LARIMER COUNTY

COMMITTED TO EXCELLENCE

Larimer County Multi-Jurisdictional Hazard Mitigation Plan Update

FEMA Review

May 2021







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CERTIFICATION OF ANNUAL PLAN REVIEW MEETINGS

The Larimer County Hazard Mitigation Planning Team (HMPT) has agreed to review the contents of this Hazard Mitigation Plan annually. The following table hereby certifies this review.

Year	Date	Signature
2022		
2023		
2024		
2025		
2026		

RECORD OF CHANGES

1 INTRODUCTION

Larimer County, Colorado, including the following participating municipalities and Title 32 Special Districts, have prepared this 2021 update of the Larimer County Hazard Mitigation Plan (HMP).

- Larimer County
- Town of Berthoud
- Berthoud Fire Protection District
- Crystal Lake Fire Protection District
- Town of Estes Park
- Estes Park Health
- Estes Valley Fire Protection District
- Estes Valley Recreation and Parks District
- City of Fort Collins
- Glacier View Fire Protection District
- Town of Johnstown
- Livermore Fire Protection District
- City of Loveland
- Loveland Fire Rescue Authority
- Northern Water Conservancy District
- Pinewood Springs Fire Protection District
- Poudre Canyon Fire Protection District
- Poudre Fire Authority
- Thompson Valley EMS District
- Town of Timnath
- Upper Thompson Sanitation District
- Town of Wellington
- Wellington Fire Protection District
- Town of Windsor
- Windsor Severance Fire Protection District

1.1 Executive Summary

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from disasters and hazard events. Studies have found that hazard mitigation is extremely cost-effective, with every dollar spent on mitigation saving an average of $6 in avoided future losses. Larimer County and its participating jurisdictions developed this hazard mitigation plan to reduce future losses to the County and its communities from natural and human-caused hazards, and to reduce the shocks and stressors caused by those events. This Plan is the result of the continued effort from stakeholders, partners and districts to complete a document that updates the 2016 Larimer County Hazard Mitigation Plan, which in turn built on the 2005 and 2010 Northern Colorado Regional Hazard Mitigation Plans. The Federal Emergency Management Agency (FEMA) requires that local hazard mitigation plans be updated every five years in order for the jurisdictions to be eligible for federal mitigation assistance. All sections of the 2016 plan were reviewed and updated to reflect new data changes in the hazards facing the County, as well as changes in demographics and development. The updated Plan addresses natural, technological, and human-caused hazards throughout Larimer County with the expressed purpose of saving lives and reducing future losses in anticipation of future events.

Section 1: Introduction – includes this Executive Summary and lays out the background, purpose, scope and authotities of the plan.

Section 2: Community Profile – describes the planning area, consisting of Larimer County and the participating jurisdictions listed above, and includes updated information on demographics, social vulnerability, and changes in development.

Section 3: Planning Process – describes the planning process used to conduct the 2021 update. Larimer's HMP has been completed with a high degree of public participation. A broad range of public and private stakeholders, including agencies, local businesses, nonprofits, and other interested parties were invited to participate in the development of the 2021 Plan. Stakeholder involvement was encouraged through staff and planning team invitations to agencies and individuals to actively participate in local planning meetings and to interact with the planning materials and surveys posted on the project website. Public

input was sought throughout the planning process by conducting open public meetings advertised through social media networks, community bulletins, email distribution lists, and jurisdictional websites. The final plan was reviewed by the State of Colorado Division of Homeland Security and Emergency Management (DHSEM), formally adopted by the governing bodies of all participating jurisdictions, and approved by the Federal Emergency Management Agency (FEMA).

Section 4: Risk Assessment – builds on available historical data from past hazard occurrences, establishes detailed profiles for each hazard, and culminates in a hazard risk ranking based on conclusions about the frequency of occurrence, spatial extent, and potential impact of each hazard. Additional data pertaining to drought and dam failures/incidents allowed those hazards to be more fully fleshed out than they were in the previous plan. The information generated through the risk assessment serves a critical function as communities seek to determine the most appropriate mitigation actions to pursue and implement — enabling communities to prioritize and focus their efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s). The best available information on the impacts of climate change were taken into account for each hazard.

The following hazards are profiled in the 2021 Plan:

- Biological Hazards (including pandemics)
- Civil Disturbance
- Dam Inundation
- Drought
- Earthquake
- Flood – Flash and Riverine
- Hazardous Materials Incident
- Landslide / Rockslide
- Soil Hazards
- Spring / Summer Storms
- Tornado
- Utility Disruption
- Wildfire
- Winter Storm (Blizzard, Heavy Snow)

The overall significance of these hazards, based on their frequency of occurrrence, spatial extent affected, and severity of impacts, are shown in Table 1-1. Details about how the risk from each hazard varies by jurisdiction can be found in Section 4 and in the Community Annexes.

Section 5: Capability Assessment – evaluates programs and policies currently in use across the County to reduce hazard impacts or that could be used to implement hazard mitigation activities. The section also identifies opportunities for enhancement.

Section 6: Mitigation Strategy – describes what the County and jurisdictions will do to reduce their vulnerability to the hazards identified in Section 4, and to increase their mitigation capabilities described in Section 5. It presents the updated goals and objectives of the mitigation program, and details a broad range of targeted mitigation actions to reduce losses from hazard events.

Section 7: Plan Implementation and Maintenance – details how the plan will be implemented, monitored, evaluated, and updated, as well as how the mitigation program will be integrated into other planning mechanisms.

While the above sections focus on the risks, capabilities, and activities of the planning area as a whole, the Jurisdictional Annexes provide specific details unique to each participating jurisdiction, including variations in risk and vulnerability, and each jurisdictions' planned mitigation actions.

Table 1-1 Larimer County Hazard Significance

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Significant	Medium
Dam Inundation	Occasional	Significant	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Highly Likely	Significant	Catastrophic	High
Hazardous Materials Incident	Likely	Limited	Critical	High
Landslide/Rockslide	Likely	Limited	Critical	High
Soil Hazards	Likely	Limited	Significant	Medium
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

1.2 Background

Emergency Management is the practice of identifying, managing, and reducing risks. It is a discipline that involves preparing for a disaster before it occurs, supporting those affected by the disaster, as well as rebuilding after the natural or human-caused disaster event, and determining solutions for increased overall resilience of the community. Emergency Management is an ever-changing process by which all individuals, groups, and communities attempt to manage hazards (and our interactions with them) in an effort to avoid or reduce the impact of disasters. One method for proactively managing hazard risks is hazard mitigation planning, which is the identification of policies, capabilities, activities, and tools to implement successful and sustainable risk reduction actions.

Mitigation planning offers many benefits, including:

- Saving lives and property
- Saving money
- Ensuring quick and effective recovery following disasters
- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction
- Enhancing coordination within and across participating jurisdictions,
- Expediting the receipt of pre-disaster and post-disaster grant funding, and
- Demonstrating a firm commitment to improving community health and safety

Mitigation planning has great potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that pre-disaster investments will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, improving water quality, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that any local mitigation planning process be integrated with existing local planning efforts, and any proposed mitigation strategies must take into account broader community goals. Larimer County and its jurisdictions have embraced this approach, identifying multiple opportunities to link the Plan with pre-existing programs, policies, plans, and resilience-building initiatives.

During the last several decades, the emergency management cycle has evolved considerably. A renewed emphasis has been placed on planning for disasters before they occur as a complement to effective response and recovery. As a result, hazard mitigation has gained increasing prominence as a critical part of emergency management. By mitigating hazards through sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards, risks can be proactively combated in a systematic manner, rather than being reacted to once they occur.

This 2021 Plan is the result of continuing work by the citizens of the County to update a regional pre-disaster multi-hazard mitigation plan that will not only continue to guide the County towards greater disaster resistance, but will also respect the character and needs of the community.

1.3 Purpose and Scope

Recognizing the importance of hazard mitigation planning, Larimer County, the City of Fort Collins, and the City of Loveland adopted the first Northern Colorado Regional Hazard Mitigation Plan (NCRHMP) in 2005. An updated NCRHMP was adopted in 2010 by those jurisdictions, in addition to the Towns of Berthoud, Estes Park, and Wellington. In 2016, the County and its participating municipalities and special districts chose to develop a county-scale hazard mitigation plan to better address the needs and capabilities of Larimer County.

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning helps reduce the cost of disaster response and recovery to communities and their residents by protecting people and critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. The Larimer County area has been affected by hazards in the past, and is committed to reducing future impacts from hazard events.

This plan was also developed to maintain Larimer County's and participating jurisdiction's eligibility for federal disaster assistance, specifically the Federal Emergency Management Agency's (FEMA), Hazard Mitigation Assistance (HMA) grants including the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), and Building Resilient Infrastructure and Communities (BRIC) grant program, as well as the Rehabilitation of High Hazard Potential Dam grant program (HHPD).

Larimer County has remained dedicated in implementing the actions and strategies defined in the 2016 Plan and its predecessors, and is committed to continuing that momentum with the 2021 Plan. It will be updated and maintained to continually address changes in hazards or vulnerabilities, and will be updated within the next five years.

1.4 Authority

This Hazard Mitigation Plan has been adopted by Larimer County and its participating jurisdictions in accordance with the authority granted to counties by the State of Colorado.

This Plan was developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The Plan shall be monitored and updated on a routine basis to maintain compliance with the following legislation and guidance:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, Mitigation Planning, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390) and by FEMA's Interim Final Rule published in the Federal Register on February 26, 2002, at 44 CFR Part 201

2 COMMUNITY PROFILE

Larimer County describes itself as a "thriving, friendly place where people of all ages, cultures, and economic backgrounds live, work, play and most of all, call home." The county extends to the Continental Divide and includes several mountain communities and Rocky Mountain National Park. The County encompasses 2,640 square miles that include some of the finest irrigated farmland in the state, as well as vast stretches of scenic ranch lands, forests and high mountain peaks. Over 50% of Larimer County is publicly owned, most of which is land within Roosevelt National Forest and Rocky Mountain National Park.

The Introduction to the 2016 Larimer Community Resiliency Framework states:

> Larimer County is known for its world-class outdoor recreation opportunities, a balance between thriving agriculture and growing urban communities, and Colorado State University. Like most counties in the Front Range of the Rocky Mountains, Larimer County encompasses both the mountains in the west and flat agricultural land in the east. Communities in the mountains tend to follow the canyons carved out by the main rivers and creeks, flowing on to the plains. These water courses provide resources for recreation, irrigation, and urban water needs. Unlike most Front Range counties, Larimer County has never had a large mining industry. Instead, ranching and agriculture, including cattle, hay, and sugar beets, have historically driven growth. Today, the county is considerably more diversified, with most people finding employment in government, hospitality and food industries, and retail.

The County's 2019-2023 Strategic Plan and 2019 Comprehensive Plan establish the following guiding principles:

VISION: Larimer County is a great place to be; an innovative community to live, work, and play for everyone.

MISSION: Larimer County government upholds and advances the community's health, safety, well-being and quality of life.

2.1 County History

Present-day Larimer County was originally the home of several Native American tribes, with the Utes occupying the mountainous areas and the Cheyenne and Arapaho living on the piedmont areas along the base of the foothills. French fur trappers infiltrated the area in the early decades of the 19th century, soon after the area became part of the United States with the Louisiana Purchase and was organized as part of the Missouri Territory. In 1828 William H. Ashley ascended the Cache la Poudre River on his way to the Green River in present-day Utah. The river itself received its name in the middle 1830s from an obscure incident in which French-speaking trappers hid gunpowder along its banks, somewhere near present-day Laporte or Bellvue. In 1848 a group of Cherokees crossed through the county following the North Fork of the Poudre to the Laramie Plains on their way to California along a route that became known as the Cherokee Trail.

Larimer County was established in 1861 as one of the 17 original counties of the Colorado Territory, and was named after General William Larimer. Unlike that of much of Colorado, which was founded on the mining of gold and silver, the settlement of Larimer County was based almost entirely on agriculture, an industry that few thought possible in the region during the initial days of the Colorado Gold Rush. The

mining boom almost entirely passed the county by. It would take the introduction of irrigation to the region in the 1860s to bring the first widespread settlement to the area.

The first railroad finally arrived in the County in 1877 when the Colorado Central Railroad extended a line north from Golden via Longmont to Cheyenne. The town council of Fort Collins designated right-of-way through the center of town (and through the campus of the unbuilt college) for the line. A planned transcontinental line over Cameron Pass was never completed, but the line nevertheless opened up the quarrying of stone for the railroad at Stout, furnishing another industry for the region.

The early growth of agriculture, which depended highly on direct river irrigation, experienced a second boom in 1902 with the introduction of the cultivation of sugar beets, accompanied by the construction of the large processing plant of the Great Western Sugar Co. in Loveland. In the following decade, the sugar beet industry brought large numbers of German emigrants from the Russian Empire to the county. The neighborhoods of Fort Collins northeast of the Poudre were constructed largely to house these new families. Meanwhile the Estes Park area was developing into a major tourist destination, especially after the formation of Rocky Mountain National Park in 1915 and the construction of the Stanley Hotel in 1909.

A significant increase in the agricultural productivity of the region came in the 1930s with the construction of the Colorado Big Thompson Project following the Great Depression, sort of a third boom for the agricultural industry around Fort Collins. This project collected and captured Western Slope water, and carried it over to the Front Range Colorado counties of Boulder, Larimer and Weld, along with an extensive water storage and distribution system, which significantly extended the irrigable growing season and brought substantial additional land under irrigation for the first time.

2.2 Governing Body

Larimer County is governed by ten elected officials that over-see different functions of county government:

- Assessor
- Board of County Commissioners
- Clerk & Recorder
- Coroner
- District Attorney
- Sheriff
- Surveyor
- Treasurer

Constitutionally and statutorily independent from one another, their powers and duties are prescribed by state statute. The County Commissioners have no direct authority over the other elected officials in the County except that commissioners approve budgets for all other elected officials' departments.

2.3 Geography

Larimer County is located in north-central Colorado at the border with Wyoming. The County is bordered by Jackson, Grand, Boulder, and Weld Counties and the State of Wyoming to the north. Covering 2,631.75 square miles, it is the 9th largest Colorado County by area.

Larimer County has a rich agricultural history and the county's agricultural lands are rapidly vanishing as the County continues to develop. According to the 2017 Census of Agriculture, there are 2,043 farms in Larimer County covering 482,456 total acres. Although the number of farms in Larimer County rose steadily between 1982 and 2007, the number of acres covered by farms declined. Over the 24 year period, Larimer County saw an overall drop of 16.1% in the total acreage in farmland, compared with an increase of 56% in number of farms. The trend in Larimer County is more pronounced than it is nationally or in the state of Colorado. In Larimer County, this increase in number of farms, followed by a decrease in acreage, is due to larger farms going out of business and being resold as smaller 'ranchettes'.

Figure 2-1 Larimer County and Municipalities

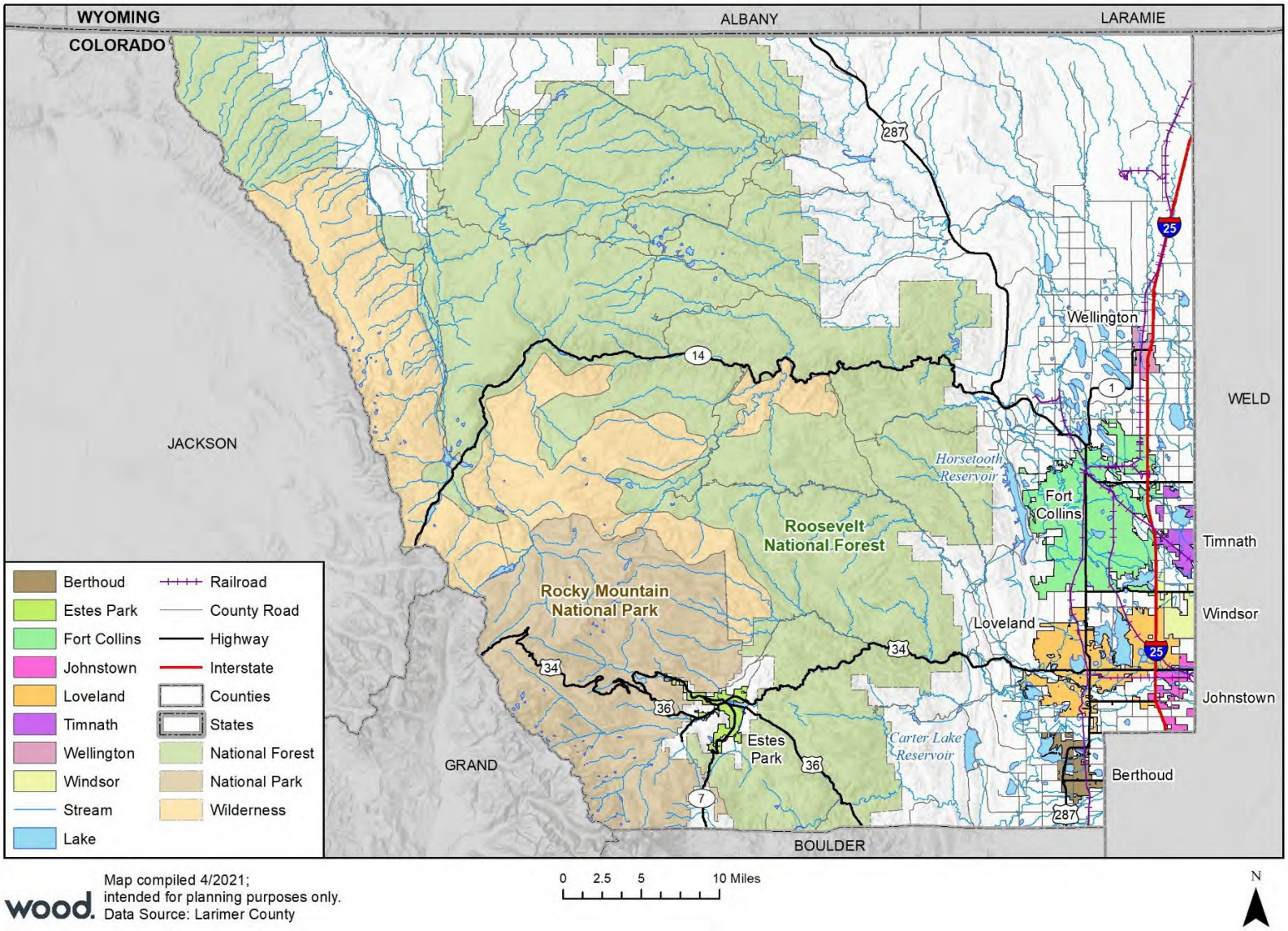
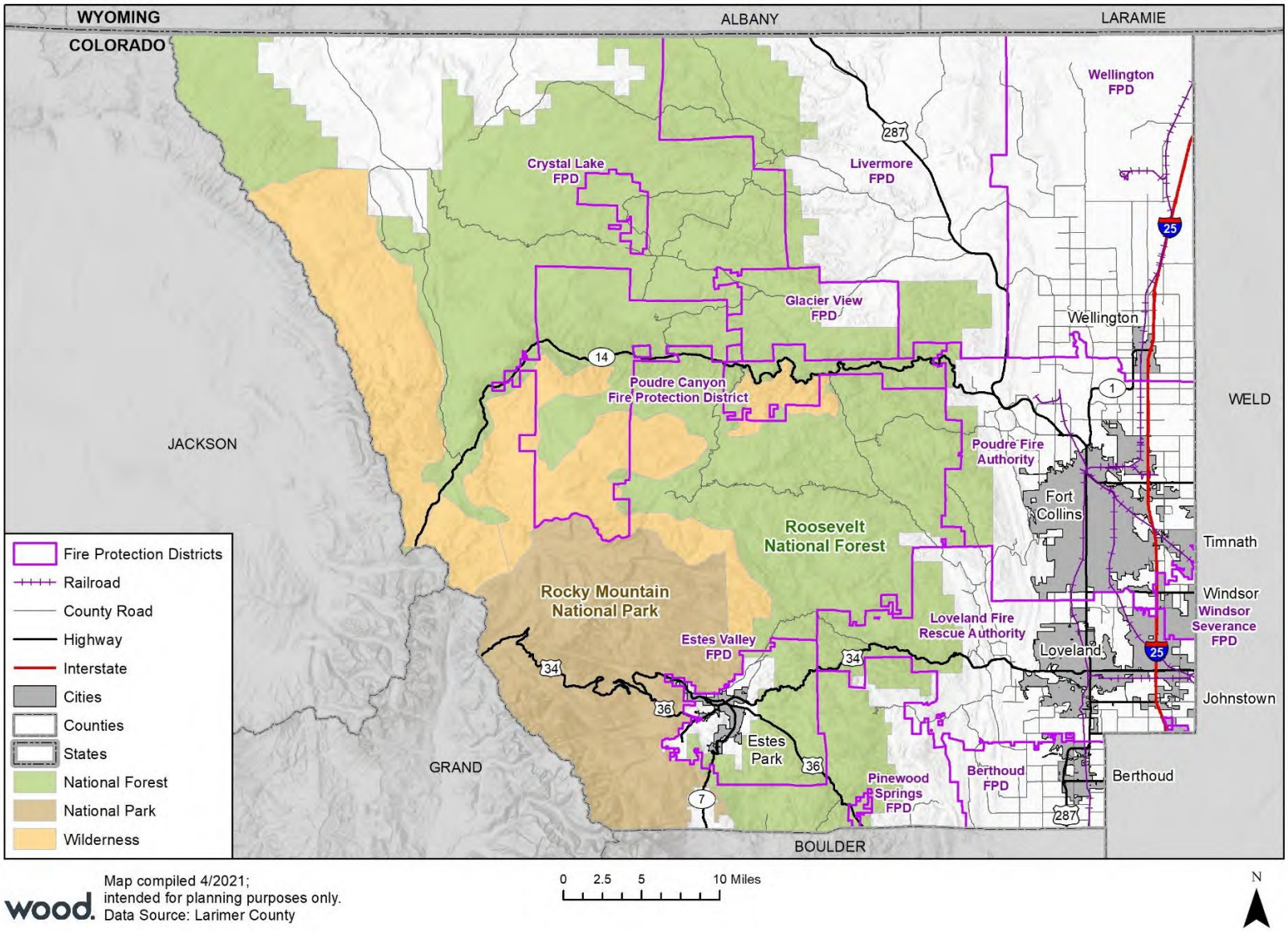


Figure 2-2 Larimer County Fire Protection Districts



Information on natural resources to include endangered species and areas that provide natural floodplain protections are discussed in Section 4.2.4.

2.4 Cities and Communities

Larimer County contains 9 incorporated and 19 unincorporated communities:

Cities

- Fort Collins
- Loveland

Towns

- Berthoud (partially in Weld County)
- Estes Park
- Johnstown (partially in Weld County)
- Red Feather Lakes
- Timnath
- Wellington
- Windsor (partially in Weld County)

Unincorporated communities and census-designated places

- Bellvue
- Buckeye
- Campion
- Cherokee Park
- Drake
- Glendevey
- Glen Haven
- LaPorte
- Livermore
- Kinikinik
- Masonville
- Norfolk
- Pinewood Springs
- Pingree Park
- Poudre Park
- Red Feather Lakes
- Rustic
- Teds Place
- Waverly

2.5 Transportation Systems

Major Highway corridors through the County include:

- I-25 (runs north-south through near the eastern county line)
- US 287 (runs north-south slightly west of I-25)
- US 34 (runs east-west through the southern County)
- US 36 (runs diagonally through Estes Park and Rocky Mountain National Park)
- CO 7 (runs north-south between Estes Park and Allenspark)
- CO 14 (runs east-west through the center of the County)

The principal railroads that pass through the County are the Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) lines that run north-south in the eastern portion of the County. Great Western Railway also operates two Class 3 rail lines that run from Fort Collins and Loveland east to Greeley.

Northern Colorado Regional Airport in Fort Collins is primarily used for general aviation and tourism flights, scheduled commercial service to the airport having been discontinued in 2012.

2.6 Demographics

As of 2018 the population of Larimer County is estimated at 338,161. This represents a 12% increase since the 2010 Census of 300,637. Roughly 82% of this increase has come from net migration (new residents who moved in minus those who moved out), with 18% coming from natural increase (births - deaths). Larimer County has been the sixth most populated county in Colorado since 2010.

Table 2-1 Shows the County's population broken down by jurisdiction. (For municipalities that cross county lines, the numbers show estimates for the portion of that municipality that fall within Larimer County; see that jurisdiction's annex for complete population data.) Roughly 80% of the County's population lives in one of the incorporated cities or towns, with 20% in unincorporated areas. The City of Fort Collins accounts for 48% of the County's population, followed by the City of Loveland at 22%.

Table 2-1 Larimer County Population By Jurisdiction, 2018

Jurisdiction	Population	% of County
Larimer County	338,161	---
City of Fort Collins	162,511	48%
City of Loveland	75,395	22%
Unincorporated County	66,430	20%
Town of Wellington	8,571	3%
Town of Windsor	7,296	2%
Town of Berthoud	6,518	2%
Town of Estes Park	6,297	2%
Town of Timnath	2,922	1%
Town of Johnstown	2,221	1%

Source: U.S. Census Bureau, American Community Survey

The following tables break down key demographic, economic, and social characteristics based on data from the U.S. Census Bureau.

Table 2-2 Larimer County Demographic and Social Characteristics, 2014-2018

Larimer County	2014	2018	% Change
Population	311,435	338,161	8.58%
Median Age	35.5	35.9	1.1%
Total Housing Units	135,219	145,672	7.7%
Housing Occupancy Rate	90.8%	91.7%	1.0%
% of Housing Units with no Vehicles Available	4.5%	4.1%	-8.9%
Median Home Value	$251,600	$336,200	33.6%
Unemployment Rate	7.5%	5.0%	-33.3%
Mean Travel Time to Work (minutes)	22.6	23.2	2.7%
Median Household Income	$58,844	$67,664	15.0%
Per Capita Income	$31,082	$35,390	13.9%
% of Individuals Below Poverty Level	13.7%	12.0%	-12.4%
% Without Health Insurance	11.0%	6.3%	-42.7%
# of Households	122,743	133,527	8.8%
Average Household Size	2.5	2.5	0.0%
% of Population Over 25 with High School Diploma	95.1%	95.8%	0.7%
% of Population Over 25 with Bachelor's Degree or Higher	44.1%	46.3%	5.0%

Larimer County	2014	2018	% Change
% with Disability	9.4%	9.8%	4.3%
% Speak English less than "Very Well"	2.2%	2.6%	18.2%

Source: U.S. Census Bureau, American Community Survey

Table 2-3 Demographic and Social Characteristics Compared to the State and the Nation

Demographic & Social Characteristics (as of 2018)	County	Colorado	U.S.
Median Age	35.9	36.6	37.9
Housing Occupancy Rate	91.7%	89.8%	87.8%
% of Housing Units with no Vehicles Available	4.1%	5.2%	8.7%
Median Home Value	$336,200	$313,600	$204,900
Unemployment	5.0%	4.7%	5.9%
Mean Travel Time to Work (minutes)	23.2	25.5	26.6
Median Household Income	$67,664	$68,811	$60,293
Per Capita Income	$35,390	$36,415	$32,621
% of Individuals Below Poverty Level	12.0%	10.9%	14.1%
% Without Health Insurance	6.3%	8.1%	9.4%
Average Household Size	2.5	2.6	2.6
% of Population Over 25 with High School Diploma	95.8%	91.4%	87.7%
% of Population Over 25 with bachelor's degree or Higher	46.3%	40.1%	31.5%
% with Disability	9.8%	10.6%	12.6%
% Speak English less than "Very Well"	2.6%	5.9%	8.5%

Source: U.S. Census Bureau, American Community Survey

Table 2-4 Larimer County Demographics by Race and Sex

Larimer County	Population	%
Total Population	338,161	
Male	168,615	49.9%
Female	169,546	50.1%
White, not Hispanic	280,122	82.8%
Hispanic or Latino	38,323	11.3%
Black	3,275	1.0%
Asian	7,505	2.2%
American Indian and Alaska Native	2,322	0.7%
Native Hawaiian and Other Pacific Islander	309	0.1%
Some other race	4,949	1.5%
Two or more races	10,532	3.1%

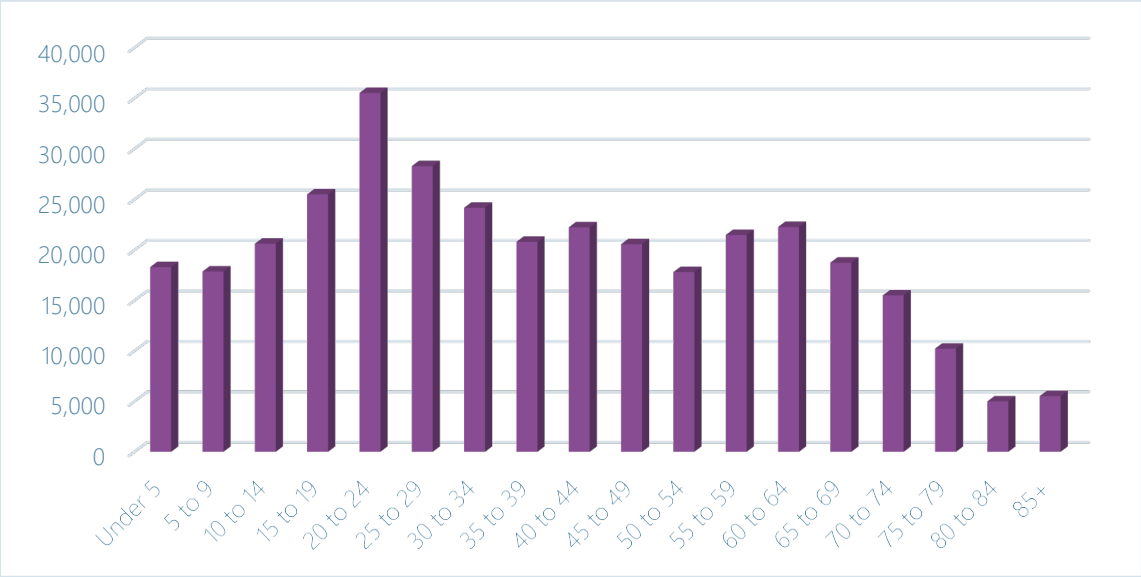
Source: U.S. Census Bureau, American Community Survey

Table 2-5 Types and Total Amounts of Housing Units in Larimer County

Type of housing units	Total	Percentage
Total housing units	145,672	
1-unit detached	96,799	66.4%
1-unit attached	10,208	7.0%
2 units	2,995	2.1%
3 or 4 units	5,716	3.9%
5 to 9 units	7,386	5.1%
10 to 19 units	7,609	5.2%
20 or more units	9,313	6.4%
Mobile home	5,600	3.8%
Boat, RV, van, etc.	46	0.03%

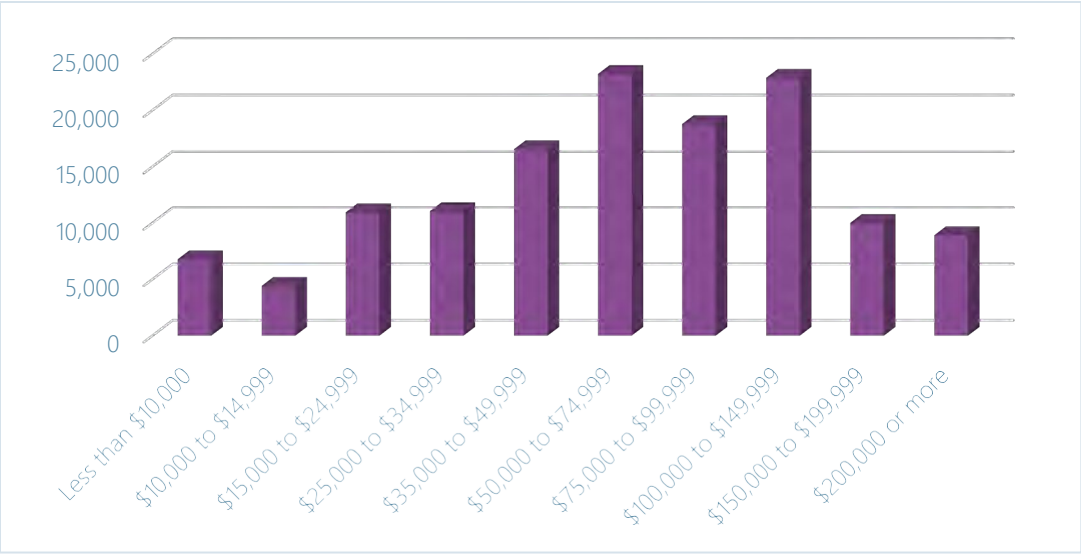
Source: U.S. Census Bureau, American Community Survey

Figure 2-3 Larimer County Demographic Breakdown by Age



Source: U.S. Census Bureau, American Community Survey

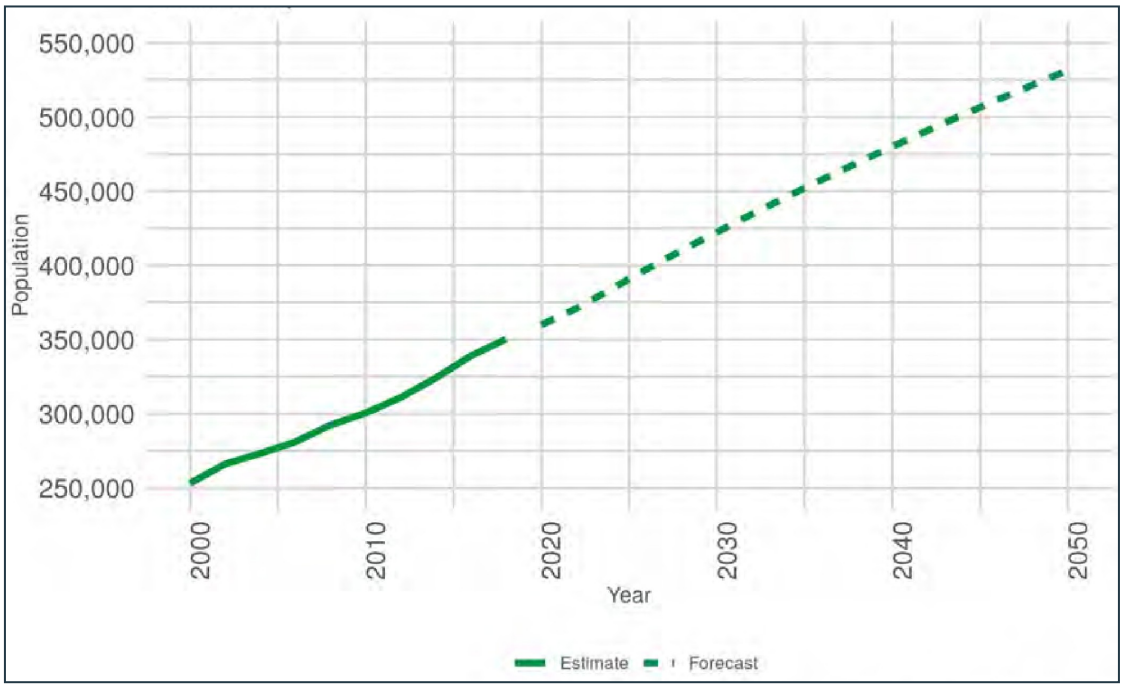
Figure 2-4 Larimer County Demographic Breakdown by Income



Source: U.S. Census Bureau, American Community Survey

The Colorado State Demography Office creates population forecasts for Colorado counties and communities. Figure 2-4 illustrates their projections for Larimer County's population through 2050 based on "plausible courses of future population change." The population of Larimer County is forecast to reach 480,126 by 2040. Between 2010 and 2020 the County's annual growth rate was 1.8%; this is expected to decrease slightly to 1.6% annually between 2020 and 2030, and 1.3% 2030 and 2040. This decrease is due in part to population aging and changes in the proportion of the population in childbearing ages.

Figure 2-5 Larimer County Projected Population Growth, 2000-2050



Source: State Demography Office

2.7 Social Vulnerability

Local vulnerability to disasters depends on more than the relationship between a place and its exposure to hazards. Social vulnerability to disasters refers to "the characteristics and situation of a person or group that influence their capacity to anticipate, cope with, resist, or recover from the impact of a hazard". It is determined by a number of pre-existing social and economic characteristics. Very often, the impacts of hazards fall disproportionately on the most underserved or marginalized people in a community – people with low income, children, people who are aging, people with disabilities, and minorities. During emergencies, for example, self-evacuation can be nearly impossible for individuals who are disabled or institutionalized. Additionally, the willingness of an individual/family to invest in residential mitigation actions is often limited if their home is a rental and they are averse to investing money in long-term mitigation activity. Not only do conditions like these limit the ability of some communities to get out of harm's way, they also decrease the ability of communities to recover from and thrive in the aftermath of a disaster event.

The term vulnerability should be used to describe the communities more vulnerable to a risk or hazard, such as high vulnerability due to wildfires or floods based upon geography, topography, hydrology or weather. Referencing people themselves directly with the term vulnerability causes individual community members to be seen with a deficit lens, leaving the impression that the vulnerability is a result of the lack of responsibility and/or adequate planning of the individual. Instead, vulnerability only occurs when the system that the individual is part of fails to provide equitable accessibility to resources or services, known as access and functional needs, for the individual to survive, respond to, and recover from an event. Barriers that may be exacerbated by certain social and economic factors – including race, age, income, renter status, or institutionalized living – directly affect a community's ability to prepare for, respond to, and recover from hazards and disasters. The concept of social vulnerability helps explain why communities often experience a hazard event differently, even when they experience the same amount of physical impacts or property loss.

The 2016 Plan integrated social vulnerability into the hazard risk analysis in order to more effectively identify hazard risk experienced by the most vulnerable residents and communities within the County; this analysis has been updated with new data for the 2021 Plan, including lessons learned from the ongoing COVID-19 pandemic. The social vulnerability assessment is designed to improve local decision making, hazard prioritization, and emergency management activities. By incorporating social vulnerability into the risk assessments of individual hazards, local communities are able to identify more vulnerable areas and tailor their mitigation actions to accommodate all members of their community, including the most sensitive groups.

The Center for Disease Control and Prevention (CDC) has developed a social vulnerability index (SoVI) as a way to measure the resilience of communities when confronted by external stresses such as natural or human-caused disasters or disease outbreaks. The SoVI is broken down to the census tract level and provides insight into particularly vulnerable populations to assist emergency planners and public health officials identify communities more likely to require additional support before, during, and after a hazardous event. The SoVI index combines four main themes of vulnerability, which are in turn broken down into subcategories for a total of 15 vulnerability factors. Table 2-6 displays those 15 factors and shows how Larimer County compares to other counties in Colorado and nationally. The rankings show the percentage of counties that Larimer County is more vulnerable than, i.e. – high numbers are worse.

During the risk assessment and mitigation strategy development phases of the 2016 planning process, participating jurisdictions reviewed the results of the social vulnerability analysis in conjunction with the multi-hazard risk assessment results. The social vulnerability information helped communities uncover unseen risks and better prioritize their local mitigation actions.

Table 2-6 Social Vulnerability in Larimer County

Theme	Variable	Ranking Compared to Colorado Counties	Ranking Compared to US Counties	Vulnerability
Socioeconomic status		37%	15%	Low
	Below poverty	49%	32%	Below Average
	Unemployment	59%	42%	Below Average
	Income	27%	8%	Low
	No high school diploma	19%	2%	Low
Household composition and disability		27%	2%	Low
	Age 65 or older	33%	19%	Low
	Age 17 or younger	41%	23%	Low
	Disability	27%	6%	Low
	Single-parent households	62%	19%	Low
Minority status and language		35%	60%	Above Average
	Minority	33%	52%	Above Average
	Speaking English "less than well"	38%	63%	Above Average
Housing and transportation		33%	36%	Below Average
	Multiunit structures	78%	91%	High
	Mobile homes	18%	16%	Low
	Crowding	18%	30%	Below Average
	No vehicle	41%	22%	Low
	Group quarters	73%	64%	Above Average
Overall Social Vulnerability		**35%**	**12%**	**Low**

Source: U.S. CDC https://svi.cdc.gov (using data from U.S. Census Bureau American Community Survey, 2014-2018)

The data shows that Larimer County's social vulnerability is low overall compared to both the State and the Nation. However, the County's vulnerability is high or above average in the following areas:

- Multi-unit housing (defined as more than 10 units per structure), which are more difficult to evacuate during emergencies.
- Institutionalized group quarters (such as college dormitories, farm workers' dormitories, psychiatric institutions, and prisons) which present special concerns during evacuation and are often highly dependent on limited staffing.
- Percentage of racial minorities, who historically are hardest hit by disasters.
- Percentage of people who speak English "less than well," complicating disaster communications.

It should be noted that even though the County may have relatively fewer people in a SoVI category compared to other counties, there are still people in that category who may be disproportionately impacted by disasters.

Figure 2-5 through Figure 2-9 display the SoVI data for Larimer County broken down by census tract. Based on this data, the areas with the highest level of social vulnerability are primarily located along the metro corridor in and around the incorporated municipalities.

Additional information on the CDC's Social Vulnerability Index can be found at https://svi.cdc.gov.

Another social vulnerability not captured in the CDC data is the lack of broadband service in certain areas of the county. According to the 2019 Larimer County Comprehensive Plan 45% of private land in the county are not serviced by broadband technology. Most of these areas are in the Mountain Planning Area (Refer to Section 2.10 for additional information on Planning Areas). The lack of broadband services, or in some cases high speed services, can make it challenging to inform people in these areas of emergency situations or community outreach related to hazards in general.

For a more thorough discussion of ways to minimize the disproportionate impact of disasters on disadvantaged and marginalized communities, to include specific initiatives completed or underway in Larimer County, see the Larimer County Office of Emergency Management Equity and Inclusion Strategic Plan.

Figure 2-6 Larimer County Overall Social Vulnerability

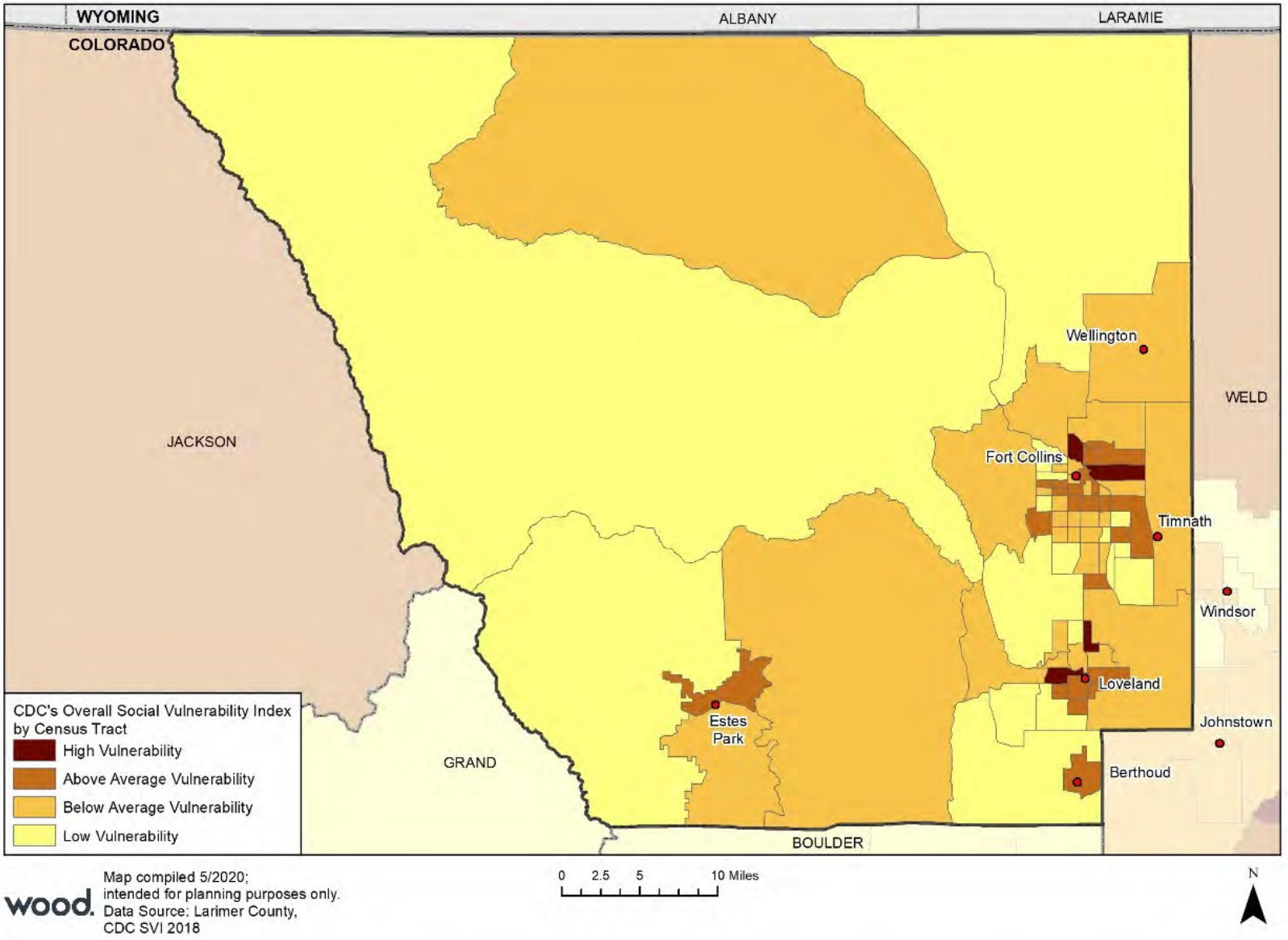


Figure 2-7 Larimer County Socioeconomic Vulnerability

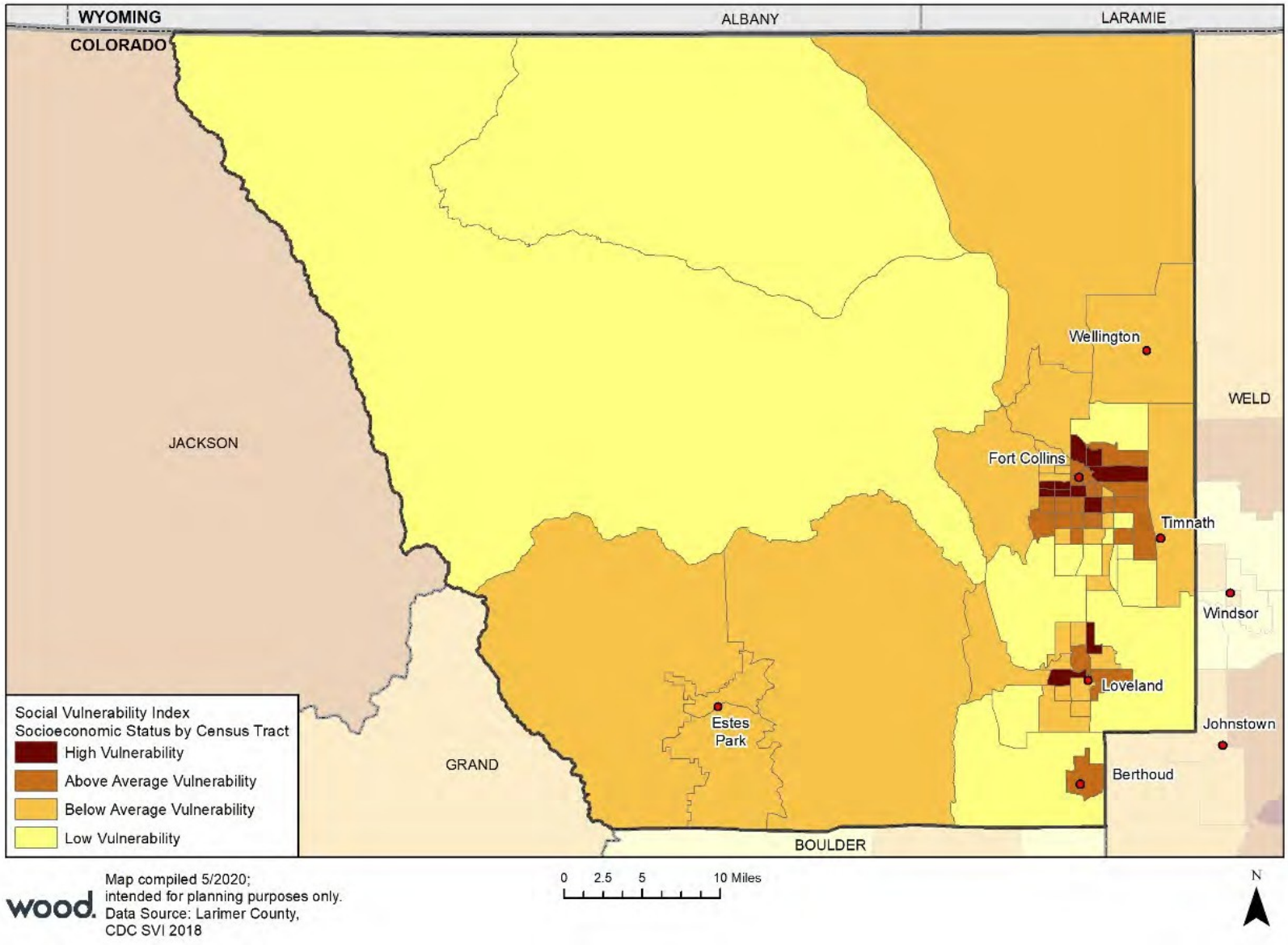


Figure 2-8 Larimer County Household Composition and Disability Vulnerability

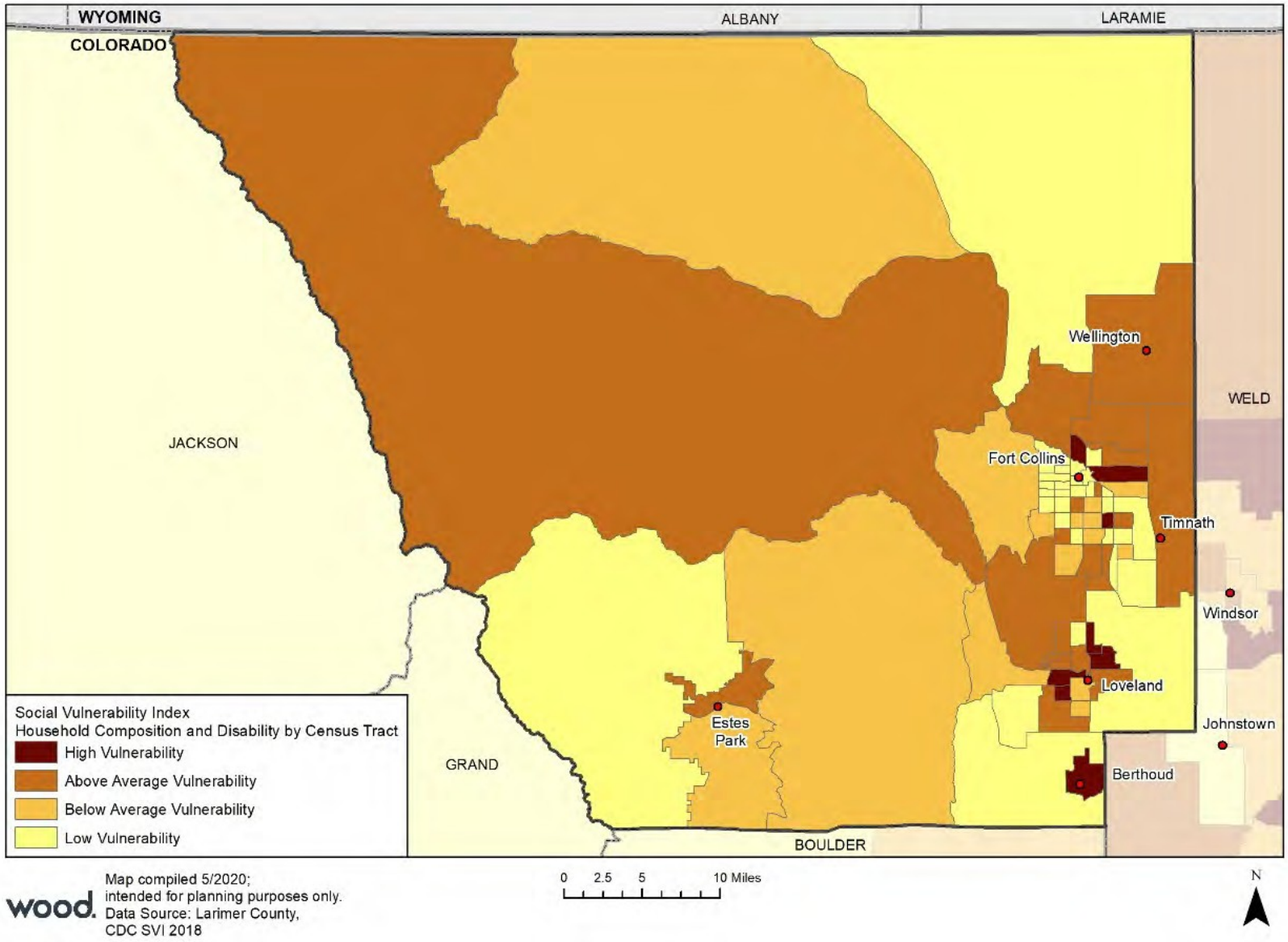


Figure 2-9 Larimer County Minority Status and Language Vulnerability

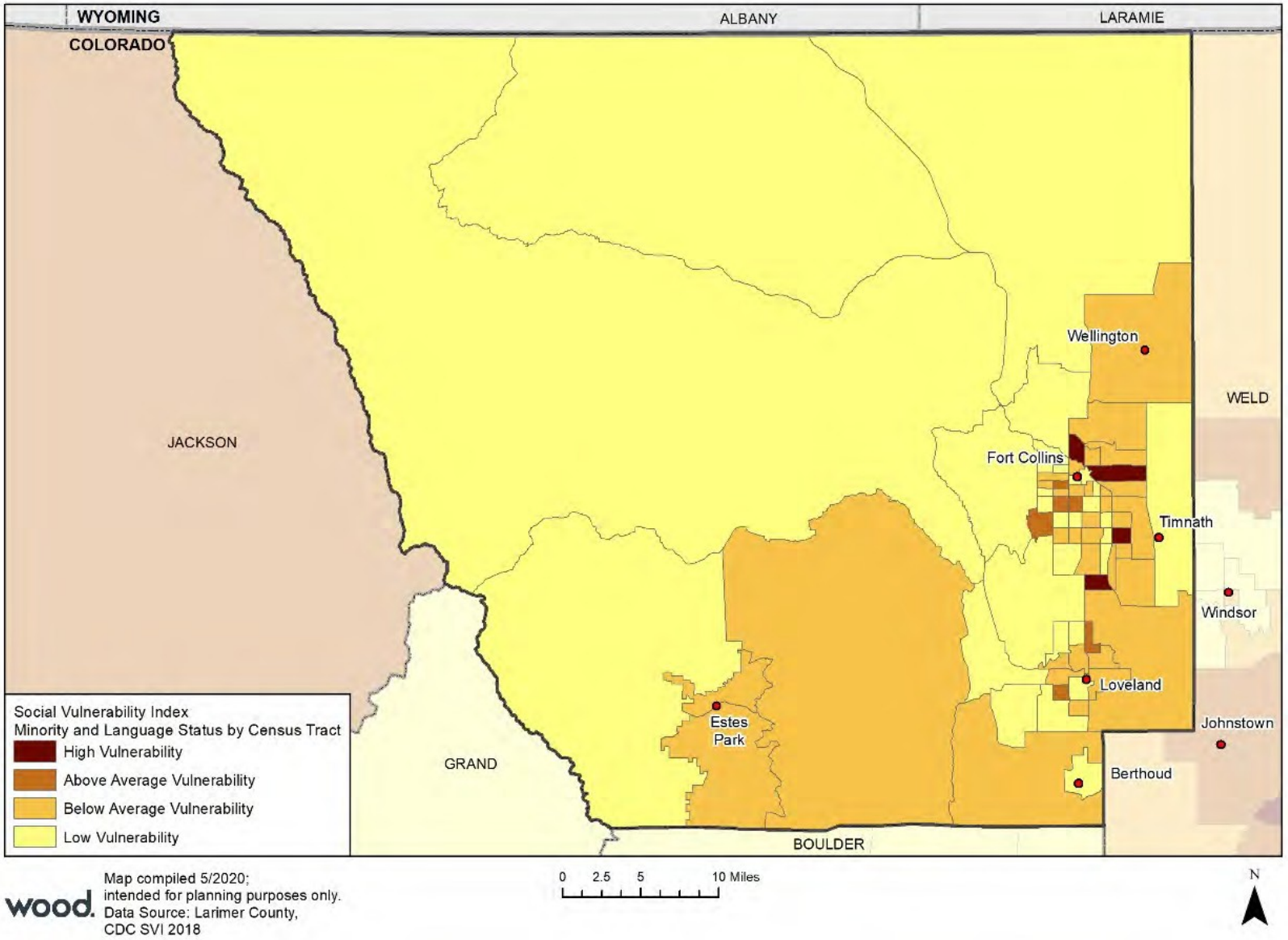
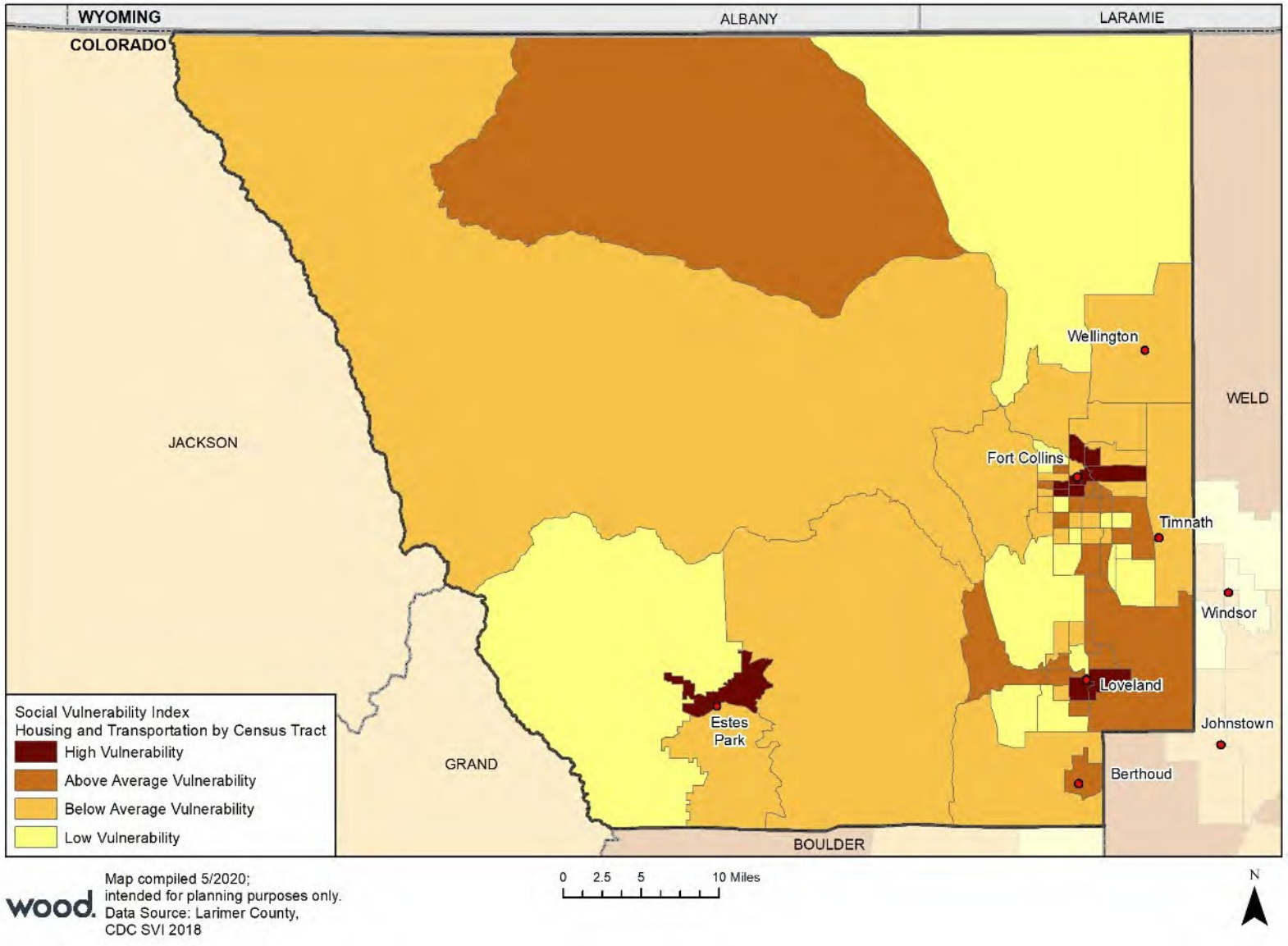


Figure 2-10 Larimer County Housing and Transportation Vulnerability



2.8 Economy

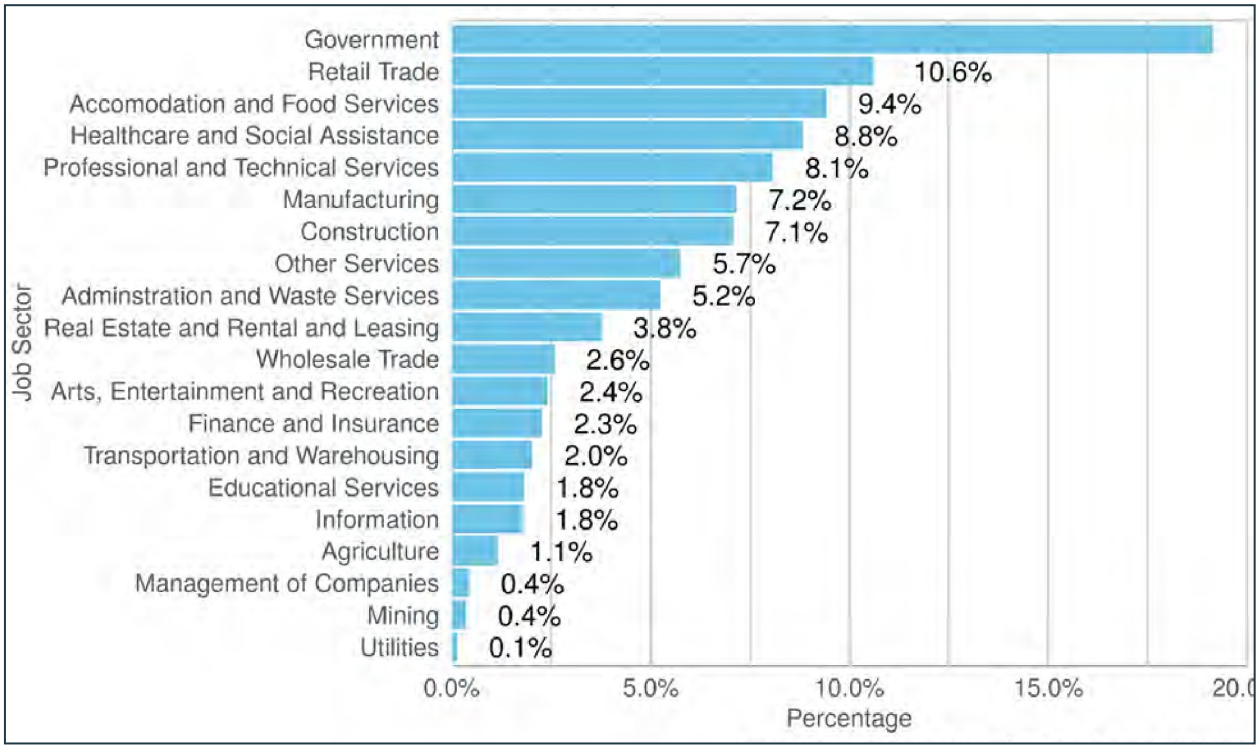
According to data from the U.S. Bureau of Economic Analysis, Larimer County's Gross Domestic Product (GDP) in 2018 was $16,793,330. This constitutes 4.9% of the State's economy and ranks Larimer 8th among Colorado Counties in terms of GDP. The County's GDP has grown by an average of 4.4% annually since 2015, which makes it the 19th fastest growing County economy in Colorado.

Based on data from the U.S. Census Bureau's County Business Patterns (CBP), the following private businesses employ the lion's share of Larimer County residents:

- Poudre Valley Health Systems
- Broadcom
- Banner Health
- Hewlett Packard
- Center Partners
- Woodward, Inc.

In addition to the private employers listed above, several public employers (Colorado State University, Poudre and Thompson School Districts, Larimer County and the Cities of Fort Collins and Loveland) employ more than 1,500 workers each.

Figure 2-11 Larimer County Share of Jobs by Industry, 2018



Source: State Demography Office

Figure 2-12 Larimer County Average Weekly Wage in Real (2017) Dollars



Source: Colorado Department of Labor and Employment

The U.S. Census Bureau estimates that 60,066 Larimer County residents are employed outside the County. The top 5 counties where they work are Weld, Boulder, Denver, Adams, and Jefferson Counties. Conversely, 52,553 people who live outside of Larimer County are employed in the County. The top 5 counties where those commuters live are Weld, Boulder, Jefferson, Adams, and Arapahoe Counties. As shown in Table 2-3, the average Larimer County commuter has a 23.2 minute commute, slightly below state and national averages.

According to the 2017 Census of Agriculture, there are 2,043 farms in Larimer County covering 482,456 total acres. The market value of agricultural products sold by these farms is estimated at over $150M.

2.9 Community Values, Historic, and Special Considerations

Historic resources include landmarks buildings, historic structures and sites, commercial and residential districts, historic rural resources, archaeological and cultural sites, and the historic environment in which they exist. Historic resources serve as visual reminders of a community's past, providing a link to its development. Preservation of these important resources makes it possible for them to continue to play an integral, vital role in the community. Currently, Larimer County has 107 properties and Historic Districts listed on the National Register of Historic Places, including two National Historic Landmarks. The listing of these assets can be found in Section 4.3.

Depending on the number of historic resources within a community, it can be unrealistic to assume that all of the necessary mitigation activities can be taken to protect these resources. Historic preservation and protection work must be done in a manner that retains the character-defining features of a historic property. Because this work can be costly, it is important to set priorities in terms of which resources and mitigation projects should become the point of focus. Larimer County and its jurisdictions recognize that

the preservation and maintenance historic sites and structures contributes to the cultural heritage of the county and is in the long-term best interest of the community.

2.10 Land Use & Development Trends

A key strategy for reducing future losses in a community is to avoid development in known hazard areas while enforcing the development of safe structures in other areas. The purpose of this strategy is to keep people, businesses, and buildings out of harm's way before a hazard event occurs. The 2021 Larimer County Multi-Jurisdictional Hazard Mitigation Plan highlights areas where future development can be expected and areas where mitigation options can be considered in future land use decisions to ensure safe, smart growth in the county.

Larimer County has grown significantly in the past decade and is one of the fastest growing counties in the State. The amount of growth that Larimer County has seen over the past decade has been dictated by the availability of undeveloped land. Based on observed population growth trends, housing demand within Larimer County is expected to remain steady over the next decade.

Land use patterns and cover varies across the county. The Larimer County 2019 Comprehensive Plan divides the county into two planning areas, 'Mountain' and 'Front Range'. The City of Fort Collins and the City of Loveland are both located in the Front Range planning areas, which is comprised of mostly urban and suburban land uses and where most of the housing in the county is located. Most of the current development in the county is taking place in this planning areas along the I-25 corridor. Urban Growth Areas were established around the cities in 1980. The county's policy has been to locate urban development in cities and towns adjacent to these areas. There are 642 vacant residential parcels within platted subdivisions in this planning area. Complete development of these parcels in addition to the parcels greater than 35 acres would result in 1,797 new residents in the Front Range planning area (Larimer County 2019).

The Mountain planning area consists more of low density rural land uses. According to the County's Comprehensive Plan there are 2,200 vacant residential parcels from subdivisions approved in the 1970s and 1980s in the Mountain planning area. In addition, there are 3,300 parcels that are greater than 35 acres, which allows landowners to obtain a building permit without going through a formal planning process as long as access and provided and there is a buildable area. Full development of these vacant areas would result in 13,750 new residents in the Mountain planning area (Larimer County 2019).

Half of the area in the county is considered public lands, under state or federal control. Larimer County only has the ability to directly influence development on 31% of land area in the county. The remaining areas are under ad hoc informal local government channels that limits the County's ability to influence development and actions that occur in these areas. The following table shows the current breakdown of the County's zoning districts. One of the goals with the County's Land Use Code update process in the 2019-2021 is to broaden the county's zoning toolbox by revising these 23 base zone districts.

Table 2-7 Larimer County Zoning District Composition

District Label	District Name	Number of Parcels	Total Gross Acres	% of County-Zoned Land Area
FA	Farming	4,080	24,980	1.54%
FA-1	Farming	5,932	62,071	3.83%
FO	Forestry	498	9,677	0.60%
FO-1	Forestry	54	3,025	0.19%
O	Open	19,565	1,453,798	89.73%
E	Estate	2,765	10,437	0.64%

District Label	District Name	Number of Parcels	Total Gross Acres	% of County-Zoned Land Area
E-1	Estate	2,559	5,218	0.32%
RE	Rural Estate	1,117	12,833	0.79%
RE-1	Rural Estate	382	10,857	0.67%
R	Residential	3,057	2,501	0.15%
R-1	Residential	1,285	10,533	0.65%
R-2	Residential	558	226	0.01%
M	Multiple-Family	470	147	0.01%
M-1	Multiple-Family	2,509	473	0.03%
A	Accommodations	321	2,676	0.17%
T	Tourist	318	1,205	0.07%
B	Business	88	220	0.01%
C	Commercial	760	1,743	0.11%
I	Industrial	477	2,197	0.13%
I-1	Heavy Industrial	58	2,432	0.14%
AP	Airport	499	2,576	0.16%
PD	Planned Development	181	310	0.02%
RFLB	Red Feather Lakes Business	25	40	0.00%
Total		**47,558**	**1,620,175**	**100%**

Source: Clarion Associates, Larimer County Land Use Code 2020 Assessment and Annotated Outline, November 2019

3 PLANNING PROCESS

DMA Requirements §201.6(b) and §201.6(c)(1):
An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process; and
Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

This section of the Plan describes the mitigation planning process undertaken by Larimer County and participating jurisdictions in the preparation of this Multi-Jurisdictional Hazard Mitigation Plan. This chapter consists of the following subsections:

- Background
- What's New in the 2021 Plan Update
- Local Government Participation
- The 2021 Planning Process

3.1 Background

Recognizing the importance of hazard mitigation planning, Larimer County, the City of Fort Collins, and the City of Loveland adopted the first Northern Colorado Regional Hazard Mitigation Plan (NCRHMP) in 2005. An updated NCRHMP was adopted in 2010 by those jurisdictions, in addition to the Towns of Berthoud, Estes Park, and Wellington. The 2016 Larimer County Multi-Jurisdictional Hazard Mitigation Plan expanded on the NCRHMP and included all incorporated jurisdictions in the County as well as special districts. A key focus of the 2016 Plan was the integration of hazard mitigation with ongoing land use and community development activities.

The multi-jurisdictional Hazard Mitigation Plan (HMP) underwent a comprehensive update in 2021. The planning process followed during the update was similar to what was used in the original plan development. This planning process utilized the input from a multi-jurisdictional Planning Team. The County received Hazard Mitigation Assistance grant funding from DHSEM and FEMA to procure consultant assistance during the 2021 update, and a consultant, Wood Environment & Infrastructure Solutions, Inc (Wood) was procured to assist with the update. The plan update process is described further in this section and documented in Appendix B.

It is worth noting that this update was conducted during the middle of the COVID-19 pandemic and while the largest wildfire in Colorado's history, the Cameron Peak Fire, was burning in Larimer County. The fact that the participating jurisdictions remained committed to and engaged in the update process even in the midst of these major disasters is a testament to how seriously the community takes mitigation planning.

This 2021 Plan is the result of continuing work by the citizens of the county to update a multi-jurisdictional pre-disaster multi-hazard mitigation plan that will not only continue to guide the county towards greater disaster resistance but will also respect the character and needs of the community.

3.2 What's New in the 2021 Plan Update

DMA Requirements §201.6(d)(3):
A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The 2021 HMP complies with all Federal Emergency Management Agency (FEMA) guidance for local hazard mitigation plans. The update followed the requirements noted in the Disaster Mitigation Act (DMA) of 2000 and FEMA's 2013 Local Hazard Mitigation Planning Handbook.

This multi-jurisdictional, multi-hazard mitigation plan update involved a comprehensive review and update of each section of the 2016 plan and includes an assessment of Larimer County's success in evaluating, monitoring, and implementing the mitigation strategy outlined in the previous plan. The process followed to review and revise the chapters of the plan during the 2021 update is detailed in Table 3-1. All sections of the plan were reviewed and updated to reflect new data and methodologies on hazards and risk, risk analysis processes, capabilities, participating jurisdictions and stakeholders, and mitigation strategies. The plan was also revised to reflect changes in development, including using the latest version of the assessor's office data as the basis for identifying overall and hazard exposure for developed parcels by County and jurisdiction. Only the information and data still valid from the 2016 plan was carried forward as applicable to this plan update.

Table 3-1 2021 Plan Update Summary of Changes by Chapter

2016 Plan Section	Update Review and Analysis	2021 Plan Section
1 Certification of Annual Plan Review Meetings	Moved into separate section. Updated with information on past meetings. Updated for future years.	Certification of Annual Plan Review Meetings, Record of Changes, Executive Summary
2 Executive Summary	Moved into Section 1. Updated Executive Summary to reflect updated plan. Moved Background, Purpose and Scope into Planning Process Section.	1 Introduction
3 Planning Process	Described and documented the planning process for the 2021 update, including coordination among agencies and integration with other planning efforts. Updated summary of changes. Described any changes in jurisdictional priorities. Described changes in participation. Described 2021 public participation process.	3 Planning Process
4 County Profile	Moved to new Section 2. Updated demographic, social & economic data, including the results of any recent annexations or new development.	2 Community Profile
5 Risk Assessment	Moved into Section 4. Added new hazards: Dam Inundation and Drought. Reviewed hazards from current Colorado State Hazard Mitigation Plan for consistency.	4 Risk Assessment

2016 Plan Section	Update Review and Analysis	2021 Plan Section
	Updated list of disaster declarations, hazards data, and past occurrences to include 2016-2020 data. Incorporated new hazard studies since 2016 and wildfire risk mapping. Added potential consequences of climate change within each hazard profile. Updated critical facilities data from the 2016 plan. Updated development and land use trends Used 2020 Assessor's data to update current property values. Estimated flood losses using the latest flood hazard mapping and building counts and values. Updated NFIP data and Repetitive Loss structure data from the previous plan. Incorporated new hazard loss estimates since 2016, as applicable. Conducted a Hazus-MH Level I earthquake vulnerability analysis. Updated information regarding specific vulnerabilities to hazards, including maps and tables of specific assets at risk, specific critical facilities at risk, and specific populations at risk. Updated maps where appropriate.	
5 Capability Assessment	Previously within Risk Assessment. Moved to new section 5. Updated capability assessment with information provided in Data Collection Guides Reviewed mitigation capabilities and updated to reflect current capabilities. Indicated projects that have been implemented that may reduce previously identified vulnerabilities. Described how 2016 plan was integrated into other plans and programs.	5 Capability Assessment
6 Mitigation Strategy	Updated based on the results of the updated risk assessment, completed mitigation actions, and implementation obstacles and opportunities over the last five years. Reviewed goals and objectives to determine if they are still representative of the County's mitigation strategy. If necessary, form new goals and objectives or revise existing ones. Reviewed mitigation actions from the 2016 plan and develop a status report for each; identify if action has been completed, deleted, or deferred. Added a section on Progress Made Since 2016 HMP Identified and detailed new mitigation actions not captured in the previous plan. Identified projects that have been submitted for funding and those that will be likely candidates for this funding. Created consolidated mitigation actions table. Moved mitigation action worksheets to an appendix	6 Mitigation Strategy

2016 Plan Section	Update Review and Analysis	2021 Plan Section
7 Plan Implementation and Maintenance	Reviewed and updated procedures for monitoring, evaluating, and updating the plan. Revised to reflect current methods. Revised to note opportunities for integration in future planning efforts. Updated the system for monitoring progress of mitigation activities by identifying additional criteria for plan monitoring and maintenance.	7 Plan Implementation and Maintenance
Community Profiles	Formerly in Appendix B, broken out as Annexes.	Annexes A through U.
Appendices	Appendix A: Meeting Minutes & Sign-In Sheets Appendix B: Community Profiles (see above) Appendix C: Local Jurisdiction Mitigation Outreach Appendix D: Additional Fort Collins CRS Documentation Appendix E: Update on Mitigation Actions from the 2010 Northern Colorado Regional Hazard Mitigation Plan Appendix F: FEMA Approval Documents & Jurisdictional Adoptions	Appendix A: Planning Team Appendix B: Planning Process Appendix C: Adoption Resolution Appendix D: Mitigation Action Worksheets Appendix E: References

3.3 Local Government Participation

DMA Requirements §201.6(a)(3):
Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

Larimer County invited every incorporated city, town, and special district in the County to participate in the 2021 Plan update. The following jurisdictions met all the participation requirements described below:

County

- Larimer County

Municipalities

- Town of Berthoud
- Town of Estes Park
- City of Fort Collins
- Town of Johnstown
- City of Loveland
- Town of Timnath
- Town of Wellington
- Town of Windsor

Special Districts

- Berthoud Fire Protection District
- Crystal Lake Fire Protection District
- Estes Park Health
- Estes Valley Fire Protection District
- Estes Valley Recreation and Parks District
- Glacier View Fire Protection District
- Livermore Fire Protection District
- Loveland Fire Rescue Authority
- Northern Water Conservancy District
- Pinewood Springs Fire Protection District
- Poudre Canyon Fire Protection District
- Poudre Fire Authority
- Thomas Valley EMS District
- Upper Thompson Sanitation District
- Wellington Fire Protection District
- Windsor Severance Fire Protection District

The only change in participation from the 2016 Plan was that Colorado State University and the Platte River Power Authority declined to participate in this update due to conflicting priorities and limited resources; they did not provide any updates on their information or actions from the 2016 Plan.

The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the multi-jurisdictional plan in order to be eligible for FEMA Hazard Mitigation Assistance grants. The jurisdictions that chose to participate in the planning process were required to meet strict plan participation requirements defined at the beginning of the process, which included the following:

- Designating a representative to serve on the Planning Team
- Participating in Planning Team meetings
- Completing and returning updates on Mitigation Actions since 2016
- Identifying new mitigation actions for the plan
- Reviewing and commenting on plan drafts
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan
- Formally adopting the mitigation plan and re-adopting every 5 years

Appendix A shows the attendance of representatives at each Planning Team meeting, including the titles of individuals involved; sign-in sheets are included in Appendix B Planning Process Documentation.

3.4 The 2021 Planning Process

The Larimer County Office of Emergency Management worked with the consultant team to establish the framework and process for this planning effort using FEMA's Local Multi-Hazard Mitigation Planning Guidance (2013). The guidance and this plan are structured around FEMA's original four-phase process:

1) Organize resources
2) Assess risks
3) Develop the mitigation plan
4) Implement the plan and monitor progress

Into this four-phase process, Wood integrated the 10-step planning process used for FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. Thus, the modified 10-step process used for this plan meets the funding eligibility requirements of the Hazard Mitigation Assistance grants (including Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities grant, High Hazard Potential Dams grant, and Flood Mitigation Assistance grant), Community Rating System, and the flood control projects authorized by the U.S. Army Corps of Engineers (USACE). Table 3-2 shows how the process followed meets all the requirements for those programs.

Table 3-2 Mitigation Planning Process Used to Develop the Plan

FEMA's 4-Phase DMA Process	Modified 10-Step CRS Process
1) Organize Resources	
201.6(c)(1)	1) Organize the Planning Effort
201.6(b)(1)	2) Involve the Public
201.6(b)(2) and (3)	3) Coordinate with Other Departments and Agencies
2) Assess Risks	
201.6(c)(2)(i)	4) Identify the Hazards
201.6(c)(2)(ii)	5) Assess the Risks

FEMA's 4-Phase DMA Process	Modified 10-Step CRS Process
3) Develop the Mitigation Plan	
201.6(c)(3)(i)	6) Set Goals
201.6(c)(3)(ii)	7) Review Possible Activities
201.6(c)(3)(iii)	8) Draft an Action Plan
4) Implement the Plan and Monitor Progress	
201.6(c)(5)	9) Adopt the Plan
201.6(c)(4)	10) Implement, Evaluate, and Revise the Plan

3.4.1 Phase 1 Organize Resources

Step 1: Organize the Planning Effort

This section describes the planning process used during the 2021 update. The previous planning processes for the 2010 and 2016 planning efforts are well documented and can be referenced in those plans. The Larimer County Emergency Management Coordinator took the lead on coordinating and reconvening the Planning Team and identifying the key county, municipal, and other local government and initial stakeholder representatives. Representatives from all jurisdictions listed in Section 3.3 above participated on the Planning Team and the update of the plan.

The Larimer County Office of Emergency Management emailed letters of invitation to each meeting to county, municipal, district, state, and other stakeholder representatives. This list is included in Appendix B. Stakeholder participation was significant during the 2021 update; stakeholders are listed in subsection Step 3: Coordinate with Other Departments and Agencies.

Two distinct but related groups were formed to direct and inform the update of this plan. The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the multi-jurisdictional hazard mitigation plan. An All Hazards Planning Team was created that includes representatives from each participating jurisdiction, departments of the County, and other local, state, and federal organizations responsible for making decisions in the plan and agreeing upon the final contents. Kickoff meeting attendees discussed potential participants and made decisions about additional stakeholders to invite to participate on the Planning Team. The Planning Team contributed to this planning process by:

- Providing facilities for meetings,
- Attending meetings,
- Collecting data,
- Managing administrative details,
- Making decisions on plan process and content,
- Submitting mitigation action implementation worksheets,
- Reviewing and editing drafts, and
- Coordinating and assisting with public involvement and plan adoptions.

Within the All Hazards Planning Team, a Floodplain Management Steering Committee (FMSC) was formed to lead the floodplain management planning effort. The FMSC was composed of staff from those community departments that implement or have expertise in floodplain mitigation activities including land use and comprehensive planning, and also included members of the public and other stakeholders. All jurisdictions participating in the Community Rating System (CRS) were represented on the FMSC. All decisions pertaining to floodplain management efforts and CRS activities were made by the FMSC, with information and advice being provided by the rest of the All Hazards Planning Team and other

stakeholders. All FMSC members were also members of the All Hazards Planning Team, and participated in all Planning Team meetings. The FMSC contributed to the floodplain management planning process by:

- Providing facilities for meetings,
- Attending meetings,
- Collecting data,
- Managing administrative details,
- Making decisions on plan process and content,
- Submitting mitigation action implementation worksheets,
- Reviewing and editing drafts, and
- Coordinating and assisting with public involvement and plan adoptions.

Membership and attendance of the All Hazards Planning Team and the Floodplain Management Steering Committee are listed in Appendix A. Appendix A also shows the areas of mitigation expertise of County and jurisdictional representatives participating on the FMSC, as well as additional external stakeholders contacted or coordinated with during the update process.

During the plan update process, the Planning Team and FMSC communicated with a combination of online webinars, phone interviews, and email correspondence. Four planning meetings with the Planning Team and FMSC were held during the plan's development between April 2020 and July 2020. The meeting schedule and topics are listed in the following table; all 10 planning process steps were covered in these four meetings. All meetings were held virtually as webinars due to social distancing requirements associated with the ongoing COVID-19 pandemic. The sign-in sheets and agendas for each of the meetings are included in Appendix B.

Table 3-3 Summary of Meetings

Planning Meetings	Meeting Topic	CRS Steps	Meeting Date
1 – Kickoff	1. Introduction to DMA, CRS and the planning process. 2. Organize resources: the role of the planning team, planning for public involvement, and coordinating with other agencies and stakeholders.	1, 2, 3	April 10, 2020
2 – Floodplain Management	1. Overview of the CRS floodplain management planning process. 2. Organize resources: the role of the FMSC 3. Review of CRS activities in 2016 Plan	1, 2, 3	April 10, 2020
3 – Risks and Goals	1. Review online survey and other public involvement strategies. 2. Review/discussion of Risk Assessment (Assess the Hazard) 3. Review/discussion of Vulnerability Assessment (Assess the Problem) 4. Review Capability Assessment 5. Discuss/update mitigation goals 6. Solicit comments and feedback from the Planning Team	2, 4, 5, 6	May 15, 2020
4 – Mitigation Strategy	1. Review/discussion of Risk and Vulnerability Assessment 2. Discuss/develop mitigation strategies 3. Review Draft Plan 4. Update maintenance and implementation procedures 5. Solicit comments and feedback from the Planning Team	7, 8, 9, 10	July 14, 2020

Planning Meeting #1 – Kickoff Meeting

During the kickoff meeting, Wood presented information on the scope and purpose of the plan update, participation requirements of Planning Team members, and the proposed project work plan and schedule. Plans for public involvement (Step 2) and coordination with other agencies and departments (Step 3) were discussed. Wood also introduced the hazard identification requirements and data. The Planning Team discussed past events and impacts and future probability for each of the hazards required by FEMA for consideration in a local hazard mitigation plan. Each jurisdiction provided updates through a data collection workbook created by Wood and mitigation action trackers or provided information directly to Wood for incorporation into the plan update.

Planning Meeting #2 — Floodplain Management

Following the kickoff meeting, the Floodplain Management Steering Committee (FMSC) met separately to discuss the floodplain management planning portions of the HMP update. Thirteen FMSC members participated in the discussion. Wood gave an overview of Community Rating System (CRS) planning credits and how they fit into the multi-hazard mitigation plan update. Roles and responsibilities of the FMSC were discussed, along with how the FMSC will direct the floodplain management planning process.

Planning Meeting #3 — Risk Assessment Update

On May 15, 2020, the Planning Team convened virtually to review and discuss the results of the risk and vulnerability assessment update. Fifty-three members of the Planning Team and stakeholders were present for the discussion. Wood presented preliminary risk assessment results for natural and human-caused hazards. The group went through each hazard together and discussed the results as well as shared any local insight to inform the HIRA update. The Planning Team made two additions to the hazards list from the 2016 plan, to include Dam Inundation and Drought. A survey was developed by Wood and shared with the Planning Team after the meeting, that asked the members to rank each hazard for the county as a whole and asked if any additional hazards should be considered. The survey also asked the Planning Team to review the 2016 mitigation goals and objectives and determine if they were still valid, comprehensive, and reflect current priorities and updated risk assessments. Revisions to the goals can be found in Chapter 6 Mitigation Strategy. Refer to the meeting summary in Appendix B for notes related to each hazard discussed and results from the post meeting survey.

Planning Meeting #4 — Mitigation Strategy

The Planning Team convened virtually on July 14, 2020 with forty-five people participating to discuss goals and objectives for this planning process. The group discussed the criteria for mitigation action selection and prioritization using a worksheet provided by Wood (refer to Appendix B). The group reviewed each possible new mitigation action and additional details were provided by the Planning Team. The meeting ended with a review of the next steps and planning process schedule. Wood provided the Planning Team with a link to an online form to submit new mitigation actions. During the Planning Team review of the full plan, each member was provided a handout on prioritizing new mitigation actions and asked to focus on prioritizing each new mitigation action in their jurisdictional annex.

Step 2: Involve the Public

DMA Requirements §201.6(b):
An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

Larimer County and its participating jurisdictions were active in involving the public throughout the update process. The fact that the process was conducted during the COVID-19 pandemic, with attendant restrictions on public gatherings, made it difficult to use many traditional outreach methods such as in person public gatherings or discussion at other forums. The Planning Team adapted by leveraging virtual meetings and other online messaging, which in many cases resulted in greater public attendance and involvement than more traditional face-to-face meetings. These outreach efforts are summarized in Table 3-4 and discussed below.

Table 3-4 Summary of Public Outreach and Involvement Efforts

Event/Effort	Message	Dates	Methods Advertised
Online Public Survey	Personal experience with hazard events; public perception of hazard significance; what mitigation measures should be pursued.	May 18 to July 14, 2020	Flyer, website posting, Facebook, Twitter
Public Workshop #1 (virtual)	Overview of mitigation planning and plan update process; introduction to hazards and risk assessment; mitigation goals and objectives.	May 28, 2020	Flyer, website posting, Facebook, Twitter, YouTube
Public Workshop #2 (virtual)	Overview of draft plan; solicitation of feedback.	October 13, 2020	Flyer website posting, Facebook, Twitter, YouTube
Public Review Draft	Public review and comment on the draft plan.	February 1-22, 2021	Flyer, website posting, Facebook
Virtual Public Room	Virtual room for the public to educate the public on mitigation planning and the 2021 plan update, as well as providing opportunities to review and comment on the draft plan.	February 1-22, 2021	Flyer, website posting, Facebook
Hazard Mitigation Flyer	Public information flyer created and disseminated by multiple means.	May 2020	Email, website posting, Facebook, Twitter
YouTube.com	Videos of public workshops posted.	Ongoing	NA
Website notices	Notices of process, survey, public workshops, and public review draft posted at Larimer.org.	May – December 2020	NA
Facebook posts	Updates on process, survey, public workshops, and public review draft posted on County Facebook page.	May – December 2020	NA
Twitter posts	Updates on process, survey, public workshops, and public review draft posted on County Twitter account.	May – December 2020	NA

At the kickoff meeting, the Planning Team discussed options for soliciting public input on the mitigation plan and developed an outreach strategy by consensus. An online public survey was developed by Wood and shared with the Planning Team to share through their respective public information channels. A link to the survey was also posted on some of the participating jurisdictions' websites as well as through social media posts; screenshots from both can be found in Appendix B.

Figure 3-1 below is the flyer the County Planning Team used to advertise the first public workshop on May 28, 2020.

Figure 3-1 Larimer County's Flyer for Public Workshop #1 May 28, 2020



Online Public Survey

During the plan update's initial drafting stage, an online public survey was used to gather public input to the Planning Team. The survey provided an opportunity for public input during the planning process, prior to finalization of the plan update. The survey gathered public feedback on concerns about hazards and input on mitigation strategies to reduce their impacts. The survey was released on May 18, 2020 and closed on July 14, 2020. The Planning Team provided links to the public survey by distributing it using social media, email, and posting the link on websites. One hundred and thirty-eight people filled out the survey online. Results showed that the public perceives the most significant hazards to be wildfire, spring/summer storm, winter storm and flood. Question 4 of the survey asked the public's opinion on what mitigation actions that should have the highest priority in the updated hazard mitigation plan; wildfire fuels treatment projects, improving reliability of communication systems, forest health/watershed protection, continued participation in the National Flood Insurance Program, and public education and awareness were cited as the most popular mitigation actions. This information was shared with the Planning Team during the update of the mitigation strategy to consider when evaluating hazard rankings and as a source of potential mitigation ideas. A summary of all the survey data and documentation of the public feedback can be found in Appendix B.

Public Workshops

Two online public workshops were held during the planning process to inform the public, receive input to integrate into the plan update, and keep the public updated on the progress being made in the planning

process. Both workshops were held virtually as webinars due to social distancing requirements associated with the ongoing COVID-19 pandemic.

The first workshop was held on May 28, 2020 through Zoom. The workshop introduced the public to the hazard mitigation planning process for the County's Plan Update and answered any questions and gather public input to be integrated into the plan update. In addition, it was an opportunity to help staff identify risks, hazards and vulnerabilities from the public's perspective. In total eighteen individuals participated in the virtual workshop. Members of the public were able to submit comments verbally or via the chat function. The Planning Team received four comments from the meeting that helped to inform the Planning Team on the public initial thoughts on hazard mitigation and hazards in their community. A recording of the meeting was subsequently posted on Larimer County's YouTube channel, where it has been viewed an additional 51 times as of March 1, 2021.

The second virtual public workshop was held on October 13, 2020 via Zoom. Eight individuals participated in the workshop. This workshop gave an update on the planning process, reviewed the results of the public survey, and introduced the draft plan and key components. Participants were invited to comment on the public review draft (see below). A recording of the meeting was subsequently posted on Larimer County's YouTube channel, where it has been viewed an additional 19 times as of March 1, 2021.

Public Review Period

The public was also given an opportunity to provide input on a draft of the complete plan prior to its submittal to the State and FEMA. Larimer County provided the plan draft for review and comment on the County website from February 1-28, 2021. (Due to the ongoing COVID-19 pandemic at that time, hard copy plans were not made available for comment.) The jurisdictions announced the availability of the draft plan and the public comment period through social and traditional media announcements. Copies of these notices is provided in Appendix B. An online form to collect comments was posted with the plan, and is also included in Appendix B. The Planning Team received 16 comments from the public that helped to inform the Planning Team on the public's perception of hazard mitigation and hazards in their community. A section on low head dams was added to the Dam Inundation section based on public and stakeholder comments.

Step 3: Coordinate with Other Departments and Agencies

DMA Requirements §201.6(b):
[T]he planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

There are numerous organizations whose goals and interests interface with hazard mitigation in Larimer County. Coordination with these organizations and other community planning efforts is vital to the success of this plan update. The Larimer County Office of Emergency Management invited other local, state, and federal agencies to the kickoff meeting to learn about and participate in the hazard mitigation planning initiative. Many of the agencies participated throughout the planning process in meetings described in Step 1: Organize the Planning Effort. In addition, the Planning Team developed a list of neighboring communities and local and regional agencies involved in hazard mitigation activities, as well as other interested parties to keep informed on the plan update process.

Stakeholders included local and regional agencies involved in hazard mitigation activities and those with the authority to regulate development. The neighboring jurisdictions of Boulder, Weld, Jackson, and

Grand Counties were also invited to participate, either by attending meetings or reviewing draft documents. Stakeholders could participate in various ways, either by contributing input at Planning Team meetings, being aware of planning activities through an email group, providing information to support the effort, or reviewing and commenting on the draft plan. Many of these groups found it beneficial to participate on the Planning Team and/or the FMSC. Stakeholders were also invited to review and comment on the plan prior to its submission to Colorado DHSEM and FEMA. A complete list of stakeholders contacted or invited to participate in the planning process can be found in Appendix A.

As part of the public review and comment period for the draft plan, key agencies were again specifically solicited and the incorporated jurisdictions not participating in this HMP update, to provide any final input to the draft plan document. This input was solicited by direct emails to key groups and associations to review and comment on the plan. As part of this targeted outreach, these key stakeholders were also specifically invited to attend the Planning Team meetings to discuss any outstanding issues and to provide input on the draft document and final mitigation strategies. This met the requirements of planning steps 2 and 3 in the FEMA Local Mitigation Planning Handbook.

Incorporation of Existing Plans and Other Information

The coordination and synchronization with other community planning mechanisms and efforts are vital to the success of this plan. To have a thorough evaluation of hazard mitigation practices already in place, appropriate planning procedures should also involve identifying and reviewing existing plans, policies, regulations, codes, tools, and other actions that help to reduce a community's risk and vulnerability from hazards. Larimer County uses a variety of mechanisms to guide growth and development. Integrating existing planning efforts, mitigation policies, and action strategies into this plan establishes a credible, comprehensive document that weaves the common threads of a community's values together. The development and update of this plan involved a comprehensive review of existing plans, studies, reports, and initiatives from Larimer County and each participating municipality that relate to hazards or hazard mitigation. A high-level summary of the key plans, studies and reports is summarized in the table below. Information on how they informed the update are noted and incorporated where applicable.

Table 3-5 Summary of Review of Key Plans, Studies and Reports

Plan, Study, Report Name	How Plan informed LHMP
Larimer County Comprehensive Plan (2019)	Provided background information on the County including some information related to jurisdictions. Informed the Community Profile in Chapter 2 and Chapter 4 Risk Assessment.
Larimer County Resilience Framework (2016)	Provided background information on the County and identified risks. Goals were used as a reference in the update and development of 2021 goals
Larimer County Capacity Assessment (Threat and Hazard Identification and Risk Assessment)	Informed Chapter 4 Risk Assessment including natural and cultural resources and hazardous materials section.
Colorado Front Range Gust Map ASCE 7-10 Complete (2013)	Provided background information on Wind hazard in the County.
Larimer County Land Use Code 2020 Assessment and Annotated (2020)	Provided a summary of the County's current land use code and proposed changes. Informed the Capability Assessment
Colorado State Hazard Mitigation Plan (2018)	Informed the HIRA (Chapter 4) with risk information specific to Larimer County and hazard profile information for each of the hazards. Used as a reference in the development and review of mitigation goals.

Plan, Study, Report Name	How Plan informed LHMP
Larimer County Strategic Plan 2019-2023	Provided background information on the County and future planning efforts. Used as a reference in the development and review of mitigation goals.
Larimer County Flood Insurance Study – Preliminary (2019)	Reviewed for information on past floods and flood problems to inform risk assessment (Chapter 4)
State Demography Office Colorado Demographic Profiles: • Larimer County • Town of Berthoud • Town of Estes Park • City of Fort Collins • Town of Johnstown • City of Loveland • Town of Timnath • Town of Wellington • Town of Windsor	Informed the demographic trends in the County and in each incorporated jurisdiction. Chapter 2 Community Profile, Chapter 4 Risk Assessment, and jurisdictional annexes.
Colorado State Drought Response and Mitigation Plan (2018)	Informed the drought hazard and dam incident profiles and vulnerability assessments in Chapter 4 risk assessment.
Fort Collins Utilities Water Supply Vulnerability Study Draft Report (2019)	Informed the drought hazard profile and vulnerability assessment in Chapter 4 risk assessment.
City of Loveland Mitigation Master Plan (2016)	Informed the Loveland Annex and mitigation strategy, including additional mitigation actions.
Technical Support Data Notebook for Big Thompson Watershed, Colorado (2016)	Informed the Flood profile including hydrologic condition of the Big Thompson Watershed, including both historical and future conditions.

Other technical data, reports and studies were reviewed and considered during the collection of data to support Planning Steps 4 and 5, which included the hazard identification, vulnerability assessment, and capability assessment. Information from the following agencies and groups were reviewed in the development and update of this plan. Specific references relied on in the development of this plan are also sourced throughout the document as appropriate. These sources are documented throughout the plan and specifically in the capability assessment sections of each jurisdictional annex.

- Colorado Department of Public Health and Environment (CDPHE)
- Colorado Department of Transportation (CDOT)
- Colorado Division of Water Resources – Dam Safety
- Colorado Earthquake Information Database
- Colorado Geological Survey
- Colorado State Demography Office
- Colorado Wildfire Risk Assessment Portal (CO-WRAP)
- Federal Wildland Fire Occurrence Database
- FEMA Community Information System
- Headwaters Economics
- National Drought Mitigation Center – Drought Impact Reporter
- National Fire Protection Association (NFPA)
- National Interagency Fire Center (NIFC)
- National Oceanic and Atmospheric Administration (NOAA)
- National Register of Historic Places
- National Weather Service (NWS)
- U.S. Army Corp of Engineers'(USACE) National Inventory of Dams (NID)
- U.S. Census Bureau
- U.S. Center for Disease Control and Prevention (CDC)

- U.S. Coast Guard's National Response Center (NRC)
- U.S. Department of Agriculture (USDA) – Farm Service Agency (FSA)
- U.S. Department of Transportation (DOT)
- U.S. Drought Monitor
- U.S. Environmental Protection Agency (EPA)
- U.S. Geological Survey
- Western Regional Climate Center

Larimer County is a participant in the National Flood Insurance Program (NFIP). Since it entered the program, the county has adopted the minimum NFIP requirements and imposed additional requirements into its Charter and County Code and Ordinances.

3.4.2 Phase 2 Assess Risk

Step 4: Identify the Hazards

Wood led the Planning Team and FMSC in an effort to review the list of hazards identified in the 2016 plan and document all the hazards that have impacted or could impact the planning area, including documenting recent events. The Planning Team refined the list of hazards to make it more relevant to Larimer County. The profile of each of these hazards was then developed and updated in 2021 with information from the Planning Team and additional sources. Web resources, existing reports and plans, and existing GIS layers were used to compile information about past hazard events and determine the location, previous occurrences, probability of future occurrences, and magnitude/severity of each hazard. Information on the methodology and resources used to identify and profile hazards is provided in Chapter 4.

Step 5: Assess the Risks

After profiling the hazards that could affect Larimer County, the Planning Team and FMSC collected information to describe the likely impacts of future hazard events on the participating jurisdictions. This step included two parts: a vulnerability assessment and a capability assessment.

Vulnerability Assessment - Participating jurisdictions inventoried their assets at risk of natural and human-caused hazards—overall and in the identified hazard areas. These assets included total number and value of structures; critical facilities and infrastructure; natural, historic, and cultural assets; and economic assets. The Planning Team and FMSC also analyzed social vulnerability measures, as well as development trends in hazard areas. The County's Digital Flood Insurance Rate Map (DFIRM) was used to refine the estimated flood losses during the update, where available for the NFIP participating communities.

Capability Assessment - This assessment consisted of identifying the existing mitigation capabilities of participating jurisdictions. This involved collecting information about existing government programs, policies, regulations, ordinances, and plans that mitigate or could be used to mitigate risk to disasters. Participating jurisdictions collected information on their regulatory, administrative, fiscal, and technical capabilities, as well as ongoing initiatives related to interagency coordination and public outreach. This information is included in the jurisdictional annexes.

A more detailed description of the risk assessment process and the results are included in Chapter 4 Risk Assessment and Chapter 5 Capabilities Assessment, as well as the jurisdictional annexes.

3.4.3 Phase 3 Develop the Mitigation Plan

Step 6: Set Goals

Wood facilitated a brainstorming and discussion session with the Planning Team and FMSC during their third meeting to review and update the goals and objectives for the overall hazard mitigation plan update. The Planning Team and FMSC discussed definitions and examples of goals, objectives, and actions and considered the goals of the state hazard mitigation plan and other relevant local plans when forming their own goals and objectives. The Planning Team and FMSC were provided a survey after the meeting to review the goals and objectives more closely and provide recommendations on revisions. The Planning Team and FMSC determined that the goals and objectives from the 2016 plan were still relevant; they remained unchanged except for a few minor edits. The group discussed the ideas and came to consensus on the final goals and objectives for the multi-jurisdictional plan update, which are further discussed in Chapter 6.

Step 7: Review Possible Activities

The Planning Team and FMSC identified mitigation actions at their fourth meeting. The group was presented with six different categories of mitigation actions and example actions for each identified hazard. Planning Team members were encouraged to brainstorm actions to address the plan's goals. The Planning Team and FMSC then reviewed potential mitigation alternatives and identified new actions by hazard and jurisdiction to ensure that all the plan's high- and medium-significance hazards were addressed, and that all participating jurisdictions had at least one new mitigation action.

The Planning Team and FMSC discussed criteria for narrowing down and prioritizing the identified actions. The group approved the STAPLEE criteria, which assesses the Social, Technical, Administrative, Political, Legal, Economic, and Environmental implications of each action. Each member used these criteria to determine their highest priority projects. Projects were then sorted into high, medium, or low priority based upon the feedback received from each Planning Team and FMSC member. This process is described in more detail in Chapter 6 Mitigation Strategy.

Each participating jurisdiction was responsible for submitting at least one new mitigation action specific to their jurisdiction, in addition to providing input on the progress made on actions identified in the 2016 plan.

Step 8: Draft the Plan

The first complete draft of the plan update, including annexes for each of the participating jurisdictions, was developed and submitted to the Planning Team and FMSC for review in September 2020. Once the Planning Team's comments were incorporated, a complete draft of the plan was made available online and in hard copy for review and comment by the public and other agencies and interested stakeholders, as discussed above under Step 2 Involve the Public. This review period was February 1-28, 2021. Methods for inviting interested parties and the public to review and comment on the plan were discussed in Steps 2 and 3, and materials are provided in Appendix B.

3.4.4 Phase 4 Implement the Plan and Monitor Progress

Step 9: Adopt the Plan

To secure buy-in and officially implement the plan, the governing bodies of each participating jurisdiction adopted the plan and their jurisdictional annex. Scanned copies of resolutions of adoption are included in Appendix C Local Plan Adoptions.

Step 10: Implement, Evaluate, and Revise the Plan

The true worth of any mitigation plan is in the effectiveness of its implementation. The Planning Team reviewed how the 2016 HMP was implemented and maintained since its adoption; this is described in Section 7.1.1.

The strategy for implementing and maintaining the 2021 plan, including a strategy for continued public involvement, was updated, and is described in Chapter 7 Plan Implementation and Maintenance.

4 RISK ASSESSMENT

DMA Requirement §201.6(c)(2):
[The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

This section of the Larimer County Multi-Jurisdictional Hazard Mitigation Plan describes the local Hazard Identification and Risk Assessment summary undertaken by the County and participating jurisdictions and special districts. The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a jurisdiction's potential risk to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment builds upon the methodology described in the 2013 FEMA Local Mitigation Planning Handbook, which recommends a four-step process for conducting a risk assessment:

1. Describe Hazards
2. Identify Community Assets
3. Analyze Risks
4. Summarize Vulnerability

A key step in preventing disaster losses in Larimer County is developing a comprehensive understanding of the hazards that pose risks to its communities. The following terms facilitate comparisons between communities and can be found throughout the Plan.

- **Hazard:** Event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, other types of harm or loss
- **Risk:** Product of a hazard's likelihood of occurrence and its consequences to society; the estimated impact that a hazard would have on people, services, facilities, and structures in a community
- **Vulnerability:** Degree of susceptibility to physical injury, harm, damage, or economic loss; depends on an asset's construction, contents, and economic value of its functions

In essence, the risk assessment evaluates potential loss from hazards by assessing the vulnerability of the County's population, built environment, critical facilities, and other assets. Environmental and social impacts are also taken into consideration wherever possible. Data collected through this process has been incorporated into the following subsections:

Subsection 4.1: Hazard Identification - identifies the hazards that threaten the planning area and describes why some hazards have been omitted from further consideration.

Subsection 4.2: Asset Summary - describes the methodology for inventorying assets as the basis for determining vulnerability of the planning area to the identified hazards.

Subsection 4.3: Hazard Analysis and Risk Assessment - discusses the threat to the planning area and describes previous occurrences of hazard events and the likelihood of future occurrences. It also includes a vulnerability assessment considering property, critical facilities, and historic/cultural/natural assets at risk, as well as possible effects to the economy and future development trends.

This risk assessment covers the entire geographical area of Larimer County. Since this is a multi-jurisdictional plan, the HMPC also evaluated how the hazards and risks vary from jurisdiction to jurisdiction. While these differences are noted in this section, they are expanded upon in the annexes of the participating jurisdictions. If no additional data is provided in an annex, it should be assumed that the risk and potential impacts to the affected jurisdiction are similar to those described here for the entire Larimer County planning area.

4.1 Hazard Identification

DMA Requirement §201.6(c)(2)(i):
[The risk assessment shall include a] description of the type of all-natural hazards that can affect the jurisdiction.

4.1.1 Methodology and Results

A Risk Assessment is a method for evaluating risk as defined by probability and frequency (likelihood) of occurrence of a hazard event, exposure of people and property to the hazard, and consequences of that exposure. Historical data, catastrophic potential, relevance to the jurisdiction, and the probability and potential magnitude of future occurrences were all used to reduce and prioritize the list of hazards to those most relevant to Larimer County. Hazards data was obtained from various federal, state, and local sources such as FEMA, the Colorado Geological Survey (CGS), the Colorado Dam Safety Branch (DSB), the National Oceanic and Atmospheric Administration's (NOAA) National Center for Environmental Information (NCEI), the United States Geological Survey (USGS), and others. Local and national news reports were also used to research historic events. Together, these sources were examined to assess the significance of these hazards to the County. The hazards selected for inclusion in this plan include those that have occurred historically or have the potential to cause significant human and/or economic losses in the future.

The update process included a comprehensive, parcel-level risk analysis with GIS where available data permitted. Many new maps and tables were added that capture the potential losses. Additional details on the loss analysis at the jurisdictional level, including a breakdown of hazard losses by community and property type, can be referenced in the jurisdictional annexes.

Larimer County and its communities are vulnerable to a wide range of natural and human-caused hazards that threaten life and property. The hazards identified by the HMPC for inclusion in the Plan are those determined to be of potential threat to the County and its municipalities and are consistent with the hazards identified by the State of Colorado and the Federal Emergency Management Agency for this part of the State and this region of the country.

Hazard Identification Changes from 2016 Plan

There were two changes made in the identified hazards from the 2016 Larimer County HMP, which was the addition of dam inundation and drought as hazards. The overall hazard significance ratings have generally remained the same with the exception of earthquake, which was revised from high to moderate. The hazard profiles have been improved with additional data and analysis. The 2020 planning process showed that recent hazard events have increased awareness of the interconnectedness of many hazards. Another difference of this plan compared to the 2016 HMP is that climate change considerations summaries were added to each hazard profile. The maps and GIS analysis were updated with best available data, and the writing was made more concise across most sections. Table 4-1 summarizes changes in the hazards profiled in 2016 compared to the 2021 update.

Table 4-1 Larimer County Hazards Updates

2021 Hazards	When Identified	Comments
Biological Hazards	Included in 2016 HIRA	Discussion of COVID-19 global pandemic added to 2021 HIRA
Civil Disturbance	Included in 2016 HIRA	
Dam Inundation	New in 2021	Includes downstream inundation from dam failure, uncontrolled spillway releases and controlled outlet releases.
Drought	Expanded on in 2021	Drought was briefly discussed in the 2016 Plan, but is fully profiled in the 2021 update
Earthquake	Included in 2016 HIRA	
Erosion/Deposition	Included in 2016 HIRA	Renamed to Soil Hazards to better reflect inclusion of expansive/collapsible soils, etc.
Flood	Included in 2016 HIRA	
Hazardous Materials Incident	Included in 2016 HIRA	
Landslide/Rockslide	Included in 2016 HIRA	
Spring/Summer Storm	Included in 2016 HIRA	
Tornado	Included in 2016 HIRA	
Utility Disruption	Included in 2016 HIRA	
Wildfire	Included in 2016 HIRA	Renamed from "Fire-Wildland" to "Wildfire"
Winter Storm	Included in 2016 HIRA	

Source: HMPC

The HMPC also reviewed the hazards profiled in the 2018 Colorado State Hazard Mitigation Plan in their consideration of hazards to include in the 2021 Plan Update. Several of those hazards were deemed to not be a significant risk in Larimer County. For other hazards, the risk in Larimer County does not differ significantly from the State as a whole. While the HMPC decided not to include the following hazards in the Larimer County 2021 Hazard Mitigation Plan the following descriptions of these hazards have been included below to facilitate decision making and the hazard prioritization process during the next plan update:

Aircraft Accidents: Aircraft accidents can occur at any location, with significant differences in magnitude due to the size of aircraft, altitude of the incident, and population density at the crash site and/or debris field. The cities of Fort Collins and Loveland, and Larimer County, are subject to potential aircraft accidents. The cities of Loveland and Fort Collins share a municipal airport that offers limited commercial service. The Fort Collins-Loveland Municipal Airport primarily handles small aircraft and helicopters, along with various larger private and commercial aircraft. The airspace above this region is utilized and controlled by Denver Center, which also services the Denver International Airport (DIA). The City of Fort Collins operated the Fort Collins Downtown Airport until 2005, when it was permanently closed. Larimer County experienced several aircraft accidents while controlling wildland fires during 2001. Due to the overall infrequency of aircraft accidents in the County since the closure of the Fort Collins Downtown Airport, aircraft accidents were not profiled further for this plan.

Avalanche: An avalanche is a mass of snow, ice, and other debris that flows and/or slides rapidly down a steep slope. If conditions are right, an avalanche can reach speeds in excess of 150 mph. Avalanches can be triggered by either natural causes such as earthquake, thermal changes, or blizzards, or by human activities such as snowmobiling, skiing, or hiking. The greatest threat of avalanche is in the mountainous area of Larimer County. While avalanches are quite common in the mountains, the risk of personal injury or property damage from avalanche is minimal due to the remote location. There is minimal development

in mountainous areas where avalanches occur. Furthermore, there is usually a small number of people in the area when avalanches occur.

Fire – Urban: Structure fires are among the costliest fires in the nation. The National Fire Protection Association (NFPA) reports that structural fires account for 37 percent of fires nationwide, 82 percent of civilian fire deaths, 83 percent of civilian fire injuries, and 72 percent of direct property loss from fire (NFPA 2017). Most structure fires in the region occur in residential occupancies. The two primary reasons for the lack of significant commercial structure fires are constantly improving business safety practices and frequent fire department inspections.

Terrorism / WMD: Terrorism is defined in the U.S.A. Patriot Act as "activities that (A) involve acts dangerous to human life that are a violation of the criminal laws of the U.S. or of any state; that (B) appear to be intended (i) to intimidate or coerce a civilian population, (ii) to influence the policy of a government by intimidation or coercion, or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the U.S." Terrorism can be domestic or international depending on its origin, base, and the objectives of the terrorist. Incidents usually involve a criminal act, often symbolic in nature and intended to influence an audience beyond the immediate victims. While Larimer County's law enforcement agencies are actively engaged in trying to prevent and protect against terrorist attacks, the sensitive nature of those planning efforts makes them difficult to discuss in an open plan like this; therefore, the HMPC decided not to profile terrorism further in this plan.

Hazard Ranking Methodology

The 2016 Larimer County HMP used a numerical Risk Factor Value system to rank the significance of the hazards that threaten the planning area, based on the following factors:

Probability: What is the likelihood of a hazard event occurring in a given year?

Impact: In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?

Spatial Extent: How large of an area could be impacted by a hazard event? Are impacts localized or regional?

Warning Time: Is there usually some lead time associated with the hazard event? Have warning measures been implemented?

Duration: How long does the hazard event usually last?

These factors were then combined to produce an overall Risk Rating of Low (1.9 or lower), Medium (2.0-2.4), or High (2.5 or higher).

For the 2021 plan update, the HMPC agreed this methodology was still sound overall, but decided to make a few changes to simplify the analysis and make it easier to understand. The numerical rankings were eliminated in favor of their descriptive levels (Likely, Minor, Significant, etc.) to make it easier to take into account the lived experience of HMPC members, stakeholders, and the public. The term Extent, while used by FEMA, was changed to Location to be clearer to a general reader. The term Impact was replaced by Magnitude/Severity. And Warning Time and Duration were deleted as separate factors and incorporated into the Magnitude/Severity factor. The criteria used are listed and defined in Table 4-2 below.

Overall Hazard Significance Summary

Table 4-2 shows overall hazard significance, based on a combination of geographic area, probability of future occurrence and potential magnitude/severity as defined below. The individual ratings are based on

or interpolated from the analysis of the hazards in the sections that follow. During the 2021 Plan update, the individual ratings and significance of the hazards was revisited and updated. Public concern was also considered via input at public meetings and an online survey.

Table 4-2 Larimer County Hazard Significance

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Significant	Medium
Dam Inundation	Occasional	Significant	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Highly Likely	Significant	Catastrophic	High
Hazardous Materials Incident	Likely	Limited	Critical	High
Landslide/Rockslide	Likely	Limited	Critical	High
Soil Hazards	Likely	Limited	Significant	Medium
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

As noted previously, the risk from many hazards varies across the county and between jurisdictions. Table 4-3 and Table 4-4 summarize the overall risk and significance of each hazard by jurisdiction; further details can be found in the Community Annex for each participating jurisdiction.

Table 4-3 Hazard Significance by Jurisdiction – Municipalities

Hazard	Larimer County	City of Fort Collins	City of Loveland	Town of Berthoud	Town of Estes Park	Town of Johnstown	Town of Timnath	Town of Wellington	Town of Windsor
Biological Hazards	High	Medium	High	Low	Medium	High	High	High	High
Civil Disturbance	Medium	Medium	Medium	Low	Low	Low	Low	Medium	Medium
Dam Inundation	Medium	High	Medium	Medium	Low	Low	Medium	High	Medium
Drought	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Earthquake	Medium	Low	Medium	Low	Medium	Low	NA	Medium	Medium
Flood	High	High	Medium	Medium	Medium	Medium	Medium	High	High
Hazardous Materials	High	Medium	High	Low	Medium	Medium	Low	Medium	Medium
Landslide/Rockslide	High	Low	Low	Low	Medium	Low	NA	Low	Low
Soil Hazards	Medium	Low	Medium	Low	Low	Low	Low	Low	Medium
Spring/Summer Storm	High	Medium	High	Medium	High	Low	Low	High	High
Tornado	High	Low	High	Medium	Low	Low	High	High	High
Utility Disruption	Medium	Low	Medium	Low	Medium	Low	Medium	Medium	Medium
Wildfire	High	Medium	Medium	Medium	High	Low	Low	Medium	Medium
Winter Storm	High	Medium	High	High	High	Low	Low	High	High

Table 4-4 Hazard Significance by Jurisdiction – Special Districts

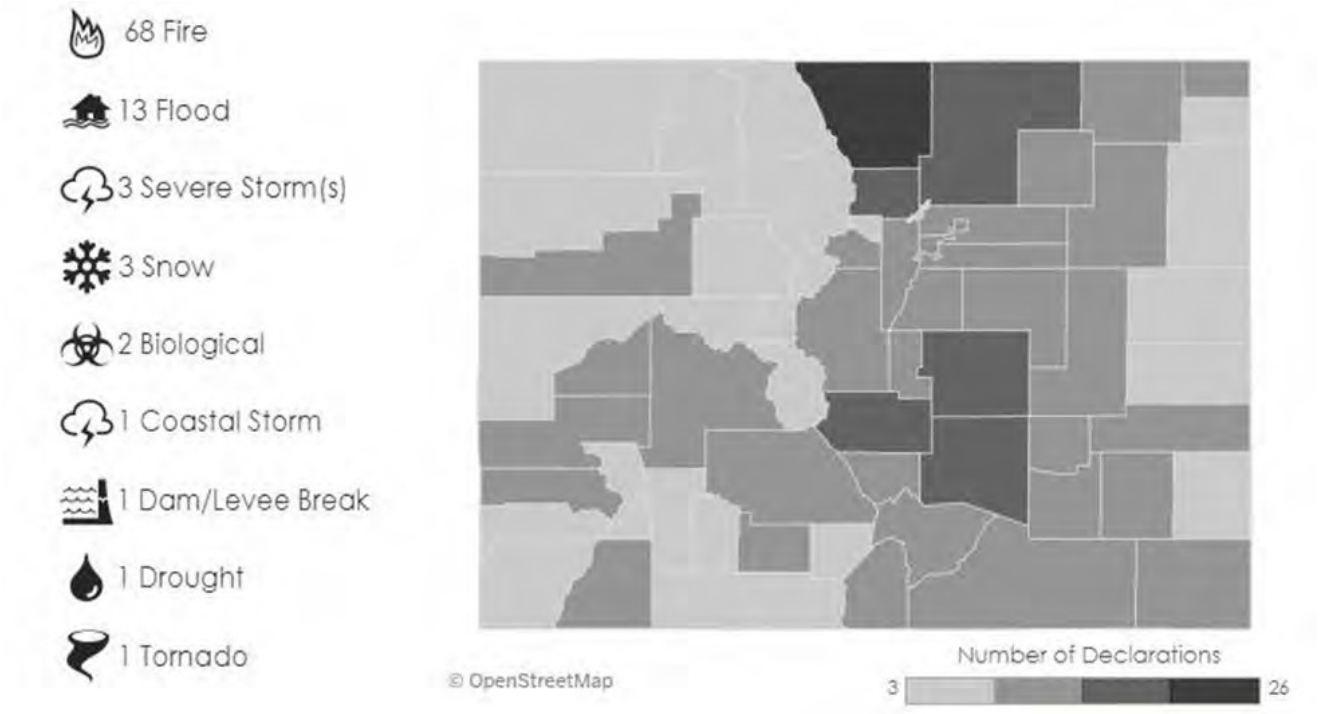
Hazard	Berthoud FPD	Crystal Lakes FPD	Estes Park Health	Estes Valley FPD	Estes Valley Rec & Park	Glacier View FPD	Livermore FPD	Northern Water	Pinewood Springs FPD	Poudre Canyon FPD	Poudre Fire Authority	Thompson Valley EMS	Upper Thompson Sanitation District	Wellington FPD	Windsor Severance Fire Rescue
Biological Hazards	Medium	High	High	High	High	High	High	Medium	High	Low	Medium	High	Medium	High	High
Civil Disturbance	Medium	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Medium	Low	Low	Medium
Dam Inundation	Medium	Medium	Low	Low	Medium	Low	Medium	High	Medium	Medium	Medium	Medium	Low	Medium	Medium
Drought	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Earthquake	Low	Medium	Medium	Medium	Low	Low	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium
Flood	Medium	Medium	Medium	Medium	Medium	Low	Low	Medium	Medium	Medium	High	High	High	Low	High
Hazardous Materials	Medium	Low	Low	Medium	Low	Low	Medium	Medium	Low	Low	High	High	Medium	High	Medium
Landslide/ Rockslide	Low	Low	Medium	Low	Low	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low	High	Low
Soil Hazards	Low	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Medium
Spring/Summer Storm	High	Medium	Low	High	Low	Medium	High	Medium	Medium	Medium	Medium	High	High	Medium	High
Tornado	Medium	Low	Low	Low	Low	Low	Low	High	Low	Low	High	High	Low	High	High
Utility Disruption	Medium	Medium	Medium	Medium	Low	Medium	Medium	Medium	Medium	Medium	Low	Medium	Medium	High	Medium
Wildfire	High	High	High	High	Medium	High	High	High	High	High	High	High	Medium	High	Medium
Winter Storm	Medium	High	Medium	High	Medium	High	High	High	High	Medium	High	High	Medium	Medium	High

4.1.2 Disaster Declaration History

To further focus on the list of identified hazards for the Plan, events were examined that triggered federal and/or state disaster declarations. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

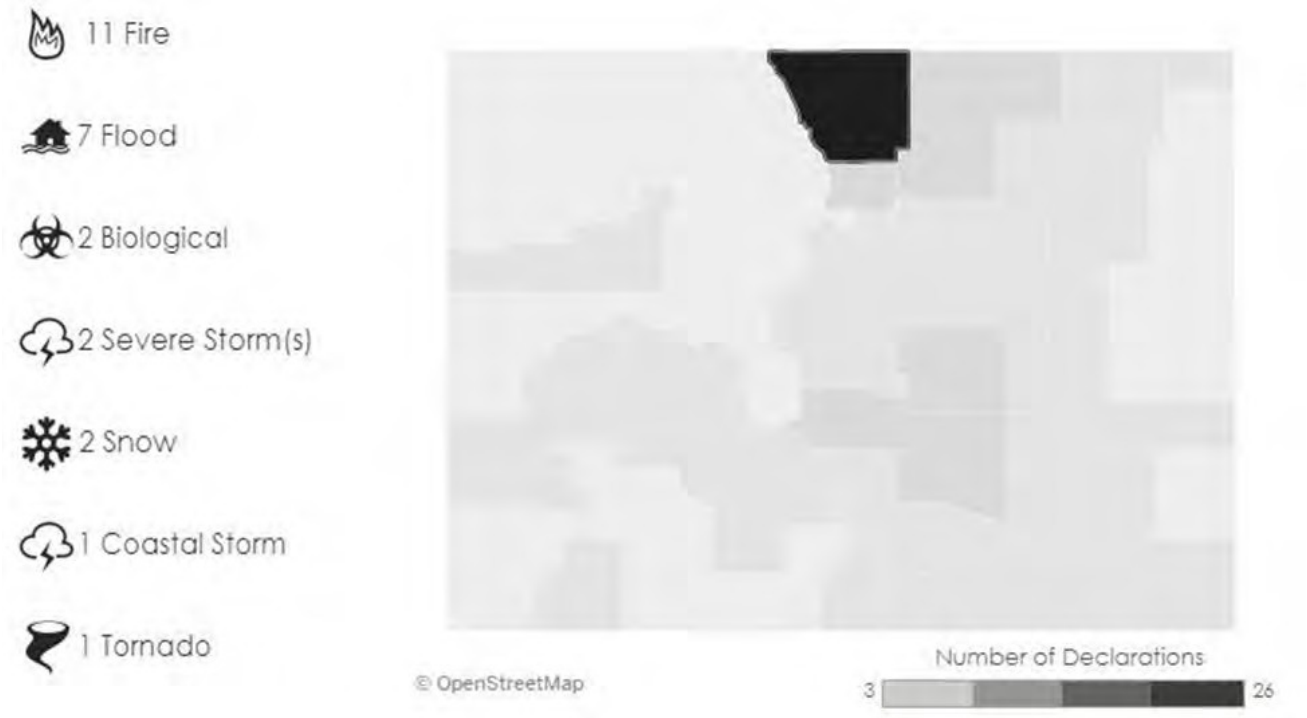
The federal government may issue a disaster declaration through FEMA, the USDA, and/or the Small Business Administration (SBA). FEMA also issues emergency declarations, which are more limited in scope and without the long-term federal recovery programs of major disaster declarations. The quantity and types of damage are the determining factors. Figure 4-1 and Figure 4-2 show the number and type of Major Disaster Declarations in Colorado and Larimer County respectively.

Figure 4-1 Summary of Disaster Declaration Events, Colorado



Source: FEMA

Figure 4-2 Summary of Disaster Declaration Events, Larimer County



Source: FEMA

Table 4-5 presents a list of all federal disaster and emergency declarations that have occurred in Larimer County since 1965, according to the Federal Emergency Management Agency. Many of the disaster events were regional or statewide; therefore, reported costs are not accurate reflections of losses to Larimer County. This list presents the foundation for identifying what hazards pose the greatest risk to the County and to its local jurisdictions.

Table 4-5 Presidential Disaster and Emergency Declarations in Larimer County

Declaration #	Date	Event Details
FM-5349-CO	9/6/2020	Cameron Peak Fire
FEMA-4498-DR	03/28/2020	Covid-19 Pandemic
FEMA-3436-EM	03/13/2020	Covid-19
FEMA-4145-DR	09/14/2013	Severe Storms, Flooding, Landslides, and Mudslides
FEMA-3365-EM	09/12/2013	Severe Storms, Flooding, Landslides, and Mudslides
FEMA-4067-DR	06/28/2012	High Park and Waldo Canyon Wildfires
FEMA-2980-FM	06/09/2012	High Park Fire
FEMA-2877-FM	04/03/2011	Crystal Fire
FEMA-2857-FM	09/12/2010	Reservoir Road Fire
FEMA-1762-DR	05/26/2008	Severe Storms and Tornadoes
FEMA-3270-EM	01/07/2007	Snow
FEMA-3224-EM	09/05/2005	Hurricane Katrina Evacuation
FEMA-2514-FM	4/1/2004	CO - PICNIC ROCK FIRE - 03/30/2004
FEMA-2511-FM	11/12/2003	CO - BUCKHORN CREEK FIRE - 11/11/2003
FEMA-2486-FM	7/25/2003	CO-CLOUDY PASS FIRE-07/25/2003
FEMA-EM-3185	04/09/2003	Snowstorm
FEMA-2447-FS	07/18/2002	Big Elk Fire
FEMA-1421-DR	6/19/2002	Wildfires

Declaration #	Date	Event Details
FEMA- 2383-FS	11/1/2001	CO – Armageddon Fire
FEMA-2308-FS	6/12/2000	Bobcat Gulch Fire
FEMA-1276-DR	05/17/1999	CO Flooding 4/30/1999
FEMA-1186-DR	08/01/1997	Severe Storms, Heavy Rain, and Flash Floods, Flooding, Mudslides
FEMA-665-DR	7/22/1982	Flash Flood Due to Dam Failure
FEMA-517-DR	08/02/1976	Severe Storms and Flash Flooding
FEMA-385-DR	05/23/1973	Heavy Rain, Snowmelt, Flooding
FEMA-261-DR	05/19/1969	Severe Storms, Flooding
FEMA-200-DR	06/19/1965	Tornadoes, Severe Storms, Flooding

Source: FEMA Disaster Declarations Summary – Open Government Dataset

Larimer County has also been included in 14 USDA disaster certifications since 2010. A USDA disaster declaration certifies that the affected county has suffered at least a 30% loss in one or more crop or livestock areas and provides affected producers with access to low-interest loans and other programs to help mitigate the impact of the disaster. In accordance with the Consolidated Farm and Rural Development Act, all counties neighboring those receiving disaster declarations are named as contiguous disaster counties and, as such, are eligible for the same assistance.

Larimer County has had the most federally-declared disasters out of all counties in the State of Colorado since 1965. This is mostly due to the three large river systems within the County and the large amount of wildland urban interface land leading to significant wildfire potential.

Table 4-6 USDA Disaster Declarations in Larimer County

Declaration #	Date Approved	Event Details
S4481	5/30/2019	Drought
S4408	10/2/2018	Drought
S4397	9/17/2018	Flood, Excessive Rain/Moisture, Hail, Wind, Tornado, Lightning
S4386	9/12/2018	Drought
S4365	8/1/2018	Hail, Wind
S4145	2/23/2017	Drought
S4087	10/26/2016	Hail
S3548	7/3/2013	Drought, Wind, Fire, Heat, Insects
S3508	4/10/2013	Drought, Wind, Fire, Heat, Insects
S3456	1/9/2013	Drought, Wind, Fire, Heat, Insects
S3347	8/15/2012	Flood, Hail, Wind
S3319	8/1/2012	Drought, Wind, Fire, Heat, Insects
S3290	7/12/2012	Drought, Wind, Fire, Heat, Insects
S3260	7/3/2012	Drought, Wind, Heat

Source: usda.gov

4.1.3 Climate Change Considerations Summary

Climate includes patterns of temperature, precipitation, humidity, wind and seasons. Climate plays a fundamental role in shaping natural ecosystems, and the human economies and cultures that depend on them. "Climate change" refers to changes over a long period of time. It is generally perceived that climate change will have a measurable impact on the occurrence and severity of natural hazards around the world. Impacts include the following:

- Snow cover losses will continue, and declining snowpack will affect snow-dependent water supplies and stream flow levels around the world.

- The risk of drought and the frequency, intensity, and duration of heat waves are expected to increase.
- More extreme precipitation is likely, increasing the risk of flooding.
- The Earth's average temperature is expected to increase.

In 2018, the U.S. Global Change Research Program released the Fourth National Climate Assessment (NCA4), the authoritative and comprehensive report on climate change and its impacts in the United States. Not only did the report confirm that climate change continues to affect Americans in every region of the U.S., the report identifies increased heat, drought, insect outbreaks, wildfire, and flooding as key climate-related concerns for the Southwest region of the U.S., which includes Colorado. The following is a summary of climate change impacts from the Fourth National Climate Assessment.

Recent warming in the southwest region is among the most rapid in the nation and is significantly greater than the global average, and the period since 1950 has been hotter than any comparable long period in at least 600 years. Summer temperatures across the state are expected to warm more than winter temperatures and projections suggest that typical summer months will be as warm as (or warmer than) the hottest 10% of summers that occurred between 1950 and 1999. Under the higher emissions scenario (RCP8.5) climate models predict an increase of 8.6°F in the southwest regional annual average temperature by 2100.

Projected increases in temperatures in the southwest region are also projected to increase probabilities of natural events such as wildfires, drought and summer precipitation. These temperature changes have great potential to directly affect public health through increased risk of heat stress and infrastructure through increased risk of disruptions of electric power generation. Water supplies are also vulnerable to impacts of higher temperatures. While water supplies generally change year-to-year due to variabilities in water use and precipitation, higher temperatures are projected to increase evapotranspiration, reducing the effectiveness of precipitation in replenishing surface water and soil moisture. This will have direct impacts on crop yields and productivity of key regional crops and livestock a major risk for the agricultural industry and food security nationwide.

The impacts of climate change already pose a threat to people and property in the southwest region of the United States, including Larimer County. Vulnerable populations, in particular those who are low-income, children, elderly, disabled and minorities will likely be impacted by the effects of climate change disproportionately than other populations (Refer to Chapter 2 for more information on social vulnerability in the county). Together, these impacts represent a slow-onset disaster that is likely to manifest and change over time. Current projections predict even more rapid changes in the near future, which are likely to affect many of the natural hazards that Larimer County has historically dealt with. According to HMPC the County is already experiencing some hazards with more frequency and intensity than in years past, such as drought, flooding, wildfire and extreme heat.

Larimer County's two most frequent and devastating hazards are wildfire and flood, both of which are expected to be impacted by our changing climate. The nature of erosion/land subsidence and public health hazards are also likely to evolve in intensity and character due to a changing regional climate. For these reasons, the hazard identification and risk assessment for the 2021 Larimer County Hazard Mitigation Plan update includes climate change considerations discussion on how climate change may impact the frequency, intensity, and distribution of specific hazards within the county. Because many impacts of climate-related hazards cross county boundaries, some of the discussion looks at impacts on a regional scale. As climate science evolves, future mitigation plan updates may consider including climate change projections in the risk rankings and vulnerability assessments of the hazards included in the Plan.

4.1.4 Overview of Hazard Identification and Risk Assessment

The hazards identified in Section 4.1 Hazard Identification are profiled individually in this section. The section will conclude by summarizing the probability of future occurrence and potential magnitude of each hazard for each jurisdiction, as well as assigning an overall vulnerability, or planning significance, rating of high, moderate, or low for each hazard.

The sources used to collect information for these profiles include the following:

- Disaster declaration history from FEMA
- State of Colorado Hazard Mitigation Plan (2018)
- Larimer County Comprehensive Plan (2019)
- Internet resources on past hazard events, such as the National Oceanic and Atmospheric Administration's National Centers for Environmental Information (NCEI) databases, and the National Response Center.
- Geographic information systems (GIS) data from the Larimer County GIS Department
- Statewide GIS datasets compiled by state and federal agencies (e.g., The Homeland Infrastructure Foundation-Level Data, or HIFLD dataset for critical facilities and infrastructure)
- Personal interviews with HMPC members and other stakeholders
- Larimer County Data Collection Guides completed by each participating jurisdiction
- Larimer County Resiliency Framework (2016)
- Larimer County Land Use Code Assessment (2019)
- Other existing plans and reports

Detailed profiles for each of the identified hazards include information on the following characteristics of the hazard:

Hazard Description

This section consists of a general description of the hazard and the general impacts it may have on a community.

Past Occurrences

This section includes information on historic incidents, including impacts and costs, if known. A historic incident worksheet was used to capture information from participating jurisdictions on past occurrences. Information from the HMPC was combined with other data sources, including those previously mentioned.

Location

This section describes the geographic coverage, or location, of the hazard in the planning area and assesses the affected areas as isolated, small, medium, or large.

Magnitude/Severity

This section summarizes the magnitude/severity or extent of a hazard event in terms of deaths, injuries, property damage, and interruption of essential facilities and services. Magnitude and severity are classified in the following manner:

- Catastrophic: Multiple deaths; property destroyed and severely damaged; and/or interruption of essential facilities and service for more than 72 hours
- Critical: Isolated deaths and/or multiple injuries and illnesses; major or long-term property damage that threatens structural stability; and/or interruption of essential facilities and services for 24-72 hours

- Limited: Minor injuries and illnesses; minimal property damage that does not threaten structural stability; and/or interruption of essential facilities and services for less than 24 hours
- Negligible: No or few injuries or illnesses; minor quality of life loss; little or no property damage; and/or brief interruption of essential facilities and services

Probability of Future Occurrence

The frequency of past events is used to gauge the likelihood of future occurrences. Based on historical data, the Probability of Future Occurrence is categorized as follows:

- Highly Likely: Near 100% chance of occurrence next year or happens every year
- Likely: 10-100% chance of occurrence in next year or has a recurrence interval of 10 years or less
- Occasional: 1-10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years
- Unlikely: Less than 1% chance of occurrence in next year or has a recurrence interval of greater than every 100 years

The probability, or chance of occurrence, was calculated where possible based on existing data. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. An example would be three wildfires occurring over a 30-year period, which suggests a 10% chance of a wildfire occurring in any given year.

Climate Change Considerations

As summarized in Section 4.1.3 above, this sub-section will discuss the known or potential impacts of climate change on the specific hazard.

Vulnerability Assessment

The vulnerability assessment further defines and quantifies populations, buildings, critical facilities and infrastructure, natural/cultural resources, and other community assets at risk to the profiled hazards, as well as the potential impacts to the economy and future development trends of the planning area. The vulnerability assessment includes these sub-sections per applicable hazard:

- People (including vulnerable populations)
- General Property
- Critical Facilities and Infrastructure
- Economy
- Historic, Cultural, and Natural Resources
- Future Development
- Risk Summary

The data and other assets inventory used in the vulnerability assessment for each hazard is described in more detail in the following Section 4.2 Asset Summary.

4.2 Asset Summary

4.2.1 People

For hazards with a geospatial component and for which data was available for GIS-based parcel analysis, population estimates were calculated. These were based on multiplying the average persons per household for Larimer County and its municipalities as of 2018, times the number of properties of Residential nature in each of the vulnerability analyses which found parcels at risk of the various hazards. Hence, if 'X' number of properties of Residential nature were found to overlap with a hazard layer, the total population exposed to that hazard would be obtained by taking 'X' times 2.46, then adding the results by jurisdiction, parcel type, and/or hazard classification. This average number of persons per household value was obtained from the Colorado Counties and Municipalities Population and Household Estimates summary, published by the Colorado Demographer's Office (under the Department of Local Affairs). For more details on Economic Assets, development trends, and other population and demographic information refer to Section 2 Community Profile.

4.2.2 General Property

General property exposure to hazards is based on Larimer County's parcel data containing assessor information such as total number of parcels, improvement values, and parcel type classification by jurisdiction. Note that only those parcels with improvement values greater than $0, or those which were classified as "exempt" or "state assessed" were accounted here; non-developed or non-improved parcels were excluded for the purposes of conducting the vulnerability assessments under Section 4.3. Vacant parcels, due to their improvement values equaling $0, were also excluded from the exposure valuation analysis.

Counts and values are based on the latest county assessor's data (as of April 4, 2020), which was provided in GIS and tabular (spreadsheet) formats. Improvement values and parcel type attributes were joined to the parcel geometries in GIS, to enable spatial analysis and mapping. Content values were estimated as a percent of the improvement value based on parcel type, specifically: 50% of the improvement value for residential structures (including mobile homes), 100% for agricultural, commercial, and exempt parcels, as well as multi-unit structures, and 150% for industrial parcels. These percentage calculations are based on standard FEMA HAZUS methodologies. Finally, Total Values were aggregated by adding the improvement and content values for each jurisdiction. Table 4-7 shows the total number of improved parcels, properties, and their improvement and content values by jurisdiction.

Table 4-7 Improved Parcel Exposure Values by Jurisdiction

Jurisdiction	Improved Parcels	Improved Values	Content Values	Total Values
Berthoud	3,656	$1,216,096,180	$692,383,141	$1,908,479,321
Estes Park	4,074	$1,591,728,771	$969,018,601	$2,560,747,372
Fort Collins	52,006	$23,665,351,379	$15,092,610,654	$38,757,962,033
Johnstown	1,227	$744,855,197	$559,614,704	$1,304,469,901
Loveland	27,708	$10,640,269,300	$6,751,873,209	$17,392,142,509
Timnath	2,213	$1,072,713,092	$579,454,731	$1,652,167,823
Wellington	3,774	$1,112,267,351	$611,266,287	$1,723,533,638
Windsor	2,879	$1,484,571,448	$821,478,128	$2,306,049,576
Unincorporated	29,325	$11,211,866,745	$6,529,948,869	$17,741,815,614
Total	**126,862**	**$52,739,719,463**	**$32,607,648,324**	**$85,347,367,787**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

Table 4-8 summarizes parcels for unincorporated Larimer County by parcel type. The below information indicates that 86% of parcels in Larimer County are residential in nature, followed by 7% agricultural and 4% commercial. The Total Values of parcels available for assessment is over $85 billion including both improvement values and content values. A total of 126,862 parcels were summed up for this exposure summary.

For those vulnerability analyses to follow in Section 4.3 Hazard Analysis and Risk Assessment, the total parcels exposed to the hazards available in geospatial format were obtained by overlaying the hazard threat layers with the parcel layer in GIS. The following hazards will have vulnerability summaries at the parcel level, due to the availability of hazard data for the geospatial overlay analysis: Dam Inundation, Flood, Landslide/Rockslide, Soil Hazards, and Wildfire. Earthquake will also include damage and loss estimates to general property based on the HAZUS-derived information (see Section 4.3.4 Earthquake for details).

Table 4-8 Improved Parcel Exposure Values by Parcel Type

Parcel Type	Improved Parcels	Improved Values	Content Values	Total Values
Agricultural	2,183	2,587	$848,882,468	$848,882,468
Commercial	1,077	1,753	$542,488,008	$542,488,008
Exempt	310	1,178	$282,034,786	$282,034,786
Industrial	91	117	$77,906,548	$116,859,834
Mobile Home	257	3,059	$242,398,985	$121,199,488
Multiple Unit	46	134	$18,812,653	$18,812,653
Residential	25,361	27,742	$9,199,343,297	$4,599,671,632
Total	**29,325**	**36,570**	**$11,211,866,745**	**$6,529,948,869**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

4.2.3 Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. Table 4-9 summarizes the inventory of critical facilities by jurisdiction (based on best available data) in Larimer County. Table 4-10 breaks down those facilities by type. The locations of these facilities are displayed in Figure 4-3.

The primary data source used was Larimer County's Cascarta system. Cascarta is an innovative web-based mapping tool of facilities and infrastructure across the County, which allows emergency managers, land use planners, and others to visualize the resiliency of the built environment, including critical lifeline utilities and social infrastructure, and the cascading effects of a disaster. By identifying and assessing the relationships and dependencies between critical utility and social infrastructure assets, users are able to pinpoint areas of vulnerability and proactively mitigate risks and build additional redundancy into community systems. Cascarta data was supplemented with Tier II hazardous materials facilities data.

FEMA Lifeline categories are the U.S. Department of Homeland Security's current recommended way to standardize the classification of critical facilities and infrastructure which provide indispensable service, operation, or function to a community. A lifeline is defined as providing indispensable service that enables the continuous operation of critical business and government functions, and is critical to human health and safety, or economic security. These categorizations are particularly useful as they:

- Enable effort consolidations between government and other organizations (e.g., infrastructure owners and operators)
- Enable integration of preparedness efforts among plans; easier identification of unmet critical facility needs

- Refine sources and products to enhance awareness, capability gaps, and progress towards stabilization
- Enhance communication amongst critical entities, while enabling complex interdependencies between government assets
- Highlight lifeline related priority areas regarding general operations as well as response efforts.

Other identified critical facilities that do not fall into one of the Lifeline categories were classified as Miscellaneous. Specific information on facilities, names, and other key details by participating communities may be accessed by permission of the jurisdiction or infrastructure owner.

Table 4-9 Critical Facilities and Infrastructure in Larimer County by Jurisdiction

Jurisdiction	Total
Berthoud	16
Estes Park	21
Fort Collins	268
Johnstown	4
Loveland	115
Timnath	6
Wellington	6
Windsor	1
Unincorporated	244
Total	**681**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Table 4-10 Critical Facilities and Infrastructure in Larimer County by Lifeline and Type

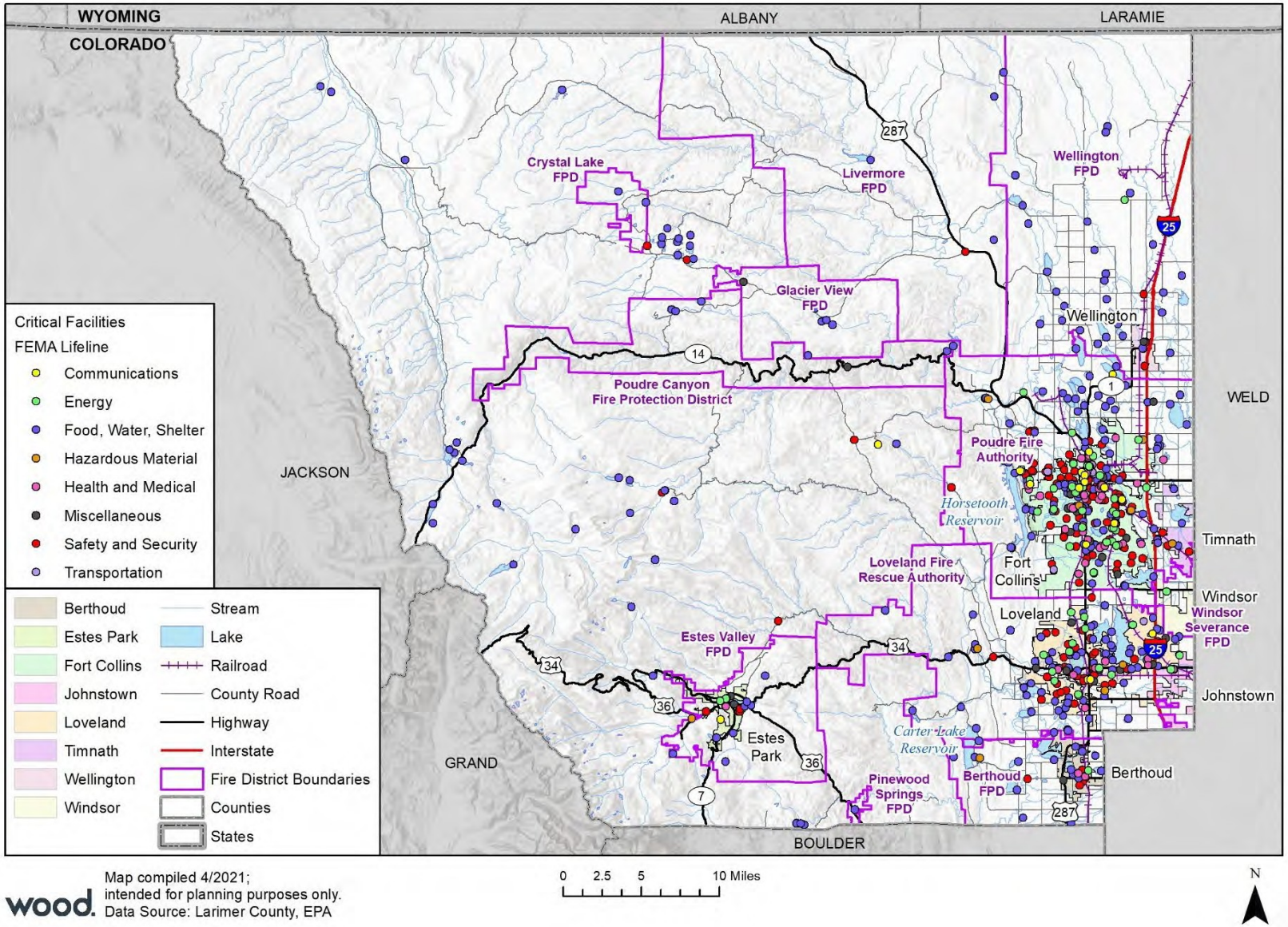
FEMA Lifeline	Critical Facility Type	Total
Communications	Commercial buildings	2
	Utility and other nonbuilding structures	24
	Total	**26**
Energy	Generators	2
	Commercial buildings	18
	Public assembly facilities	2
	Utility and other nonbuilding structures	36
	Total	**58**
Food, Water, Shelter	Agricultural facilities	1
	Commercial buildings	26
	Public assembly facilities	3
	Residential buildings	31
	Utility and other nonbuilding structures (incl. dams)	232
	Total	**293**
Hazardous Material	Commercial buildings	3
	Utility and other nonbuilding structures	9
	Total	**12**
Health and Medical	Institutional or community facilities	31
	Public assembly facilities	25
	Residential buildings	9
	Total	**65**

FEMA Lifeline	Critical Facility Type	Total
Safety and Security	Institutional or community facilities	182
	Specialized military facilities	2
	Utility and other nonbuilding structures	7
	Total	**191**
Transportation	Public assembly facilities	4
	Transportation-related facilities	4
	Total	**8**
Miscellaneous	Commercial buildings	5
	Public assembly facilities	19
	Utility and other nonbuilding structures	4
	Total	**28**
Grand Total		**681**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Critical facilities that are located in areas at risk of hazards are discussed in the Vulnerability Assessment section of each hazard profile.

Figure 4-3 Critical Facilities in Larimer County



4.2.4 Historic, Cultural, and Natural Resources

Assessing the vulnerability of Larimer County to disasters also involves inventorying the natural, historic, and cultural assets of the area. This step is important for the following reasons:

- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher.
- The rules and laws for reconstruction, restoration, rehabilitation, and/or replacement are often specific for these types of designated resources (e.g., under the NEPA and Section 106 of the National Historic Preservation Act).
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters.

Historical and Cultural Resources

A historic property not only includes buildings or other types of structures such as bridges and dams but can also refer to prehistoric or Native American sites, roads, byways, historic landscapes, and such other features. Given the history of the County, these types of historic properties exist; some are inventoried and listed in this plan and used in appropriate GIS analyses to determine potential vulnerability to hazards.

Historic properties and cultural resources are also valuable economic assets that increase property values and attract businesses and tourists. Far from being at odds with economic development, preservation of these assets is often an important catalyst for economic development (e.g., historic downtown revitalization programs leading to growth in heritage tourism). Some key information on historic assets and properties in Larimer County was obtained from local sources, the HMPC, and the following two historic inventories:

- **National Register of Historic Places.** The Nation's official list of cultural resources worthy of preservation. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.
- **Colorado State Register of Historic Properties.** A listing of the state's significant cultural resources worthy of preservation for the future education and enjoyment of Colorado's residents and visitors. Properties listed in the Colorado State Register include individual buildings, structures, objects, districts, and historic and archaeological sites. The Colorado State Register program is administered by the Office of Archaeology and Historic Preservation within the Colorado Historical Society. Properties listed in the National Register of Historic Places are automatically placed in the Colorado State Register.

Based on these databases there are 135 historic resources in Larimer County. Of these resources 101 are listed on the National Register, 27 are on the State Register and 7 are listed on both Registers. Table 4-11 summarizes those cultural and historic resources throughout Larimer County.

Table 4-11 Historic and Cultural Resources in Larimer County

Property Name	Register	Jurisdiction	Date Listed
A.S. Benson House	National	Loveland	Jan. 6, 2004
Aggie "A"	State	Fort Collins	Sept. 13, 1995
Agnes Vaille Shelter	National	Rocky Mountain National Park, Estes Park	Dec. 24, 1992
Ammons Hall	National	Fort Collins	June 15, 1978
Anderson, Peter, House	National	Fort Collins	Oct. 25, 1979
Armstrong Hotel	National	Fort Collins	Aug. 31, 2000
Arrowhead Lodge	National	Bellvue	May 27, 1992
Avery House	National	Fort Collins	June 24, 1972
Baker House	National	Fort Collins	July 20, 1978
Baldpate Inn	National	Estes Park	Jan. 11, 1996
Bear Lake Comfort Station	National	Estes Park	Jan. 29, 1988
Bee Farm	National	Fort Collins	Nov. 25, 2002
Bennett House	State	Fort Collins	Sep. 25, 2019
Big Thompson River Bridge III	National	Loveland	Oct. 15, 2002
Big Thompson River Bridge IV	National	Loveland	Oct. 15, 2002
Bimson Blacksmith Shop	National	Berthoud	July 23, 1981
Bingham Homestead Rural Historic Landscape	National	Bellvue	April 16, 2013
Birch Cabin	State	Estes Park	Dec. 12, 2001
Borland, Maude Stanfield Harter, House	National	Loveland	July 6, 2004
Botanical and Horticultural Laboratory	National	Fort Collins	Sept. 18, 1978
Bouton, Jay H., House	National	Fort Collins	Dec. 18, 1978
Buckeye School	National	Wellington	June 26, 2008
Chasteen's Grove	National	Loveland	Sept. 6, 1978
Civil & Irrigation Engineering Building, Colorado Agricultural College (Statistics Building)	State	Fort Collins	Dec. 13, 1995
Clatworthy Place	National	Estes Park	July 14, 2004
Colorado and Southern Railway Depot	National	Loveland	June 14, 1982
Colorado-Big Thompson Project Administration Building	State	Estes Park	June 10, 1998
Coy Barn	State	Fort Collins	June 14, 1995
Crags Lodge	National	Estes Park	July 1, 1998
Deines Barn	State	Fort Collins	March 13, 2002
Downtown Loveland Historic District	National	Loveland	June 1, 2015
Dunraven Cottage-Camp Dunraven	National	Estes Park	April 5, 2019
East Longs Peak Trail--Longs Peak Trail--Keyhole Route--Shelf Trail	National	Rocky Mountain National Park, Allenspark	July 10, 2007

Property Name	Register	Jurisdiction	Date Listed
Edgemont	State & National	Estes Park	June 10, 1998 (State) July 15, 1998 (National)
Elkhorn Lodge	National	Estes Park	Dec. 27, 1978
Entomology Building, Colorado Agriculture College (L.L. Gibbons Building)	State	Fort Collins	Dec. 13, 1995
Estes Park Chalet	State	Estes Park	Sept. 13, 1995
Fall River Entrance Historic District	National	Estes Park	Jan. 29, 1998
Fall River Entrance Historic District (Boundary Increase and Additional Documentation)	National	Estes Park	March 5, 2018
Fall River Pass Ranger Station	National	Estes Park	Jan. 29, 1988
Fall River Pump House and Catchment Basin	National	Estes Park	Aug. 30, 2006
Fall River Road	National	Estes Park	July 20, 1987
Fall River Road (Boundary Increase and Additional Documentation)	National	Estes Park	May 21, 2018
Fansler House	State	Loveland	Dec. 13, 2000
Fern Lake Patrol Cabin	National	Estes Park	Jan. 29, 1988
Fern Lake Trail	National	Estes Park	Feb. 28, 2005
First National Bank Building	National	Wellington	Aug. 10, 2000
First United Presbyterian Church	State & National	Loveland	March 8, 2000 (State) July 7, 2004 (National)
Flattop Mountain Trail	National	Rocky Mountain National Park, Estes Park	Sept. 27, 2007
Flowers Store (Cache la Poudre Grange No. 456)	State	Bellvue	Feb. 14, 2006
Flowers' House (Jacob and Elizabeth Flowers)	National	Bellvue	March 1, 2007
Forestry Building, Colorado State College of Agriculture & Mechanical Arts (Building #81)	State	Fort Collins	Aug. 11, 1999
Fort Collins Armory	National	Fort Collins	Oct. 15, 2002
Fort Collins Masonic Temple	State	Fort Collins	Feb. 28, 2008
Fort Collins Municipal Railway Birnery Safety Streetcar No. 21	National	Fort Collins	Jan. 5, 1984
Fort Collins Post Office	National	Fort Collins	Jan. 30, 1978
Fort Collins Waterworks	State	Fort Collins	10-Mar-99
Gem Lake Trail	National	Rocky Mountain National Park, Estes Park	Jan. 29, 2008
Glacier Basin Campground Ranger Station	National	Rocky Mountain National Park, Estes Park	July 20, 1987
Graves Camp Rural Historic District	National	Wellington	Dec. 14, 2016
Great Western Sugar Company Effluent Flume and Bridge	National	Fort Collins	Nov. 19, 2014

Property Name	Register	Jurisdiction	Date Listed
Greeley, Salt Lake and Pacific Railroad--Stout Branch	National	Laporte	April 16, 2008
Guggenheim Hall, Colorado Agricultural College	State	Fort Collins	Dec. 13, 1995
Harmony Mill	National	Fort Collins	Nov. 22, 1995
Hewes--Kirkwood Inn	National	Estes Park	Oct. 28, 1994
Homestead Meadows Discontiguous District	National	Estes Park	Oct. 4, 1990
Hyatt-Spence-Pulliam Ranch	State	Loveland	Oct. 28, 2011
Kaplan-Hoover Site	State & National	Windsor	April 18, 2003 (National) March 10, 2004 (State)
Kelley House	National	Loveland	Nov. 15, 2019
Kissock Block Building	National	Fort Collins	May 16, 1985
Lake Haiyaha Trail	National	Rocky Mountain National Park, Estes Park	March 5, 2008
Laurel School Historic District	National	Fort Collins	Oct. 3, 1980
Lavatory/Entomology Laboratory, Colorado Agricultural College (Nutrition Research Laboratory)	State	Fort Collins	Dec. 13, 1995
Leiffer House	National	Estes Park	Aug. 2, 1978
Library, Colorado Agricultural College (Laurel Hall)	State	Fort Collins	Dec. 13, 1995
Lindenmeier Site	National	Fort Collins	Oct. 15, 1966
Livermore Hotel and General Store	National	Livermore	Sept. 14, 2001
Lost Lake Trail	National	Rocky Mountain National Park, Estes Park	March 5, 2008
Loveland State Amory	National	Loveland	April 12, 2001
MacGregor Ranch	National	Estes Park	July 31, 1989
Maxwell, R. G., House	National	Fort Collins	Sept. 29, 1980
McCreery House	State & National	Loveland	Feb. 14. 2001 (State) May 2, 2001 (National)
McGraw Ranch	National	Rocky Mountain National Park, Estes Park	Sept. 17, 1998
McHugh-Andrews House	National	Fort Collins	Dec. 27, 1978
Mechanical Engineering Building, Colorado Agricultural College (Industrial Sciences Building)	State	Fort Collins	Dec. 13, 1995
Mills, Enos, Homestead Cabin	National	Estes Park	May 11, 1973
Milner--Schwarz House	National	Loveland	May 19, 2014
Montezuma Fuller House	National	Fort Collins	Dec. 15, 1978
Moraine Lodge	National	Rocky Mountain National Park, Estes Park	Oct. 8, 1976
Moraine Park Museum and Amphitheater	National	Rocky Mountain National Park, Estes Park	June 15, 2005
Mosman House	National	Fort Collins	Dec. 15, 1978

Property Name	Register	Jurisdiction	Date Listed
Mountainside Lodge	State & National	Estes Park	May 14, 1997 (State) July 20, 2000 (National)
North Inlet Trail	National	Rocky Mountain National Park, Grand Lake	March 5, 2008
Old Town Fort Collins	National	Fort Collins	Aug. 2, 1978
Opera House Block/Central Block Building	National	Fort Collins	Feb. 8, 1985
Park Theatre	National	Estes Park	14-Jun-84
Patterson House	National	Fort Collins	Jan. 22, 2019
Peep O Day Park	National	Loveland	Aug. 10, 2011
Pleasant Valley School	National	Bellvue	Oct. 1, 2003
Plummer School	State & National	Fort Collins	Sep. 11, 1996 (State) April 29, 1999 (National)
Potting Shed, Colorado Agricultural College (Forensics Laboratory)	State	Fort Collins	Dec. 13, 1995
Preston Farm	National	Fort Collins	May 10, 2001
Provost Homestead--Herring Farm Rural Historic Landscape	National	Laporte	Dec. 27, 2010
Ramsey-Koening Ranch	State	Bellvue	May 14, 1997
Red Feather Lakes Post Office	State	Red Feather Lakes	Sept. 25, 2019
Rialto Theater	National	Loveland	Feb. 17, 1988
Robertson, T. H., House	National	Fort Collins	July 2, 1992
Rocky Mountain National Park Administration Building	National	Rocky Mountain National Park, Estes Park	Jan. 3, 2001
Rocky Mountain National Park Utility Area Historic District	National	Rocky Mountain National Park, Estes Park	March 18, 1982
Schlichter, E.A., House	National	Fort Collins	Nov. 22, 2016
Shaffer, Henry K. and Mary E., House	National	Loveland	Jan. 9, 2007
Snogo Snow Plow	National	Estes Park	Oct. 4, 2006
Soils Building, Colorado Agricultural College (Vocational Education/Soils Laboratory)	State	Fort Collins	Dec. 13, 1995
Soloman Batterson Ranch (Rural Historic Landscape)	National	Livermore	Oct. 28, 2010
Spruce Hall	National	Fort Collins	Jan. 9, 1977
Stanley Hotel	National	Estes Park	May 26, 1977
Stanley Hotel District	National	Estes Park	June 20, 1985
Stanley Hotel District (Stanley Power Plant Boundary Increase)	National	Estes Park	April 14, 19998
Stove Prairie School	State	Bellvue	March 11, 1998
Swanson, Gustav and Annie, Farm	National	Berthoud	Oct. 5, 2005
Trail Ridge Road	National	Rocky Mountain National Park, Estes Park	Nov. 14, 1984
Truscott Junior High School	National	Loveland	July 16, 2017

Property Name	Register	Jurisdiction	Date Listed
Twin Sisters Lookout	National	Rocky Mountain National Park, Estes Park	Dec. 24, 1992
United Brethren Church	State	Berthoud	May 16, 2001
Vaille, Agnes, Shelter	National	Rocky Mountain National Park, Estes Park	Dec. 24, 1992
Veterinary Medicine Building, Colorado State College of Agriculture & Mechanical Arts	State	Fort Collins	Aug. 11, 1999
Virginia Dale Stage Station	National	Virginia Dale	Sept. 26, 1985
Waycott, Ernest, House	National	Fort Collins	Dec. 2, 1993
White, William Allen, Cabins	National	Rocky Mountain National Park, Estes Park	Oct. 25, 1973
Willard, Beatrice, Alpine Tundra Research Plots	National	Estes Park	Oct. 25, 2007
Willow Park Patrol Cabin	National	Rocky Mountain National Park, Estes Park	July 20, 1987
Willow Park Stable	National	Rocky Mountain National Park, Estes Park	July 20, 1987
Wind Ridge	State & National	Estes Park	March 13, 2002 (State) Oct. 15, 2002 (National)
Wurl Ranch	State	Livermore	Dec. 13, 1995
Ypsilon Lake Trail	National	Rocky Mountain National Park, Estes Park	March 5, 2008

Source: National Register of Historic Places, History Colorado National & State Register Listed Properties database

Natural Resources

Natural resources are important to include in benefit-cost analyses for future projects and may be used to leverage additional funding for projects that also contribute to community goals for protecting sensitive natural resources. Awareness of natural assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetland areas protects sensitive habitat as well as attenuates and stores floodwaters.

Wetlands

Wetlands are a valuable natural resource for communities due to their benefits to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands provide natural floodplain protection by reducing flood peaks and slowly releasing floodwaters to downstream areas. When surface runoff is dampened, the erosive powers of the water are greatly diminished. Furthermore, the reduction in the velocity of inflowing water as it passes through a wetland helps remove sediment being transported by the water. They also provide drought relief in water-scarce areas where the relationship between water storage and streamflow regulation is vital (Wetland Functions and Values, 2016).

Endangered Species

To further understand natural resources that may be particularly vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (endangered and threatened species) in the planning area. An endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable

future throughout all or a significant portion of its range. Both endangered and threatened species are protected by law and any future hazard mitigation projects are subject to these laws. Candidate species are a third category of plants and animals at risk, but these have been proposed as endangered or threatened but are not currently listed.

According to the U.S. Fish and Wildlife Service (USFW) Environmental Conservation Online System (ECOS), there were 19 federally endangered, threatened, or candidate/proposed/under/other status review species in Larimer County (as of July 2020). These are listed in Table 4-12.

Table 4-12 Endangered Species in Larimer County

Group	Common Name	Scientific Name	Status
Birds	Whooping crane	*Grus americana*	Experimental Population, Non-Essential
Birds	Bald eagle	*Haliaeetus leucocephalus*	Recovery
Birds	American peregrine falcon	*Falco peregrinus anatum*	Recovery
Birds	Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Birds	Southern white-tailed ptarmigan	*Lagopus leucura altipetens*	Under Review
Fishes	Humpback chub	*Gila cypha*	Endangered
Fishes	Colorado pikeminnow (squawfish)	*Ptychocheilus lucius*	Endangered
Fishes	Greenback Cutthroat trout	*Oncorhynchus clarkii stomias*	Threatened
Fishes	Bonytail	*Gila elegans*	Endangered
Fishes	Razorback sucker	*Xyrauchen texanus*	Endangered
Flowering Plants	Colorado Butterfly plant	*Gaura neomexicana var. coloradensis*	Recovery
Flowering Plants	North Park phacelia	*Phacelia formosula*	Endangered
Flowering Plants	Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened
Flowering Plants	Western prairie fringed Orchid	*Platanthera praeclara*	Threatened
Mammals	Black-footed ferret	*Mustela nigripes*	Endangered
Mammals	Canada Lynx	*Lynx canadensis*	Threatened
Mammals	Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Threatened
Mammals	North American wolverine	*Gulo gulo luscus*	Proposed Threatened
Mammals	Little brown bat	*Myotis lucifugus*	Under Review

Source: U.S. Fish & Wildlife Service Environmental Conservation Online System

4.3 Hazard Analysis and Risk Assessment

4.3.1 Biological Hazards

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High

Description

Biological hazards and contagions, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. There are several contagious and infectious diseases present in the State of Colorado that constitute a public health risk. Emergency Support Function 8 (ESF 8) of the Larimer County Emergency Operations Plan provides an organizational framework for public health and medical service preparedness, response, and recovery efforts for various emergency epidemics. During the 2016 planning process, pandemic flu was identified as the key public health hazard in the county. This hazard risk assessment includes an analysis of pandemic flu risk in Larimer County and an analysis of the impacts of the hazards profiled in this plan on biological hazards and contagions.

A pandemic can be defined as a disease that attacks a large population across great geographic distances. Pandemics are larger than epidemics in terms of geographic area and number of people affected. Epidemics tend to occur seasonally and affect much smaller areas. Pandemics, on the other hand, are most often caused by new subtypes of viruses or bacteria for which humans have little or no natural resistance. Consequently, pandemics typically result in more deaths, social disruption, and economic loss than epidemics.

According to data from the Colorado Reportable Disease Statistics (CDPHE) database, Influenza viruses represent the most common cause of hospitalization due to disease in Larimer County. Seasonal influenza (often referred to as the flu) is a common infection that affects large numbers of people in Colorado every year. Influenza is an acute respiratory disease caused by influenza type A or B viruses. The typical features of seasonal influenza include abrupt onset of fever and respiratory symptoms such as cough, sore throat, as well as headache, muscle ache, and fatigue. For seasonal influenza, the incubation period ranges from 1 to 4 days and the clinical severity of infection can range from asymptomatic infection to primary viral pneumonia and death. Most people experience influenza as a very-uncomfortable but ultimately benign illness. However, the influenza virus can mutate, causing it to be much more dangerous to humans. Yearly seasonal influenza remains a significant disease in the U.S. and Colorado, and seasonal epidemics can result in high morbidity and mortality, as well as create strains on the health care system and communities.

There are three conditions that must be met before an influenza pandemic begins:

1. A new virus subtype must emerge that has not previously circulated in humans (and therefore there is no pre-existing immunity),
2. This new subtype must be able to cause disease in humans, and
3. The virus must be easily transmissible from human to human.

Unlike influenza viruses that have achieved ongoing transmission in humans, the sporadic human infections with avian A (H5N1) viruses are far more severe with high mortality. Initial symptoms include high fever and other influenza-like symptoms. It also appears that the incubation period in humans may

be longer for avian (H5N1) viruses, ranging from 2 to 8 days, and possibly as long as 17 days. Diarrhea, vomiting, abdominal pain, chest pain, and bleeding from the nose and gums have also been reported. The disease often manifests as a rapid progression of pneumonia with respiratory failure ensuing over several days.

Zoonotic diseases are diseases that can be spread through animals and humans. These diseases can be caused by bacteria, viruses, parasites, and fungi that are carried by animals and insects. Hantavirus is an example that may pose a higher risk to Larimer County residents in the future. Deer mice are the primary reservoir for Hantaviruses.

Past Occurrences

Public health hazards can manifest as primary events by themselves, or they may be secondary to another disaster or emergency, such as a flood, a severe storm, or a hazardous materials incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people.

The Colorado Department of Public Health and Environment releases an annual reportable disease summary for each county. The events with the highest incidences in Larimer County between 2010 and 2018 (the most recent year for which data was available) are summarized in Table 4-13.

Table 4-13 Colorado Reportable Disease Statistics for Larimer County, 2010-2018

Disease	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Campylobacter	91	78	49	80	62	73	65	95	103	696
Carbapenem-Resistant Enterobacteriaceae (CRE)	-	-	-	-	-	-	-	12	14	26
Carbapenem-Resistant Pseudomonas Aeruginosa (CRPA)	-	-	-	-	-	-	-	86	71	157
Cryptosporidiosis	8	14	5	3	11	14	26	12	33	126
Giardiasis	21	16	15	13	16	13	16	25	39	174
Haemophilus Influenzae	5	4	7	3	4	6	5	8	2	44
Hepatitis B, Chronic	14	19	16	18	22	19	19	16	17	160
Hepatitis C, Chronic	115	104	94	80	80	145	193	277	291	1379
Influenza-Hospitalized	1	40	69	103	169	91	79	268	237	1057
Meningitis Aseptic/Viral	29	24	19	6	7	-	-	-	-	85
Pertussis	8	7	79	81	79	89	34	30	42	449
Salmonellosis	34	21	37	28	39	36	49	46	88	378
Shigellosis	2	5	11	7	3	3	4	3	12	50
STEC (Shiga Toxin Producing E. coli)	21	14	15	14	5	11	10	17	33	140
Strep Pneumo Invasive	16	20	17	15	18	28	28	25	20	187
Varicella (Chicken Pox)	22	29	43	20	41	33	36	22	30	276
West Nile Virus	14	2	-	-	-	-	-	14	17	47
Total:	**401**	**397**	**476**	**471**	**556**	**561**	**564**	**956**	**1049**	**5431**

Source: Division of Disease Control and Environmental Epidemiology, CDPHE

Chronic Hepatitis C and hospitalizations from influenza represented the largest disease incidences in Larimer County between 2010 and 2018. Note that Carbapenem (i.e., antibiotic) Resistant Enterobacteriaceae (CRE) and Pseudomonas Aeruginosa (CRPA) were only added to the CDPHE database starting in 2017.

Pandemics

Since the early 1900s, five lethal pandemics have swept the globe:

- **1918-1919 Spanish Flu:** The Spanish Flu was the most severe pandemic in recent history. The number of deaths was estimated to be 50-100 million worldwide and 675,000 in the United States. Its primary victims were mostly young, healthy adults. At one point, more than 10 percent of the American workforce was bedridden.
- **1957-1958 Asian Flu:** The 1957 Asian Flu pandemic killed 1-2 million people worldwide, including about 70,000 people in the United States, mostly the elderly and chronically ill. Fortunately, the virus was quickly identified, and vaccine production began in May 1957.
- **1968-1969 H3N2 Hong Kong Flu:** The 1968 Hong Kong Flu pandemic killed 34,000 Americans. Again, the elderly were more severely affected. This pandemic peaked during school holidays in December, limiting student-related infections, which may have kept the number of infections down. Also, people infected by the Asian Flu ten years earlier may have gained some resistance to the new virus.
- **2009-2010 H1N1 Swine Flu:** This influenza pandemic emerged from Mexico in early 2009 and was declared a public health emergency in the U.S. on April 26. By June, approximately 18,000 cases had been reported in the U.S. and the virus had spread to 74 countries. Most cases were fairly mild, with symptoms similar to the seasonal flu, but there were cases of severe disease requiring hospitalization and a number of deaths. The CDC estimates that 43-89 million people were infected worldwide, with an estimated 8,870 to 18,300 H1N1 related deaths, including 12,469 deaths in the United States.
- **2020-Ongoing COVID-19:** The COVID-19 or coronavirus pandemic began in December 2019 and was declared a pandemic in March of 2020. As of September 15th, 2020, it has killed more than 900,000 people worldwide and more than 190,000 Americans. It is expected to last through the remainder of 2020 and possibly into 2021.

Location

Infectious disease outbreaks can occur anywhere in the planning area, especially where there are groups of people in close quarters. More highly-populated areas may be affected sooner and may experience higher infection rates.

Magnitude/Severity

The magnitude of a health-related emergency will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. Pandemic influenza is easily transmitted from person-to-person but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. In terms of lives lost, the impact of various pandemic influenza outbreaks over the last century has declined globally. However, a recent trend in parents not vaccinating their children could increase the likelihood and severity of an outbreak.

Epidemics and pandemics can lead to high infection rates in the population causing isolation, quarantine, and potential mass fatalities. An especially severe influenza pandemic or other major disease outbreak could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines.

Overall, the impacts from a pandemic outbreak in Larimer County could be critical, with 25-50% of the planning area's population affected. Depending on the specific disease, the elderly and/or the very young could be impacted the most, along with people with pre-existing medical conditions. Local medical facilities could be rapidly overwhelmed. The medical facilities of neighboring jurisdictions would most likely also be overwhelmed and unable to provide assistance.

Table 4-14 describes the World Health Organization's six main phases to a pandemic flu as part of their planning guidance.

Table 4-14 World Health Organization's Pandemic Flu Phases

Phase	Description
1	No animal influenza virus circulating among animals have been reported to cause infection in humans.
2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to sustain community-level breakouts.
4	Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level breakouts has been verified.
5	The same identified virus has caused sustained community-level outbreaks in two or more countries in one WHO region.
6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.
Post-Peak Period	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
Post-Pandemic Period	Levels of influenza activity have returned to levels seen for seasonal influenza in most countries with adequate surveillance.

Source: World Health Organization

Probability of Future Occurrences

Based on historical record of 2,308 recorded diseases in Larimer County since 2010, public health hazards have affected Larimer County residents and visitors more than once every year from 2010 through 2018. The historic frequency suggests that there is a 100% chance of some type of public health hazard will affect Larimer County every year. However, most of those will have relatively minor impacts within the capabilities of the County's public health system.

It is not possible to predict when the next pandemic will occur, or how severe it will be. Based on the five pandemics that have affected the United States in roughly the last 100 years, a pandemic occurs on average roughly every 20 years.

Today, a much larger percentage of the world's population is clustered in cities, making them ideal breeding grounds for epidemics. Additionally, the explosive growth in air travel means the virus could literally be spread around the globe within hours. Under such conditions, there may be very little warning time. Most experts believe we will have just one to six months between the time that a dangerous new influenza strain is identified and the time that outbreaks begin to occur in the United States. Outbreaks are expected to occur simultaneously throughout much of the nation, preventing shifts in human and material resources that normally occur with other natural disasters. These and many other aspects make influenza pandemic unlike any other public health emergency or community disaster. Pandemics typically last for several months to 1-2 years.

Climate Change Considerations

According to the best available data, the changing climate is expected to exacerbate future pandemics. Climate change will influence vector-borne disease prevalence, although the direction of the effects (increased or decreased incidence) will be location- and disease specific. The intensity and extent of

certain diseases is projected to increase. Climate change threatens to increase the spread of infectious diseases because changing heat, rain, and humidity levels allow disease carrying vectors and pathogens to come into closer contact with humans. If Colorado's climate becomes warmer, mosquito populations could swell, making the region more favorable for disease transmission. Warmer weather could also play a role in elevated seasonal deer mouse populations. Disadvantaged populations such as people with compromised health and the economically disadvantaged are expected to bear a greater burden as a result of their current reduced access to medical care and limited resources for adaptation strategies.

Additional research is needed to determine the effects of climate change on the frequency and duration of epidemics and pandemics. Ongoing efforts to reduce Colorado's greenhouse gas emissions and adapt to a changing climate, such as the Colorado Climate Plan, may help to reduce the impacts of climate change on pandemics.

Vulnerability Assessment

The 2018 Colorado State Hazard Mitigation Plan lists several assumptions and guidelines for pandemic influenza planning. These are listed below, with notes where they have been found not to apply to the current COVID-19 pandemic:

A. Susceptibility to the virus will be universal.
B. The clinical disease attack rate will be about 30% of the overall population. The highest rates will be among school-aged children, at around 40%. About 20% of working adults will become ill. *(Note: the attack rate for COVID-19 has been reported as ranging from 10% to 20%, and children have been the least-affected demographic; as of March 2021, roughly 9% of the US population has been infected, although not all of those experienced severe symptoms.)*
C. Of those who become ill with the new strain, 50% will seek outpatient medical care.
D. In an infected community, a pandemic outbreak will last about six to eight weeks, with at least two waves likely. The seasonality cannot be predicted with certainty. *(Note: the COVID-19 pandemic has lasted twelve months as of March 2021 and is expected to last several more months.)*
E. The number of hospitalizations and death will depend on the virulence of the virus.
F. Based on an extrapolation for a severe pandemic, Colorado deaths are estimated to exceed 30,000. It is assumed that the pandemic will occur in two waves, lasting six to eight weeks each. Colorado can expect to see approximately 350 deaths per day. This factors in the 80 deaths per day that Colorado typically has per day. *(Note: Colorado has experienced 62,000 cases of COVID-19 with 2,000 deaths as of September 2020.)*
G. Risk groups for severe and fatal infections cannot be predicted with certainty. During annual fall and winter influenza season, infants and the elderly, persons with chronic illnesses, and pregnant women are usually at higher risk of complications from influenza infections.
H. In a severe pandemic, it is expected that absenteeism may reach 40% due to illness, the need to care for ill family members, and fear of infection during the peak weeks of a community outbreak. Certain public health measures (closing schools, quarantining household contacts of infected individuals, "snow days") are likely to increase rate of absenteeism.
I. The typical incubation period is two days. It is assumed this would be the same for a novel strain that is transmitted between people by respiratory secretions. *(Note: This depends on the virus; for COVID-19 the period is 2-14 days.)*
J. Persons who become ill may shed the virus and can transmit infection for up to one day before the onset of symptoms. Viral shedding and the risk of transmission will be greatest during the first two days of illness. Children shed the greatest amount of virus and are therefore the most likely to pose a risk for transmission. *(Note: patients with COVID-19 can transmit infection for a number of days while asymptomatic, and children are not the greatest infection risk.)*

K. On average, infected persons will transmit the infection to approximately two other people. Some estimates from past pandemics have been higher.
L. Outbreaks can be expected to occur simultaneously throughout much of the United States, preventing shifts in human and material resources that usually occur in response to other disasters.
M. Localities must be prepared to rely on their own resources to respond. The effect of influenza on individual communities will be relatively prolonged (weeks to months) in comparison to other types of disasters.
N. Healthcare workers, public health workers, and other responders (i.e., law enforcement and firefighters) may be at higher risk of exposure and illness than the general population, further straining the pandemic response.
O. Effective prevention and therapeutic measures, including vaccine and antiviral agents, may be delayed and, initially, in short supply or not available.
P. Substantial public education regarding the need to target priority groups for vaccination and possibly for antiviral medication, and rationing of limited supplies, is paramount to controlling public panic.
Q. Adequate security measures must be in place while distributing limited supplies of vaccine or antiviral medication.
R. All plans must account for the uncertainness of the situation.

Preparing for, responding to, and recovering from pandemic influenza will require a strategy that includes a holistic suite of public health activities designed to lessen the impact on morbidity and mortality. These activities include education, vaccination, prophylaxis, isolation/quarantine, a robust contact tracing program, and the closure of public facilities. In addition, clear, concise communication with the public and with other agencies remains a critical component, as does the ability of the involved agencies to achieve collaboration and coordination. By its very nature, an influenza pandemic, once started, will not be stopped until it has run its course. This course can be shortened and weakened by a number of factors, with vaccination being the gold standard for protecting the population. Pandemic plans describe strategies of preparedness, response, and recovery to attempt to decrease illnesses and deaths during the pandemic period to manageable levels (i.e., that do not overwhelm the critical infrastructures of the State), and to promote community resiliency and rapid recovery.

The Colorado Department of Public Health and Environment has developed a number of resources related to pandemic health hazards to supplement the State Emergency Operations Plan. Listed below are a number of pandemic response plans, health alert networks, and resources currently available for residents and planners in the State of Colorado and Larimer County.

Table 4-15 Influenza Planning Resources and Guidelines

Title	Source
Pandemic Influenza Action Plan for Schools (2009)	Colorado Department of Public Health & Environment
Infectious Diseases in Child Care and School Settings: Guidelines for Childcare Providers, School Nurses and Other Personnel (2013)	Colorado Department of Public Health & Environment
Pandemic Influenza Planning Guidelines for Hospitals (2009)	Colorado Department of Public Health & Environment
Home Care Guide: Providing Care at Home During Pandemic Flu (2009)	Colorado Department of Public Health & Environment
Guidelines for Medical Office Pandemic Readiness (2007)	Colorado Department of Public Health & Environment
Social Distancing Support Guidelines for Pandemic Readiness (2008)	Colorado Department of Public Health & Environment
Colorado Health Alert Network (HAN)	Colorado Department of Public Health & Environment

Title	Source
Public Health Emergency Operations Plan	Larimer County
Comprehensive Emergency Management Plan: Emergency Operations	Larimer County
Comprehensive Emergency Management Plan: Continuity of Operations	Larimer County
Comprehensive Emergency Management Plan: Recovery	Larimer County
Comprehensive Emergency Management Plan: Resiliency Framework	Larimer County
Epidemiology Plan	Larimer County
Quarantine and Isolation Plan	Larimer County
Risk Communication Plan	Larimer County
Strategic National Stockpile and Mass Prophylaxis/Vaccination Point-of-Dispensing Plan	Larimer County
Mass Fatality Plan	Larimer County
Pandemic Influenza Plan	Larimer County

Source: HMPC

Where necessary, details or public information templates unique to pandemic influenza have been included in the plans listed above. The guidelines and plans provide background information related to pandemic influenza and infectious diseases, outline concepts of operations for response, list primary and support functional areas, and outline available resources and tools to mitigate a pandemic and promote community resilience recovery.

People

Pandemics have the ability to affect large segments of the population for long periods of time. According to the 2018 Colorado State Hazard Mitigation Plan, a pandemic flu outbreak could affect approximately 30% of the state's overall population, with as much as 10% possibly needing hospitalization. The number of hospitalizations and deaths will depend on the virulence of the virus. Risk groups cannot be predicted with certainty; the elderly, people with underlying medical conditions, and young children are usually at higher risk, but as discussed above this is not always true for all influenza strains. People without health coverage or access to good medical care are also likely to be more adversely affected.

Table 4-16 highlights a number of key pandemic vulnerability factors in Larimer County jurisdictions using 2018 Census Bureau data.

Table 4-16 Biological Hazards / Contagion Vulnerability Factor Data

Jurisdiction	Age: 5 and Under (%)	Age: 65 and Over (%)	People Below Poverty Level (%)	Persons Without Health Insurance (%)
Colorado	6.1%	13.4%	10.9%	8.1%
Larimer County	5.4%	16.3%	12.0%	6.3%
Town of Berthoud	6.1%	13.6%	7.4%	10.7%
Town of Estes Park	4.1%	33.9%	13.5%	12.2%
City of Fort Collins	5.2%	10.3%	16.8%	6.2%
Town of Johnstown	9.2%	12.9%	1.3%	3.2%
City of Loveland	5.1%	18.9%	7.9%	6.5%
Town of Timnath	6.1%	13.6%	3.2%	2.1%
Town of Wellington	12.3%	7.5%	5.7%	3.8%
Town of Windsor	7.0%	14.0%	4.3%	3.3%

Source: U.S. Census Bureau

The communities of Estes Park and Loveland have significantly higher percentages of elderly residents than the average for the State of Colorado. Johnstown and Wellington have higher percentage of children. The poverty rate is higher than average for Larimer County as a whole, and particularly for Estes Park and Fort Collins. The Towns of Estes Park and Berthoud have more people without health insurance than the state average. Also, as noted in Section 2.7, Larimer County has a higher percentage of people living in multiunit housing (more than 10 units per structure) and in group quarters such as dormitories or prisons, which could potentially accelerate the spread of disease. All these demographic trends are important to monitor over time as they will present unique challenges for the management and mitigation of biological hazards/contagions.

In the event of a pandemic, medical personnel would be incredibly overtaxed. Help from the federal government and from other states would likely be limited, as other portions of the country are likely to also be affected. Communities may have to rely on their own resources for a much longer period of time as compared to other disasters. Medications may be limited to help prevent or treat the disease. It typically takes five to six months to manufacture a vaccine, but it would likely become available in small quantities at first. Health care supplies such as protective gear would also likely be in high demand, and supply-chains, including at the manufacturing level, are also likely to be significantly disrupted. National stockpiles may not be enough to resupply local health care providers.

Other responders will be impacted similarly to the general public, although the nature of their jobs may make social distancing more difficult which could potentially lead to higher infection rates, thereby reducing available responders.

General Property

For the most part, property itself would not be impacted by a human disease epidemic or pandemic. However, as concerns about contamination increase, property may be quarantined or destroyed as a precaution against spreading illness. Additionally, traditional sheltering facilities including homeless shelters or facilities stood up to support displaced persons due to an evacuation or other reason due to a simultaneous disaster occurring cannot be done in a congregate setting. This requires additional planning considerations or use of facilities that allow for non-congregate shelter settings which may require an approval of a request to FEMA for non-congregate sheltering and may have an increased cost (such as the use of individual hotel rooms) as opposed to traditional congregate sheltering facilities.

Critical Facilities and Infrastructure

Hospitals and morgues will be heavily affected and may be overwhelmed. Other critical facilities and infrastructure are not directly affected by a pandemic but may have difficulty maintaining operations and maintenance activities due to a significantly decreased workforce. Schools may be forced to close.

Government facilities may have difficulty continuing to provide services due to staffing shortages. The Larimer County Continuity of Government Plan and departmental Continuity of Operations Plans address how to continue to provide essential services during a staffing shortage.

Economy

In a normal year, lost productivity due to illness costs U.S. employers an estimated $530 billion. During a pandemic, that figure would likely be considerably high and could trigger a recession or even a depression.

FluWorkLoss 1.0 is a tool developed by the CDC to estimate the potential economic impact of pandemic influenza on a community in terms of the number of workdays lost. Days missed from work cost both employees in lost wages, and employers in work not completed. Table 4-17 shows the total estimated number of days lost from work in Larimer County due to a four-week long influenza pandemic with a 25% clinical attack rate. The available workdays are calculated as a product of the total population in the

working age group (Census 2010), the employment rate of Larimer County (Census 2010), and five workdays in a week. Results are estimated based on three scenarios: a mild, best-case scenario; a most likely scenario, and a more severe worst-case scenario.

Table 4-17 Total Workdays Lost (Pandemic Influenza)

Scenario	Workdays Lost
Minimum Loss Scenario	121,312
Most Likely Scenario	144,596
Maximum Loss Scenario	180,307

Source: FluWorkLoss 1.0, CDC

The number of workdays lost includes days lost for both self-care and care of sick family members and shows the County could lose hundreds of thousands of workdays in a month. Moreover, these estimates do not include workdays lost due to secondary impacts such as social distancing and the closure of schools and businesses.

Historic, Cultural and Natural Resources

Impacts to these resources are typically minimal. However, reduced tourism could lead to additional economic impacts.

Future Land Use and Development
Population growth and development contribute to pandemic exposure. Future development in and around Larimer County has the potential to change how infectious diseases spread through the community and impact human health in both the short and long term. New development may increase the number of people and facilities exposed to public health hazards and greater population concentrations (often found in special needs facilities and businesses) put more people at risk. During a disease outbreak those in the immediate isolation area would have little to no warning, whereas the population further away in the dispersion path may have some time to prepare and mitigate against disease depending on the hazard, its transmission, and public notification.

Risk Summary

Ongoing mitigation activities should focus on preventing infection during flu season. This includes, but is not limited to, pre-season community outreach campaigns to educate the public about risks and available support; establishing convenient vaccination centers; reaching out to vulnerable populations and care givers; and issuing advisories and warnings.

- Pandemics affecting the U.S. occur roughly once every 20 years but cannot be reliably predicted.
- Effects on people will vary, but as much as 30% of the population could become ill, and 10% may need to be hospitalized
- Effects on property are typically minimal, although quarantines could result in short-term closures. Critical facilities may have difficulty maintaining operations due to staffing shortages.
- Lost productivity due to illness and potential business closures could potentially have severe economic impacts. Social distancing requirements and fear of public gatherings could significantly reduce in-person commerce.
- Related Hazards: None

4.3.2 Civil Disturbance

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Civil Disturbance	Likely	Limited	Significant	Medium

Description

Civil disturbance refers to one or more forms of disturbance or disruption caused by a group of people. The term is typically used by law enforcement and includes acts of violence and disorder detrimental to the public law and order. Civil disturbance includes acts such as riots, acts of violence, insurrections, unlawful obstructions or assemblages, or other disorders prejudicial to public law and order. It also includes all domestic conditions requiring or likely to require the use of federal armed forces.

Incidents that have disrupted the public peace have figured prominently throughout this country's history. Constitutional guarantees allow for ample expression of protest and dissent, and in many cases can collide with the preamble's requirement of the government "to ensure domestic tranquility." Typical examples of such conflicting ideology include the protest movements for civil rights in the late 1960s and the Vietnam War protest demonstrations in the early 1970s. The balance between an individual's and group's legitimate expression of dissent and the right of the populace to live in domestic tranquility requires the diligent efforts of everyone to avoid such confrontations in the future.

In modern society, laws have evolved that govern the interaction of its members to peacefully resolve conflict. In the United States, a crowd itself is constitutionally protected under "the right of the people to peacefully assemble." However, assemblies that are not peaceable are not protected, and this is generally the dividing line between crowds and mobs. The laws that deal with disruptive conduct are generally grouped into offenses that disturb the public peace. They range from misdemeanors, such as blocking sidewalks or challenging another to fight, to felonies, such as looting and rioting. Acts of civil disturbance are often a symptom and/or form of protest against major socio-political problems, and the severity of the event can coincide with public sentiment or expressions of displeasure. These acts may be spontaneous, such as when a group of people suddenly and unexpectedly erupts into violence, or it may be a planned event, such as a demonstration, a march, or a protest designed to intentionally interfere with another's lawful business or activity. In recent years, it has become more common to see protests or disturbances in one city ignite similar protests across the country.

Until recently, the majority of the civil disturbances in Larimer County had resulted from out-of-control parties or celebrations, but in recent years the County has seen a number of protests around political or social causes. The majority of these events have been peaceful and have not caused major concern or property damage. There have however been a few protests that have turned violent when two opposing groups have engaged with one another. As political tensions increase nationally, this trend may continue or worsen.

In an article on "Understanding Riots" published in the Cato Journal (Vol. 14, No 1), David D. Haddock and Daniel D. Polsby note that a large crowd itself is not an incipient riot merely because it assembles a great many people. Haddock and Polsby explain that "starting signals" must occur for civil disorder to erupt; these starting signals include certain kinds of high profile events. In fact, incidents can become signals simply because they have been signals in the past, as has been seen with many annual recurring riots at CSU. With any conventional triggering event, such as news of an assassination or unpopular jury verdict, crowds form spontaneously in various places as word of the incident spreads, without any one person having to recruit them. But since not every crowd threatens to evolve into a riot, the authors reason that a significant number of people must expect and desire that the crowd will become riotous. In addition, "someone has to serve as a catalyst—a sort of entrepreneur to get things going." A typical action could be

the breaking of a window, which can be heard by many who do not necessarily see it. Someone will throw the first stone, so to speak, when he calculates the risk of being apprehended has diminished to an acceptable level. This diminished risk is generally based on two variables—the size of the crowd relative to the police force and the probability that others will follow if someone leads. The authors conclude that once someone has taken a risk to get things started, the rioting will begin and spread until civil authorities muster enough force to make rioters believe they face a realistic prospect of arrest.

Universities, industry, government officials and buildings, research laboratories, medical facilities, and populated areas are all potential sites and targets for civil disturbances. All of the communities within the county region have the potential to experience civil disturbance events. The diverse (and rapidly growing) population of the region coupled with the presence of numerous research facilities, universities, and other outlets for active political and/or social activity contribute to the increased risk for civil disturbance.

In light of recent civil disturbances across the Country, regional fire agencies in Larimer and Weld Counties have begun a dialogue on developing a regional strategy for addressing such incidents.

Past Occurrences

Table 4-18 summarizes a number of notable instances of civil disturbance in Larimer County.

Table 4-18 Historical Civil Disturbances in Larimer County

Date	Event	Details
1987	College Daze riots	10,000-12,000 college students involved in disturbance for more than three days in Fort Collins.
1988	Baystone riots	10,000 people involved in civil disturbance over three day period.
1989	Baystone riots	10,000 people involved in civil disturbance over three day period.
1995	Football riots	CSU football team wins WAC Championship, nearly 3,000 people involved in riots over two days.
1997	Whitcomb/Howes	More than 3,000 people involved in two consecutive nights of riots on and near Colorado State University campus.
1998	Super Bowl riot	3,000 to 6,000 people involved in riots along College Ave, Mountain Ave., and Plum St. after Denver Broncos won the Super Bowl football championship
2000	Stanley Cup riot	2,000 to 3,000 people involved in riots in Old Town Fort Collins after Colorado Avalanche won Stanley Cup hockey championship
2004	CSU student riots	Fort Collins experienced two consecutive nights of out-of-control parties, which developed into riots near the CSU campus
2013	CSU riots	Fort Collins experienced riots near the CSU campus after an out-of-control party
2014	CSU riots	Fort Collins experienced riots near the CSU campus after an out-of-control party
2020	Black Lives Matter and Back the Blue protests	While most of these protests were peaceful, Fort Collins experienced violence at Black Lives Matter and Back the Blue protests when opposing groups converged

Source: HMPC

The causes and perpetrators of civil disturbance events are broad. Many of the most recent civil disturbance incidents in the County were located in Fort Collins and were related to annual CSU sporting events and/or large parties that devolved into riots. Other civil disturbance events have occurred when protesters gathered near Pineridge Reservoir in Larimer County to protest the planned removal of prairie dog colonies. Additionally, extremist groups such as the Animal Liberation Front and the Environmental Liberation Front have been known in the past to be involved in several civil disturbance incidents in

Larimer County and the surrounding region. Intelligence reports gathered by law enforcement indicate that several research facilities have been burglarized and/or vandalized, and this included having laboratory facilities destroyed and/or research animals being released.

In the past, "Right to Life" groups have participated in civil disturbance activity by obstructing sidewalks and entryways to medical facilities within the communities of Fort Collins, Loveland, and Larimer County. Since 2001, several small-scale civil disturbances involving religious groups have occurred within the City of Fort Collins and other local jurisdictions at local mosques. Since 2016, multiple protests have occurred in Estes Park, Loveland and Fort Collins on a variety of issues. Recently, in 2020, peaceful rallies and protests have broken out in violence due to opposing groups engaging with one another.

Location

Limited. Civil disturbances can arise from a number of causes for a variety of reasons. Circumstances may be spontaneous or may result from escalating tensions. Civil disorder can erupt anywhere, but the most likely locations are those areas with large population groupings or gatherings. As noted above, the majority of past civil disturbances in Larimer County have been centered on or near the CSU campus. Sites that are attractive for political or other rallies should be considered as probable locations for the epicenter of civil disorder events; arenas and stadiums are another type of venue where civil disorder can occur. Civil disorder can also occur in proximity to locations where a "trigger event" occurred.

Magnitude/Severity

Limited. The severity of a civil disturbance can be measured based on the number of people involved, how long the disturbance lasts, and the number and severity of injuries and property damage, as well as how much it disrupts the community. The more widespread an incident is, the greater the likelihood of excessive injury, loss of life and property damage; additional factors, such as the ability of law enforcement to contain the event, are also critical in minimizing damages.

Past disturbances in Larimer County have consisted of anywhere from a few hundred people to as many as 10-12,000 people. Major riots can last for a few hours or 2-3 days and can result in dozens or more than 100 arrests, 10s-100s of injuries, and thousands of dollars in damages.

Speed of Onset: While many protests are planned ahead of time, they can turn into riots with little or no notice. Social media can be leveraged to mobilize and organize crowds quickly. Additionally, social media can inspire local organizations when a trigger event occurred somewhere else in the country due to the rapid availability of information. Similarly, parties or other peaceful celebrations can quickly get out of control.

Duration: Civil disturbances can last for a few hours or a few days.

Probability of Future Occurrences

Likely. Due to the nature of the hazard, it is difficult to predict when a civil disturbance event may erupt, making the probability of Larimer County and its jurisdictions experiencing a civil disturbance event difficult to quantify. Historically, the County has experienced a significant civil disturbance once every 4-5 years. There is sometimes a tendency for disturbances to cluster together, where a disturbance one year may make it more likely for another disturbance to occur the following years on the anniversary of the event. Based on historic record of previous events, it is reasonable to assume that civil disturbance activity will be most probable during annual sporting events, holidays, or following nationwide triggering events. Keeping aware of these annual events, their anticipated size, and any history of contention between communities will help local law enforcement plan and anticipate potential risks.

Civil Disturbances have been on the rise nationwide due to social, economic and racial tensions. These activities have caused a recent influx in rallies and marches within Larimer County, typically in Fort Collins, Loveland and Estes Park. It is likely these events will continue into 2021.

Climate Change Considerations

As a human-caused hazard, changes in climate would not have a direct impact on civil disturbances. Far more relevant, though, could be the implications of future climate change as a cause for civil disorder. Climate change impact forecasts include increasingly extreme weather patterns that exacerbate issues of drought, flooding, severe weather and other weather hazards globally that could affect whole ecosystems. Incidents of civil disobedience could be a secondary result related to societal unrest as a result of other climate-impacted hazards.

Vulnerability Assessment

People
Generally, civil disturbance events have the potential to cause injuries and potentially fatalities, although the latter is extremely rare.

General Property
Rioters often destroy private, commercial, and public property, to include smashing windows, cars, and setting fires. Additional costs can stem from debris removal, maintenance, repair, and response. No specific, countywide loss estimation process exists for civil disturbance.

Critical Facilities and Infrastructure
Critical facilities such as government buildings and police stations are frequent targets for civil disturbances.

Economy
Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services.

Historic, Cultural and Natural Resources
Historic or cultural resources may be targets of civil disturbances. Environmental impacts can occur if the civil unrest occurs in an outdoor or environmentally sensitive area.

Future Land Use and Development

As Larimer County continues to experience rapid population growth, development, and diversification, it is anticipated that there will be increased exposure to potential casualties, injuries, and property damage due to civil disturbance incidents.

Risk Summary

- Historically, the County has experienced a significant civil disturbance once every 4-5 years.
- Can arise from a number of causes for a variety of reasons.
- Past disturbances in Larimer County have consisted of anywhere from a few hundred people to as many as 10-12,000 people and lasted from a few hours to 2-3 days.
- Injuries and property damage are common, although most have historically been relatively minimal.
- Related Hazards: None

4.3.3 Dam Inundation

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Dam Inundation	Occasional	Significant	Critical	Medium

Description

Dams are humanmade structures built for a variety of uses, including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they usually are engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped, which is when water passes over the top of the dam. Overtopping can lead to dam failure and is the primary cause of earthen dam failure in the United States. Dam failures can also result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which result in overtopping
- Earthquake/seismic activity
- Inadequate spillway capacity resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage or piping or rodent/wildlife activity
- Improper design
- Improper maintenance
- Negligent operation
- Failure of upstream dams on the same waterway

The majority of dams in Larimer County are not flood-control dams; for these dams, the natural snow-melt or precipitation runoff that flows into the dam is released into the river systems below.

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result as well as potentially catastrophic effects to roads, bridges, and homes. Associated water quality and health concerns could also be issues. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

Dam inundation can also occur from non-failure events, such as when outlet releases increase during periods of heavy rains or high inflows. Controlled releases to allow water to escape when a reservoir is overfilling actually can help prevent future overtopping or failure. When outlet releases aren't enough, spillways are designed to allow excess water to exit the reservoir and prevent overtopping. This can protect the dam but result in flooding downstream. Additionally, outlets and spillways may release water in a different direction than a dam failure, creating additional inundation areas.

The Colorado Dam Safety Branch developed a tool in recent years that can support public awareness, planning, and emergency preparedness and response involving high hazard dams across the state. This tool evaluates dams and their capabilities regarding operational and flood release functions to prevent or minimize potential future damages (Flood Hazard Mitigation Plan for Colorado 2018). The Colorado Dam Safety Branch rules and regulations require owners of High and Significant hazard dams in the state to develop and maintain Emergency Actions Plans (EAP) and file them with Larimer County Emergency

Managers. EAP's enable notification and response to dam safety emergency and contain inundation mapping that portrays the limits of flood inundation for the sunny-day (absent flooding) failure scenario.

Low Head Dams

Low head dams are engineered structures built into and across stream and river channels for a variety of purposes. Water flows over low head dams continuously, as they span from one riverbank to the other. Low head dams generally range in height from 1-15 feet. Historically, low head dams were built to divert water from streams to support industrial, municipal, and agricultural water usage. Low head dams are also engineered to prevent erosion and degradation of stream channels. More recently, low head dams have been engineered to provide recreational amenities for boating, rafting and tubing and also to improve aquatic habitat.

Low-head dams are a hazard because water flowing over low head dams produces dangerous recirculating currents that can trap recreators. Rafters, kayakers, and those floating our rivers for recreation are often unaware of these structures and the dangers resulting from them. Low head dams can be difficult to detect by uneducated river users approaching from upstream due to their height, and the fact that the relatively tranquil pool they create provides no indication of the dangers just beyond the visual horizon created by the dam and ponded water. This can limit reaction time and boaters' ability to exit the river upstream of the dam.

According to the Colorado Division of Natural Resources, public safety at low head dams is becoming an increasingly important issue as the population of Colorado increases and citizens recreate more and more on waterways within the state. Safety measures can include anything from upstream signage recommending portage, modifications to the existing structure to eliminate the recirculating current, or removal if the structure is no longer serving its original purpose.

Past Occurrences

Larimer County had one of the most devastating dam failures in Colorado's history, which resulted in a Federal Disaster Declaration. The following is a description of the event from 2018 State of Colorado Hazard Mitigation Plan.

July 15, 1982 (DR-665): The Lawn Lake Disaster of 1982 caused three deaths and over $31 million in property damage when the privately-owned Lawn Lake Dam failed in Rocky Mountain National Park above the Town of Estes Park in Larimer County. Gradual deterioration of the earthen dam led to a sudden breech that released 220 million gallons of water on a sunny day in July of 1982. The dam failure flood also resulted in the failure of the Cascade Dam and destroyed the Fall River Hydropower plant, resulting in a delayed second peak in the flood that entered downtown Estes Park. The water and debris caused extensive damage to downtown Estes Park. A lawsuit awarded $480,000 to the family of one of the three persons killed in the disaster. Loss of life would likely have been greater if not for a timely warning relayed by a trash collector in Rocky Mountain National Park who witnessed the event.

September 11, 2013 (DR-4145): The historic flooding in Colorado in September 2013 led to widespread flooding throughout Larimer County. The Olympus Dam in Estes Park is not a flood-control dam and therefore released water as it entered Estes Lake. Due to these actions, the integrity of the dam remained intact even though the amount of rainfall in the area led to catastrophic flooding along the Big Thompson River. Five Low Hazard dams failed in the Big Elk Meadows development on the Little Thompson River in parts of Boulder and Larimer County. Four of the dams were in Larimer County. The dams were designed for the 25-50 year rainfall event and the September 2013 event had an annual recurrence internal of greater than 100 years. Forensic investigations conducted following the overtopping dam failures confirmed that damaged caused by the rain event flooding alone was not exacerbated by the failure of

these small impoundments during the event. Non-failure controlled outlet works and uncontrolled spillway releases from several dams contributed to flooding damage.

Location

Significant - The geographic coverage of this hazard in Larimer County is extensive, based on the number of dams and planning area at risk to widespread inundation. The Colorado Department of Natural Resources High Hazard Dam 2020 database was queried for those dams either inside the Larimer County boundaries, or upstream of it so that they may cause inundation into the county if the structures failed. This source lists 148 dams in or upstream of the County and classifies them based on the potential hazard to the downstream areas as a result of failure or mis-operation of the dam or facilities (Refer to the Magnitude/Severity section below). According to the database there are 59 high hazard dams, 33 significant hazard dams, and 57 low hazard dams either inside of Larimer County or upstream of it so that they are considered dams of concern. (Refer to the Magnitude/Severity subsection below for a description of dam hazard classifications.) The high and significant dams are listed in Table 4-19 and illustrated in Figure 4-4 and Figure 4-5. All of the high and most of the significant hazard dams have emergency action plans (EAPs) in place, while the low hazard dams are not required to have these EAPs.

Table 4-19 Dams of Concern for Larimer County

Dam Name	Waterway*	Downstream City	Storage Capacity (Acre-Feet)	Emergency Action Plan?	Hazard Rating
Barnes Meadow	Joe Wright Creek-Tr	Fort Collins	2,329	Yes	High
Boyd Lake	Big Thompson River-Os	Loveland	48,871	Yes	High
Cache La Poudre	Cache La Poudre River-Tr	Timnath	10,070	Yes	High
Carter Lake Dam #1	Dry Creek	Berthoud	112,200	Yes	High
Carter Lake Dam #2	Dry Creek	Berthoud	112,200	Yes	High
Carter Lake Dam #3	Big Thompson River	Loveland	112,200	Yes	High
Chambers Lake	Big Thompson River Os	Fort Collins	11,400	Yes	High
Cobb Lake	Dry Creek-Tr	Windsor	28,200	Yes	High
College #3	Big Thompson River Os	Fort Collins	1,461	Yes	High
Comanche	Joe Wright Creek	Fort Collins	52	Yes	High
Crow Lane No. 1	Unnamed Trib Lt Thompson	Lyons	37	Yes	High
Dixon Canyon	Dixon Creek	Fort Collins	152,000	Yes	High
Douglas	Dry Creek	Fort Collins	8,940	Yes	High
Dry Creek	Dry Creek	Berthoud	8,900	Yes	High
East Side Detention Facility	Boxelder Creek	Timnath	1,166	Yes	High
Elder	Cache La Poudre River	Fort Collins	666	Yes	High
Equalizer	Trib Of Big T. River	Milliken	1,139	No	High
Flatiron	Dry Creek	Loveland	1,000	Yes	High
Flood Control Basin No. 1	Dry Creek	Fort Collins	0	Yes	High
Floodwater Ret. B-2	Boxelder Creek	Wellington	6,470	Yes	High
Floodwater Ret. B-3	Coal Creek	Wellington	3,839	Yes	High
Floodwater Ret. B-4	Indian Creek	Wellington	1,270	Yes	High
Fossil Creek	Fossil Creek	Windsor	11,100	Yes	High
Halligan	N Fork Cache La Poudre	Fort Collins	6,428	Yes	High

Dam Name	Waterway*	Downstream City	Storage Capacity (Acre-Feet)	Emergency Action Plan?	Hazard Rating
Handy	Dry Creek	Berthoud	6,747	Yes	High
Horsetooth	Cache La Poudre	Fort Collins	152,000	Yes	High
Hourglass	Beaver Creek	Fort Collins	1,729	Yes	High
Indian Creek	Indian Creek	Timnath	1,697	Yes	High
Ish #3 (Main Dam)	Big Thompson River	Berthoud	7,128	Yes	High
Joe Wright	Joe Wright Creek	Fort Collins	7,161	Yes	High
Kluver	Cache La Poudre River	Fort Collins	1,147	Yes	High
Lake Loveland	Big Thompson River	Loveland	12,736	Yes	High
Lon Hagler	Big Thompson River	Loveland	5,228	Yes	High
Long Draw	La Poudre Pass Creek	Fort Collins	10,900	Yes	High
Long Pond	Dry Creek	Fort Collins	3,500	Yes	High
Loveland Water Storage	Big Thompson River	Loveland	6,836	Yes	High
Mariano	Big Thompson River	Loveland	5,550	Yes	High
Milton Seaman	N Fork Cache La Poudre	Laporte	5,008	Yes	High
North Poudre # 2	Cache La Poudre River	Fort Collins	3,748	Yes	High
North Poudre # 3	Boxelder Creek	Wellington	3,080	Yes	High
North Poudre # 5	Cache La Poudre River	Fort Collins	7,704	Yes	High
North Poudre # 6	Cache La Poudre River	Fort Collins	10,969	Yes	High
North Poudre #15	Dry Creek	Fort Collins	5,560	Yes	High
Olympus	Big Thompson River	Loveland	3,100	Yes	High
Panhandle	Panhandle Creek	Fort Collins	1,018	Yes	High
Park Creek	Park Creek	Fort Collins	7,343	Yes	High
Peterson Lake	Cache La Poudre River	Fort Collins	1,183	Yes	High
Rawhide	Coal Creek	Wellington	15,400	Yes	High
Richards	Cache La Poudre River	Fort Collins	515	Yes	High
Rist - Benson	Big Thompson River	Loveland	456	Yes	High
Rocky Ridge	Cache La Poudre River	Fort Collins	4,270	Yes	High
Satanka	Cache La Poudre River	Fort Collins	152,000	Yes	High
Soldier Canyon	Cache La Poudre River	Fort Collins	152,000	Yes	High
Spring Canyon	Spring Creek	Fort Collins	152,000	Yes	High
Terry Lake	Dry Creek	Fort Collins	8,345	Yes	High
Warren Lake	Cache La Poudre	Windsor	2,185	Yes	High
Water Supply No 3	Dry Creek	Fort Collins	3,350	Yes	High
Water Supply No 4	Dry Creek	Fort Collins	1,480	Yes	High
Windsor #8	Cache La Poudre River	Fort Collins	8,993	Yes	High
Annex #8	Cache La Poudre	Fort Collins	3,724	Yes	Significant
Aspen Lodge	Tahosa Creek	Rural Development, Big Owl Rd	11	No	Significant
Berthoud	Little Thompson River	Johnstown	574	Yes	Significant
Carriage Hills #1 (Upper)	Fish Creek	Estes Park	11	Yes	Significant
Clarks Lake	North Fork Poudre	Wellington	874	Yes	Significant

Dam Name	Waterway*	Downstream City	Storage Capacity (Acre-Feet)	Emergency Action Plan?	Hazard Rating
Claymore	Cache La Poudre	Laporte	1,018	Yes	Significant
Curtis Lake	Poudre River	Fort Collins	1,259	Yes	Significant
Dixon Canyon	Dixon Creek	Fort Collins	335	Yes	Significant
Donath Lake	Big Thompson River	Loveland	1,148	Yes	Significant
Dowdy Lake	N Lone Pine Cr	Fort Collins	900	Yes	Significant
Fairport	Big Thompson River	Fort Collins	143	Yes	Significant
Fairway	Mail Creek	Windsor	32	Yes	Significant
Floodwater Ret. B-5	South Branch Boxelder Cr	Wellington	1,578	Yes	Significant
Floodwater Ret. B-6	Sand Creek	Wellington	1,496	Yes	Significant
George Rist	Big Thompson River	Loveland	337	Yes	Significant
Hertha	Dry Creek	Berthoud	1,703	Yes	Significant
Hiawatha	Columbine Cr	Fort Collins	500	Yes	Significant
High Peak Camp Dam #4	Tahosa Creek	Lyons	-	-	Significant
Horseshoe Lake (East Dam)	Big Thompson River	Loveland	8,051	Yes	Significant
Horseshoe Lake (South Dam)	Big Thompson River	Loveland	8,051	Yes	Significant
Lone Tree	Big Thompson River	Johnstown	9,268	Yes	Significant
Loveland Lake	Big Thompson River	Berthoud	2,150	Yes	Significant
Marys Lake #1	Big Thompson River	Estes Park	900	Yes	Significant
North Poudre # 4	Boxelder Creek	Wellington	1,669	Yes	Significant
North Poudre #1	Cache La Poudre River	Fort Collins	629	Yes	Significant
Parvin	South Lone Pine	Fort Collins	700	Yes	Significant
Rattlesnake	Cottonwood Creek	Loveland	2,000	Yes	Significant
Ryan Gulch	Ryan Gulch	Loveland	738	Yes	Significant
Sherwood	Cache La Poudre	Fort Collins	298	Yes	Significant
South Side	Big Thompson River	Loveland	658	Yes	Significant
Sunny Slope	Dry Creek	Berthoud	480	Yes	Significant
Twin Lakes Reservoir	S Fork Cache La Poudre	Fort Collins	278	Yes	Significant
Worster	Sheep Creek	Fort Collins	3,750	Yes	Significant

Source: State of Colorado CO-DSS (dwr.state.us/Tools/DamSafety/) queryied 9-23-2020; *Tr-tributary, Os-Off Stream

Figure 4-4 illustrates the locations of identified dams within Larimer County, or which could potentially flood into the County, including their major drainages. Figure 4-5 displays the dam inundation areas for several of the significant and high hazard dams in the county. Dam inundation extents were mapped and used in analysis throughout this chapter based on GIS layers for the significant or high hazard dams. The Colorado Dam Safety Program office provided the dam inundation maps based on latest and best available data.

During the time of this plan update the Colorado DNR mapped non-failure inundation below 40 high hazard dams in Larimer County. The mapping shows potential areas of flooding where outlet capacity exceeds the downstream channel capacity. The dams at the highest risk of non-failure inundation are shown in Table 4-20. The ranking shown in the table represents the likelihood of hazardous conditions existing below the dams during a worst case, maximum outlet release scenario. Dams are ranked as high, moderate, or low likelihood for outlet releases to cause conditions that could require an emergency

response to reduce potential downstream consequences. The ranking is based on a statewide database of high hazard dams that includes 441 high hazard dams that have been analyzed by the Colorado DNR for this aspect of dam incident flooding. The high, moderate, or low designations were assigned by DNR by dividing the total number of ranked dams across the state into thirds. Should there be a need to relieve pressure on the dam (e.g. if there was excess inflow from high rains or snowmelt) releases from the dams ranked as high or moderate may result in downstream flooding.

Table 4-20 Dams with Risk of Non-Failure Inundation

Dam Name	Dam ID	Outlet Description	Max Outlet Release Capacity (cfs)	Outlet Release Ranking
Boyd Lake	040105	1. Pump station with invert at GH 0.0 2. Hillsboro transfer outlet with invert at GH 25.0 3. Greeley-Loveland Ditch inlet/outlet with invert at GH 49.25	800	HIGH
Cache la Poudre	030327	60"RCP	575	HIGH
Chambers Lake	030115	4-3' X 4' CONC*	1,700	HIGH
Cobb Lake	030119	48"R/C,U/S SUBMERGED, D/S PIPE	633	HIGH
Comanche	030121	30" X 44" ARCH*	444	HIGH
Flood Control Basin 1	030526	UNGATED 5 FOOT BY 5 FOOT OPENING	438	HIGH
Hourglass	030209	33" RCP	180	HIGH
JoeWright	030402	72" RCP	600	HIGH
Loveland Water Storage	040217	54" Steel	255	HIGH
Milton Seaman	030223	18' TUNNEL	1,680	HIGH
North Poudre #6	030303	48" RCP	280	HIGH
North Poudre 3	030238	36" HDPE & RCP	109	HIGH
Olympus	040134	18"RCP+6.25'X8*	5,767	HIGH
Panhandle	030307	33" CONC	135	HIGH
Park Creek	030308	42" SQUARE CONCRETE	335	HIGH
Terry Lake	030326	48" RCP,D/S GOES TO 60"RCP ADD	325	HIGH
Water Supply 3	030332	3' X 4' RCP	358	HIGH
Barnes Meadow	030104	3 GATES-30"X36*24"HDP LINER	89	MODERATE
Equalizer	040231	FIVE - 4' BY 4' GATES	595	MODERATE
Floodwater Retention Basin 2	030505	48" RCP	234	MODERATE
Floodwater Retention Basin 3	030415	30" RCP	80	MODERATE
Floodwater Retention Basin 4	030414	24"&30" RCP	98	MODERATE
Halligan	030204	2-33" SP	573	MODERATE
Handy	040126	Three outlets numbered 1-2-3 from west to east (right to left)	140	MODERATE
Horsetooth	030208	2-72" STL PIPES	2,500	MODERATE
Indian Creek	030210	4 FT X 4 FT CO	210	MODERATE
Ish Reservoir	040131	By-pass: 42" RCP	95	MODERATE

Dam Name	Dam ID	Outlet Description	Max Outlet Release Capacity (cfs)	Outlet Release Ranking
Long Draw	030217	54" RCP	560	MODERATE
Long Pond	030216	42" RCP	275	MODERATE
Mariano	040203	No description	155	MODERATE
North Poudre 15	030305	42" RCP	195	MODERATE
North Poudre 2	030237	36" CMP	110	MODERATE
Rawhide	030508	54" RCP	133	MODERATE
RistBenson	040208	24" CMP x 94 ft	35	MODERATE
Water Supply 4	030333	2' X 3' ROCK	150	MODERATE
College #3	030120	3 each 18" CMP w/ Insituform liner	59	LOW
East Side Detention Facility	030527	No Outlet	NA	LOW
Lily Lake	040224	8" CMP	NA	LOW
LonHagler	040137	30" concrete cylinder pipe	45	LOW
Soldier Canyon	030324	30" STEEL PIPE	90	LOW

Figure 4-4 Dams of Concern to Larimer County

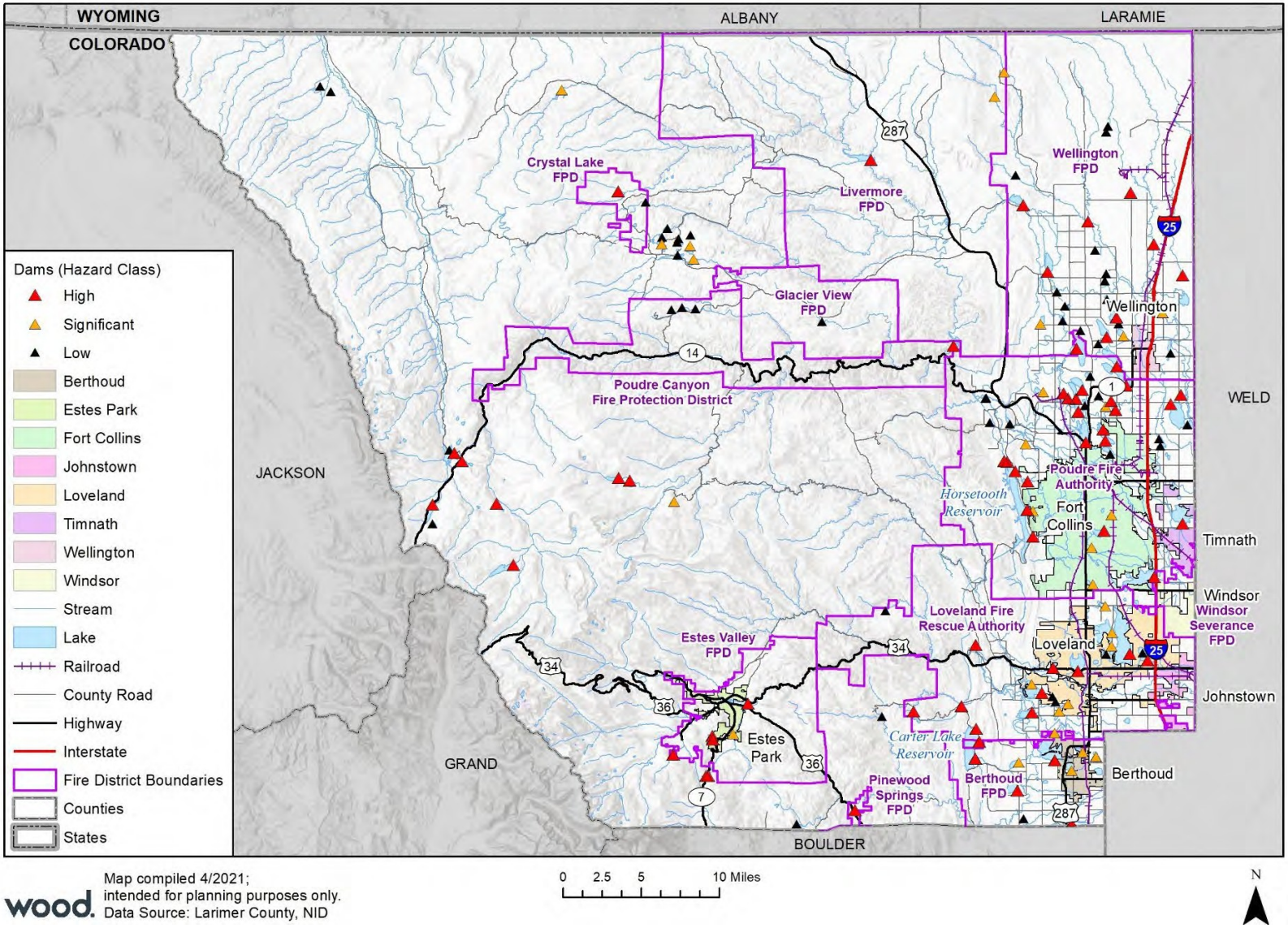
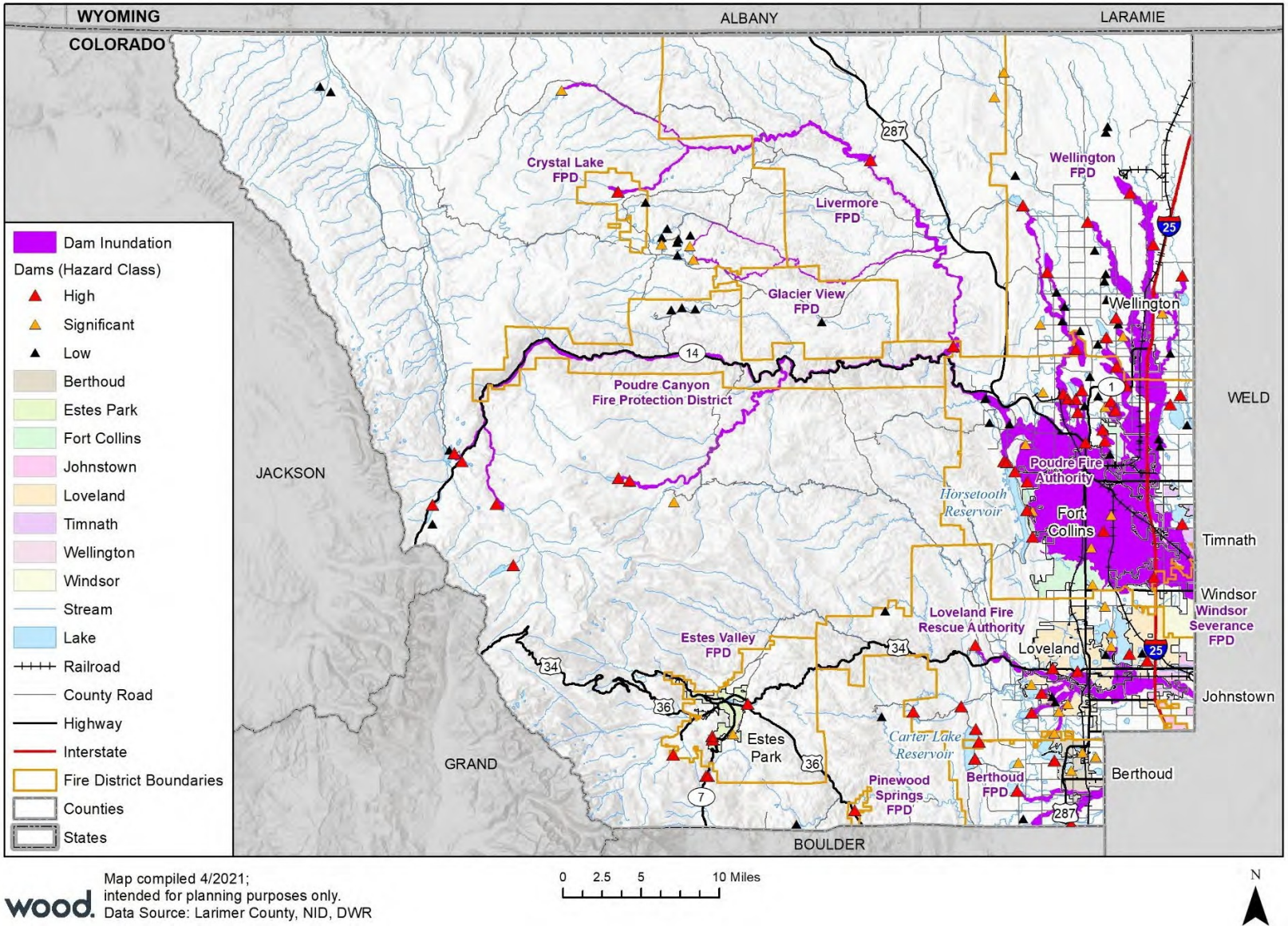


Figure 4-5 Dam Inundation Areas in Larimer County



Magnitude/Severity

Critical - Standard practice among federal and state dam safety offices is to classify a dam according to the potential impact a dam failure (breach) would have on downstream areas. The hazard potential classification system categorizes dams based on the probable loss of human life and the impacts on economic, environmental and lifeline facilities. Per the U.S. Army Corps of Engineers and National Inventory of Dams standards, dams are classified in three categories that identify the potential hazard to life and property, and one that indicates unknown risk:

- **High** hazard indicates that a failure has the potential to result in the loss of life.
- **Significant** hazard indicates that a failure could result in appreciable property damage and loss of life is not expected.
- **Low** hazard indicates that failure would result in only minimal property damage and loss of life is unlikely.
- **No Public Hazard (NPH)** dam failure damage is limited to the dam owners' property and has minimal impact downstream.

Larimer County has the highest number of high hazard dams in the State (State of Colorado 2018). In total there are 92 High and Significant hazard dams in the County, making the potential for loss of life and property damage likely if a failure was to occur. Both unincorporated and incorporated areas of the County are identified on dam inundation maps included in various dam Emergency Action Plans. The inundation areas for each of the dams are generally downstream and include rural and urban areas below the dams. The extent of impacts depends on the nature of failure and location of the dam. The largest population potentially at risk is in Fort Collins.

Speed of Onset: A dam failure event's speed of onset can range from sudden, with little warning time prior to the release of dangerous flood flows, to an event that gradually unfolds. The Lawn Lake Dam failure was a "worst case", sunny day event with little warning. An event with a dam in more developed parts of the County would likely be detected before failure occurred, but the proximity of many of the dams to Fort Collins in particular may lead to a rapid onset if failure occurred.

Duration: A spring or summer storm involving heavy rain can lead to a flash flood within six hours of the beginning of the event. Dam failure initiated because of extreme rainfall can occur within hours of an extreme rain event. Flooding from a non-dam failure flood event could last for several days depending on the amount of water needing to be released to relieve pressure on the dam.

Probability of Future Occurrence

Occasional - The County remains at risk to dam failures from numerous dams under a variety of ownership and control and of varying ages and conditions. Dam failures are infrequent but given the number of dams of concern and consequences within Fort Collins and other population centers in Larimer County the potential exists for future dam or reservoir failures. Uncontrolled or controlled release flooding as well as spillway flooding below dams due to excessive rain or runoff are more likely to occur than failures, while the consequences of such events are considerably less.

Climate Change Considerations

The potential for climate change to affect the likelihood of dam failure has been incorporated into the 2020 Rules and Regulations for Dam Safety and Dam Construction. The climate-change related Rule is based on a state-of-the-practice regional extreme precipitation study completed in 2018. (DWR, 2018). This study determined a very high likelihood of temperature increases, resulting in increased moisture availability to extreme storms. As such, an atmospheric moisture factor of 7% is required to be added to estimates of extreme rainfall for spillway design.

Vulnerability Analysis

A dam incident can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to dam failures is confined to the areas and populations subject to inundation downstream of the structure. Secondary losses could include loss of the multi-use functions of the dam itself and associated revenues that accompany those functions, as well as damage to roads, utilities, and other infrastructure. GIS analysis was carried out using dam inundation extents from the Colorado Dam Safety Program as well as the Larimer County parcel data (from the Assessor's Office), and the critical facility/infrastructure inventory. In this process, asset data was overlaid with the dam inundation layers to arrive at total units or facilities at risk.

People

Persons located downstream of a dam are at risk of a dam failure, though the level of risk can be tempered by topography, amount of water or material in the reservoir/dam/structure, and time of day of the breach. Injuries and fatalities can occur from debris, drowning, or release of sludge or other hazardous material. People in the inundation area may need to be evacuated, cared for, and possibly permanently relocated. Impacts could include hundreds of evacuations and possibly casualties, depending on the dam involved. Specific population impacts are noted in Table 4-21 below; total people at risk were estimated by multiplying the average number of persons per household in Larimer County (based on Census estimates which equals 2.46) times the number of properties of classified as Residential within the dam inundation extents. An estimated total of 161,887 people could be at risk countywide based on the rough estimation used. This estimate does not account for non-resident or visitor population. The City of Fort Collins has the most people at risk. A total of 113,266 people reside within mapped inundation areas in Fort Collins alone, based on the calculation methodology used; this analysis does not account for transient or non-resident population at risk.

The impacts of flooding from a dam failure event can be more severe for vulnerable populations. Comparing Figures 2-4 through Figure 2-8 with the social vulnerability maps in Section 2.7 shows that many of the areas at greatest risk of dam inundation also have higher social vulnerability stemming from socioeconomic status, household composition and disabilities, minority status and language proficiency, or housing and transportation resources. Families in this area may have fewer financial resources to prepare for or recover from a flood, may not have access to a vehicle for evacuation, and may be more likely to be uninsured or underinsured. Individuals with disabilities may need more time to evacuate, so evacuation notices will need to be issued as soon as feasible, and communicated by multiple, inclusive methods.

General Property

The total properties at risk and their improvements were found by counting the number of parcels intersecting with the dam inundation extents and summing the improvement values. Content value calculations are based on FEMA HAZUS software standards based on parcel type, as described in more detail under Section 4.2 Asset Summary. Total value is the combination of improved and content values. Results are presented in Table 4-21 and Table 4-22 by jurisdiction and by parcel type, respectively.

According to the analysis of the dams with a potential to impact the planning area, the majority of the dam inundation exposed parcels are Residential, followed by the Commercial, and Agricultural categories. The largest numbers of exposed parcels are located in Fort Collins, followed by the Unincorporated County areas. Total exposed parcel values add up to over $45 billion based on the over 62,000 parcels falling within these available dam inundation areas.

Table 4-21 Parcels Exposed to Dam Inundation Extents – Estimates by Jurisdiction

Jurisdiction	Total Improved Parcels	Improved Values	Content Values	Total Values	Population
Berthoud	110	$33,361,699	$16,680,845	$50,042,544	275
Estes Park	4	$1,154,771	$577,384	$1,732,155	8
Fort Collins	46,938	$21,707,572,979	$14,057,878,625	$35,765,451,604	113,266
Johnstown	21	$6,567,126	$3,283,562	$9,850,688	60
Loveland	5,059	$1,921,542,245	$1,250,412,935	$3,171,955,180	11,419
Timnath	1,165	$500,176,513	$285,208,291	$785,384,804	3,788
Wellington	3,621	$1,064,805,211	$587,276,641	$1,652,081,852	9,855
Windsor	147	$61,985,388	$31,063,054	$93,048,442	364
Unincorporated	5,928	$2,408,767,480	$1,558,716,644	$3,967,484,124	22,852
TOTAL	**62,993**	**$27,705,933,412**	**$17,791,097,981**	**$45,497,031,393**	**161,887**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

Table 4-22 Parcels Exposed to Dam Inundation Extents – Estimates by Parcel Type in Unincorporated Larimer County

Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	237	316	$93,800,690	$93,800,690	$187,601,380
Commercial	755	1,209	$362,977,352	$362,977,352	$725,954,704
Exempt	87	318	$96,310,700	$96,310,700	$192,621,400
Industrial	80	104	$70,713,632	$106,070,459	$176,784,091
Mobile Home	88	2,151	$165,152,616	$82,576,306	$247,728,922
Multiple Unit	25	75	$14,149,710	$14,149,710	$28,299,420
Residential	4,656	5,366	$1,605,662,780	$802,831,427	$2,408,494,207
TOTAL	**5,928**	**9,539**	**$2,408,767,480**	**$1,558,716,644**	**$3,967,484,124**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

Critical Facilities and Infrastructure

A total dam failure can cause catastrophic impacts to areas downstream of the water body, including critical facilities and infrastructure. In Colorado's semi-arid environment, dams and reservoirs that supply water for municipal use can also be considered critical infrastructure themselves. Any critical assets located under the dam in an inundation area would be susceptible to the impacts of a dam failure. Of particular risk would be roads and bridges that could be vulnerable to washouts, further complicating response and recovery by cutting off impacted areas. Based on the critical facility inventory considered in the updating of this plan and intersected with the dam inundation extents available, 389 county critical facilities were found to be at risk. Ten (10) of the facilities are categorized as hazardous material facilities. These at-risk facilities are listed below by jurisdiction and organized by Lifeline classification as based on the FEMA Lifeline categories.

Table 4-23 Critical Facilities in Dam Inundation Extents

Jurisdiction	FEMA Lifeline	Total Critical Facilities
Estes Park	Food, Water, Shelter	1
	Total	**1**
Fort Collins	Communications	16
	Energy	30
	Food, Water, Shelter	56

Jurisdiction	FEMA Lifeline	Total Critical Facilities
	Hazardous Material	5
	Health and Medical	40
	Miscellaneous	14
	Safety and Security	92
	Transportation	3
	Total	**256**
Loveland	Communications	2
	Energy	1
	Food, Water, Shelter	7
	Hazardous Material	1
	Health and Medical	1
	Miscellaneous	1
	Safety and Security	11
	Transportation	1
	Total	**25**
Timnath	Food, Water, Shelter	2
	Safety and Security	2
	Total	**4**
Wellington	Food, Water, Shelter	1
	Miscellaneous	1
	Safety and Security	4
	Total	**6**
Unincorporated	Communications	1
	Energy	4
	Food, Water, Shelter	68
	Hazardous Material	4
	Health and Medical	2
	Miscellaneous	2
	Safety and Security	16
	Total	**97**
Grand Total		**389**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Cascarta, Larimer County GIS, U.S. Census Bureau, Wood analysis

Economy

Extensive and long-lasting economic impacts could result from a major dam failure or inundation event, including the long-term loss of water in a reservoir, which may be critical for potable water needs, agriculture, or local wildlife. A major dam failure and loss of water from a key structure could bring about direct business and industry damages and potential indirect disruption of the local economy, and potentially affect important transportation routes enabling business and tourism into the county.

Historic, Cultural and Natural Resources

Dam or reservoir failure effects on the environment would be similar to those caused by flooding from other causes. Water could erode stream channels and topsoil and cover the environment with debris. For the most part the environment is resilient and would be able to rebound from whatever damages occurred, though this process could take years. However, historic and cultural resources could be affected just as housing or critical infrastructures would, were a dam to fail and cause downstream inundation that could further erode surfaces or cause scouring of structural foundations.

Future Land Use and Development

Flooding due to a water-related dam failure event is likely to exceed the special flood hazard areas regulated through local floodplain ordinances and usually mapped by FEMA's National Flood Hazard Layer (NFHL) dataset. The County and jurisdictions should consider dam failure and release hazards when permitting development downstream of the high hazard and significant hazard dams, in particular. In addition, there are currently 57 low hazard dams in the area of interest. Due to the phenomenon of "hazard creep," these could become significant or high hazard dams if development occurs below them and the consequences of failure increase. Regular inspection and monitoring of dams, exercising and updating of EAPs, and rapid response to problems when detected at dams are ways to mitigate the potential impacts of these rare but potentially catastrophic events.

The construction of new dams could also increase future exposure below high hazard dams. One example is Glade Reservoir, an off-channel reservoir being proposed on a tributary of the Cache La Poudre River northwest of Fort Collins, part of the Northern Integrated Supply Project (NISP).

Risk Summary

- There has been 1 recorded dam failure event in 1982 that resulted in a Disaster Declaration (DR-665). The event released 220 million gallons and caused $31 million in property damages and 3 fatalities.
- The County has the highest number of high hazard dams in the state. There are 59 High hazard dams (leading to probable loss of life if failure was to occur), 33 Significant hazard dams and 57 Low hazard dams, for a total of 149 dams.
- City of Fort Collins and the Unincorporated County areas contain the largest population at risk to a dam failure as well as the highest number of parcels and total values exposed. Loveland and Wellington also have substantial property and people in inundation zones. A total of 161,887 people are potentially at risk, over 62,000 parcels with a total exposure value of over $45 billion countywide. The majority of exposed parcels in dam inundation zones are residential.
- A total of 389 critical facilities and infrastructure are found within dam inundation extents in the county.
- Related Hazards: Civil Disturbance, Earthquake, Flood, Utility Disruption

4.3.4 Drought

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Drought	Likely	Significant	Significant	Medium

Description

Drought is a slow-onset hazard, generally defined by a long-term deficiency in precipitation resulting in water shortages causing adverse impacts on vegetation, animals, and/or people. Droughts occur gradually, which often makes it difficult to define when a drought begins and ends. Per the National Drought Mitigation Center, there are four basic approaches to defining a drought based on its effects:

- **Meteorological drought** is based on the degree and duration of dryness, usually defined by a period of below average precipitation.
- **Agricultural drought** links dryness to agricultural impacts and occurs when there is an inadequate water supply to meet the needs of crops, livestock, and other agricultural operations. It is measured by precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, and other factors. Agricultural drought is dependent on the variable needs of different crops during different stages of development.
- **Hydrological drought** concerns deficiencies in surface and subsurface water supplies and is typically defined on a watershed scale. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels. Measuring drought with this approach may result in a slower recognition of drought conditions compared to meteorological and agricultural drought because the impacts of precipitation deficiencies can take a while to be seen in the hydrologic system.
- **Socioeconomic drought** is associated with the supply and demand of water or other related goods. It occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Each of the above definitions of drought can be measured on different scales and scopes and by a variety of metrics, such as precipitation, soil moisture, streamflow, and surface water and groundwater levels. Additionally, each definition can provide a different point of view or understanding of drought severity and impacts. Several unique indices have been developed to describe drought and measure its severity. It's important to understand that each of these indices measures drought as it occurs but does not predict future drought conditions.

The **Palmer Drought Severity Index** (PDSI) devised in 1965, was the first drought indicator to assess moisture status comprehensively. The PDSI uses temperature and precipitation data to calculate water supply and demand, incorporates soil moisture, and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief.

The **Standardized Precipitation Index** (SPI), like the PDSI, index is negative for drought, and positive for wet conditions. However, the SPI is a probability index that considers only precipitation.

The **U.S. Drought Monitor** provides a summary of drought conditions across the United States and Puerto Rico. Often described as a blend of art and science, the Drought Monitor map is updated weekly by combining a variety of data-based drought indices and indicators as well as local expert input into a single composite drought indicator.

Colorado has a Drought Mitigation and Response Plan that encompasses drought monitoring, assessment, response, and mitigation statewide. Additionally, the Colorado Water Conservation Board (CWCB) maintains a Drought Response page that encompasses the above definitions of drought and supports both local and state drought planning as well as water supply planning. The CWCB also provides

a Drought Planning Toolbox designed to assist with planning and responding to drought. The City of Fort Collins Utilities' Water Shortage Action Plan (2020) was approved by CWCB in August 2020, and is an action plan to address drought, as well as other water shortages.

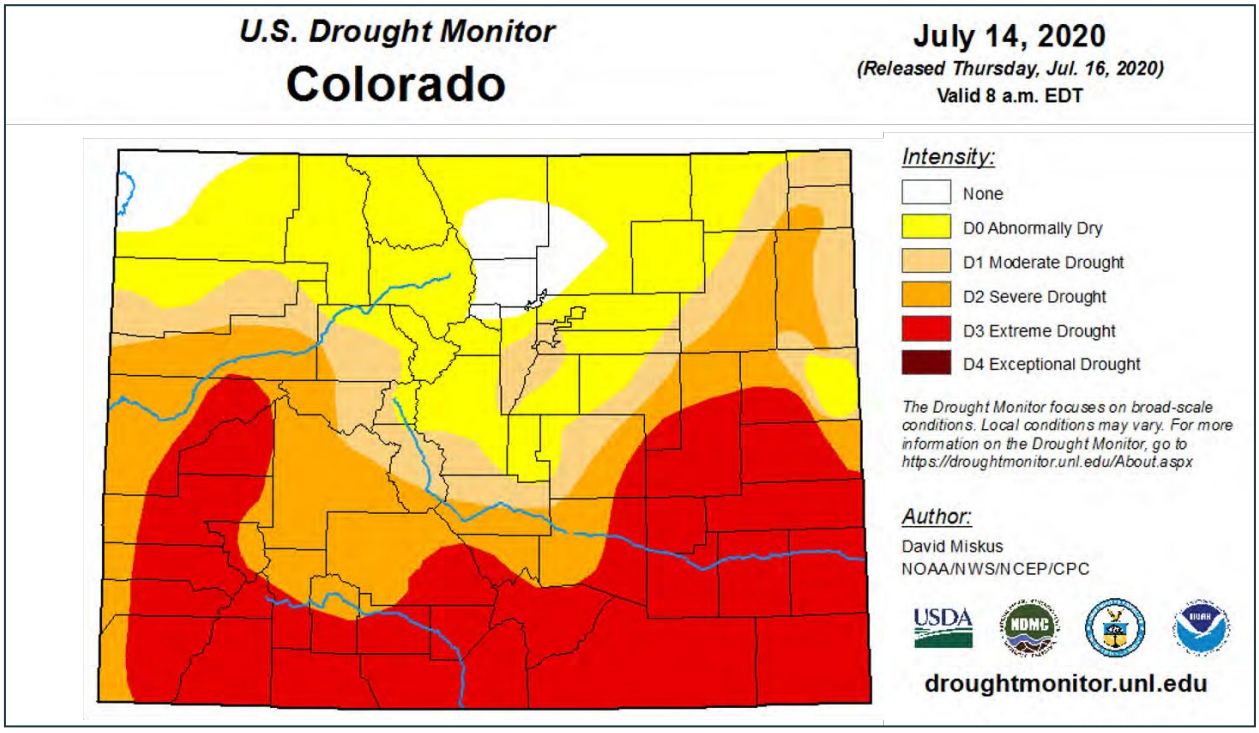
Extreme heat is defined in the State Hazard Mitigation Plan as "temperatures over 90 degrees for an extended period of time, or that hover 10 degrees or more above the average high temperature for the region and last for multiple consecutive days." It's useful to consider the extreme heat hazard in conjunction with drought because of the direct impact high temperatures can have on drought incidence. Extreme heat can occur quickly and without warning. Older adults, children, and sick or overweight individuals are more vulnerable to extreme heat.

Past Occurrences

As reported in Table 4-6, Larimer County has received ten USDA disaster declarations due to drought in the last ten years.

Figure 4-6 shows the U.S. Drought Monitor for Colorado as of July 14, 2020, illustrating the regional nature of drought.

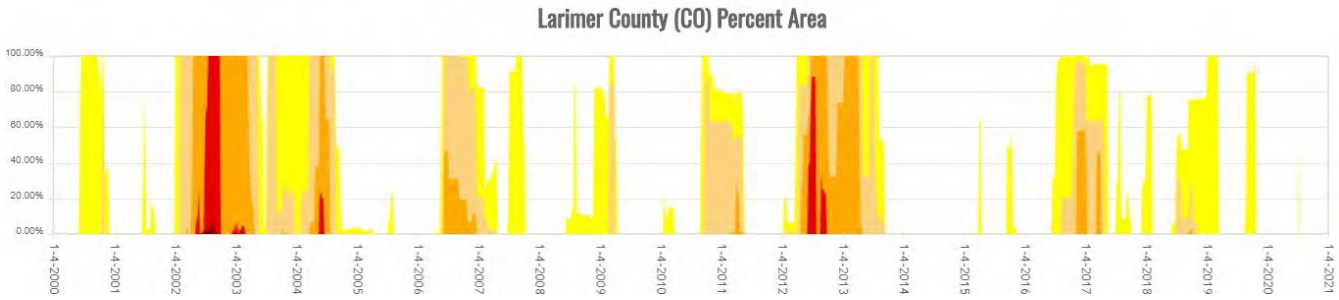
Figure 4-6 U.S. Drought Monitor



Source: U.S. Drought Monitor

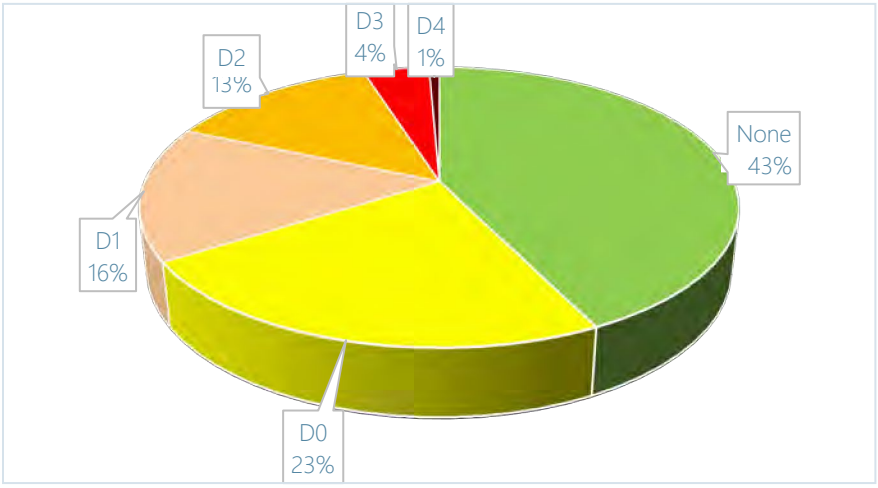
The U.S. Drought Monitor maintains weekly records of drought by county. Per these records, during the 1040-week period from January 2000 through December 2019, all or portions of Larimer County spent 596 weeks (57% of the time period) in some level of drought, defined as Abnormally Dry (D0) or worse conditions. This period includes 141 weeks of Severe Drought (D2), 44 weeks of Extreme Drought (D3), and 7 weeks of Exceptional Drought (D4). Figure 4-7 and Figure 4-8 illustrate the severity and duration of drought conditions during this time, using the same color coding for each category of drought intensity as shown in Figure 4-6 above.

Figure 4-7 U.S. Drought Monitor Drought Intensity Time Series, 2000-2020



Source: U.S. Drought Monitor

Figure 4-8 Percentage of Weeks in Drought, 2000-2020



Source: U.S. Drought Monitor

NOAA's National Centers for Environmental Information (NCEI) records 3 drought events between 1950 and 2019. Brief descriptions of each events are shown below, no damages or casualties were recorded for any of the events. NCEI does not record any severe heat events in Larimer County between 1950 and 2019.

- **April 1, 2002** – Statewide drought event. Within Larimer County the event impacted elevations below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet. April, normally the third snowiest month of the year with just over 9 inches, ended up being the third driest April on record for Denver. Only a trace of snow was recorded for the month with .23 inches liquid precipitation. The snowpack in the North Platte River Basin was only 44 percent of normal by the end of the month. The snowpack was much lower across some of the other Colorado river basins. The very dry conditions prompted the Governor to request a statewide emergency drought declaration from the U.S. Agricultural Secretary, making farmers and ranchers eligible for federal assistance.
- **March 1, 2011** - The month of March 2011 was the eighth least snowy March on record with 2.9 inches of snowfall at Denver International Airport. The seasonal snowfall of 20.6 inches, measured between July 1, 2010 and March 31, 2011 made it the third least snowy season to date. The combination of above normal temperatures, windy conditions and sparse precipitation resulted in very dry conditions along the Front Range Foothills, Urban Corridor and Northeast Plains. Over two dozen wildfires occurred throughout the region in March alone. Although structural damage was limited, the wildfires threatened hundreds of homes and forced the evacuation of thousands of residents and numerous road closures.

- **April 1, 2011** - The dry, warm, and windy conditions that started the month of April allowed for another large wildfire to develop in the foothills of Larimer County, west of Fort Collins. The fire spread after strong winds allowed a slash pile burn on private property get out of control. Nearly 3,000 acres were consumed by the blaze. Hundreds of residents were forced to evacuate their homes due to very strong winds. In all, thirteen homes were destroyed in addition to numerous vehicles and outbuildings. The total cost of fighting the fire alone was around $3 million. The Crystal Wildfire was expected to become the most destructive on record for Larimer County.

Location

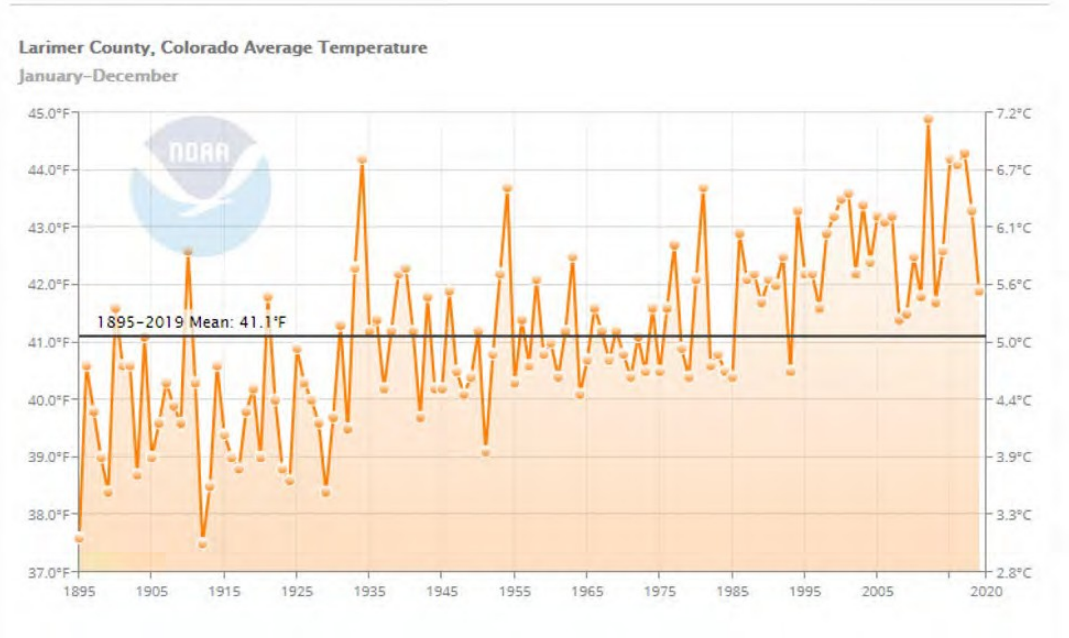
Drought is regional in nature and can occur anywhere in Larimer County, affecting all or part of the County at any given time. The eastern portion of the County may have greater exposure and vulnerability to drought due to the presence of farms and urban populations.

Extreme heat is also regional in nature; however, urbanized areas can experience pockets of heightened temperatures where surfaces such as pavement and roofs become hotter than the air temperatures, a phenomenon known as the urban heat island effect. These hot surfaces also retain heat, causing high temperatures to persist even when air temperature drops. Per the EPA, "the annual mean air temperature of a city with 1 million people or more can be 1.8–5.4°F (1–3°C) warmer than its surroundings. On a clear, calm night, however, the temperature difference can be as much as 22°F" (US EPA). Colorado's climate tends to experience large day and night temperature changes. This nighttime cooling will help alleviate heat conditions and is thought to benefit and reduce risk of extreme heat.

Magnitude/Severity

Figure 4-9 shows the average annual temperature in Larimer County going back to 1895.

Figure 4-9 Average Annual Temperature, Larimer County 1895-2020



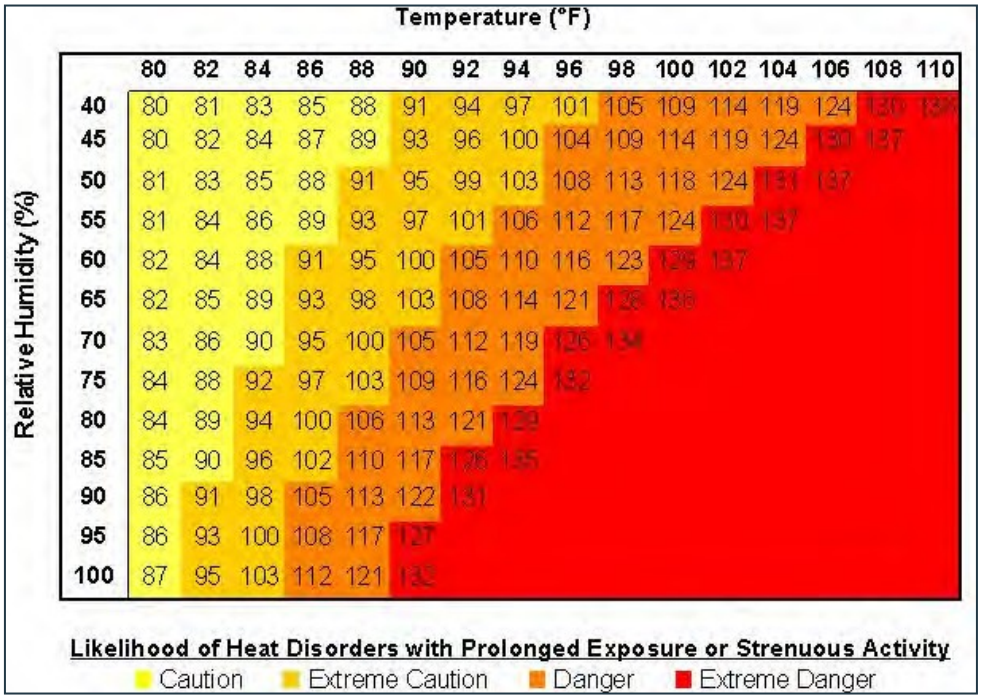
Source: NOAA

Heat conditions are a product of ambient air temperature and relative humidity. Humidity increases the feeling of heat as measured by heat index. The Heat Index Chart in Figure 4-10 shows how ambient temperature and relative humidity impact the relative intensity of heat conditions. The shaded zone above

105°F corresponds to a heat index that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Although lower relative humidity contributes to a lower overall heat index, excessively dry and hot weather can also be dangerous. These conditions can cause dust storms and low visibility and can contribute to more severe drought as well as dangerous fire conditions.

Figure 4-10 Heat Index Chart



Source: National Weather Service (NWS) Note: Exposure to direct sun can increase Heat Index values by as much as 15°F.

Drought severity can be defined in terms of intensity using the U.S. Drought Monitor scale mentioned above. This scale measures drought episodes with input from the Palmer Drought Severity Index, the Standardized Precipitation Index, the Keetch-Byram Drought Index, soil moisture indicators, and other inputs as well as information on how drought is affecting people. Table 4-24 details the classifications used by the U.S. Drought Monitor. A category of D2 (severe) or higher on the U.S. Drought Monitor Scale can likely result in crop or pasture losses, water shortages, and the need to institute water restrictions. Larimer County can experience all categories.

Table 4-24 U.S. Drought Monitor Classifications

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: ▪ short-term dryness slowing planting, growth of crops or pastures Coming out of drought: ▪ some lingering water deficits ▪ pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	▪ Some damage to crops, pastures ▪ Streams, reservoirs, or wells low, some water shortages developing or imminent ▪ Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	▪ Crop or pasture losses likely ▪ Water shortages common ▪ Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	▪ Major crop/pasture losses ▪ Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	▪ Exceptional and widespread crop/pasture losses ▪ Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Source: US Drought Monitor

The National Weather Service Heat Index Program provides a measure of the extent of typical health impacts of exposure to heat, summarized in Table 4-25. During these conditions, the human body has difficulties cooling through the normal method of the evaporation of perspiration, and health risks rise.

Table 4-25 Typical Health Impacts of Extreme Heat by Heat Index

Heat Index	Disorder
80-90° F	Fatigue possible with prolonged exposure and/or physical activity
90-105° F	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105-130° F	Heatstroke/sunstroke highly likely with continued exposure

Source: National Weather Service Heat Index Program, www.weather.gov/os/heat/index.shtml

Probability of Future Occurrence

According to information from the Colorado Drought Mitigation and Response Plan, Colorado was in drought for 50 of the past 126 years (1893-2018). Thus, there is a 39.7% chance that a drought will happen in Colorado in any given year, and a drought can be expected somewhere in the state every 2.5 years.

As noted above under past occurrences, historical drought occurrence and intensity data reported by the U.S. Drought Monitor indicates that over the 1040-week period from January 2000 through December 2019 Larimer County experienced 192 weeks of Severe Drought or worse conditions. If future occurrences continue to follow this trend, Larimer County has a 18% change of experiencing severe drought conditions in any given week. Short duration droughts are likely, but longer periods of intense drought are less common. Considered on the level of annual probability, Larimer County experienced Severe Drought or worse conditions during 8 of the 20 years during this period, which equates to a 40% annual chance of severe drought conditions.

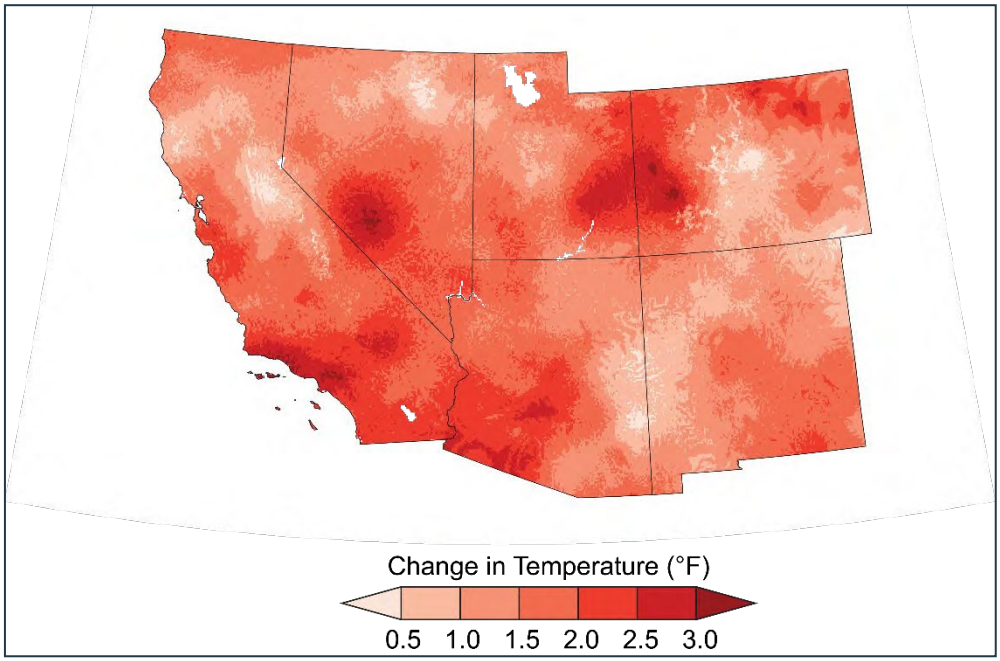
Drought and extreme heat probability may increase in the future due to climate change, discussed in greater detail below.

Climate Change Considerations

Current climate change projections suggest that drought conditions may become even more common in the future due to a variety of factors, including higher temperatures and increased evapotranspiration, reduced snowpack from less snowfall and earlier spring melt, and severe soil moisture drought.

Research cited in the Fourth National Climate Assessment indicates that average temperatures have already increased across the Southwest and will likely continue to rise. Figure 4-11 shows the difference between the 1986-2016 average temperature and the 1901-1960 average temperature. This trend toward higher temperatures is expected to continue and would cause more frequent and severe droughts in the Southwest as well as drier future conditions and an increased risk of megadroughts—dry periods lasting 10 years or more). Additionally, current models project decreases in snowpack, less snow and more rain, shorter snowfall seasons, and earlier runoff, all of which may increase the probability of future water shortages (Gonzalez et al., 2018).

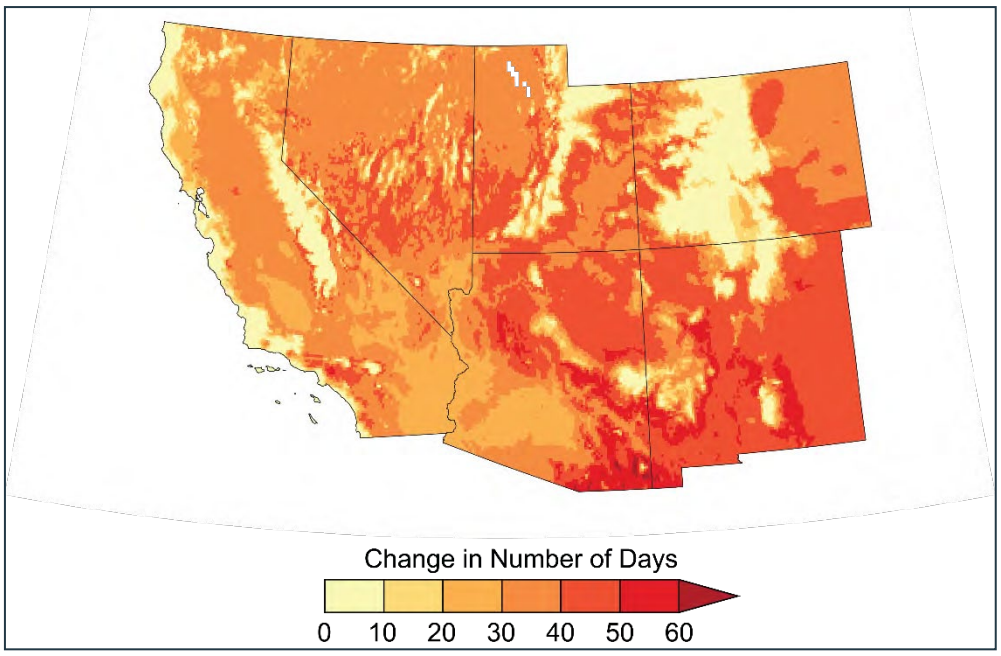
Figure 4-11 Change in Average Temperature Across the Southwest, 1901-1960 to 1986-2016



Source: Fourth National Climate Assessment

In conjunction with rising average temperatures and their projected impact on drought, extreme heat is also expected to increase in frequency. Figure 4-12 shows projected increases in extreme heat as an increase in the number of days per year when the temperature exceeds 90°F by the period 2036-2065 compared to the period 1976-2005. Under the higher emissions scenario (RCP8.5), the number of days of extreme heat would increase in Larimer County by 30 to 50 days based on the figure below.

Figure 4-12 Projected Increases in Extreme Heat



Source: Fourth National Climate Assessment *Based on higher emission scenario RCP8.5

Vulnerability Analysis

The National Drought Mitigation Center (NDMC), located at the University of Nebraska in Lincoln, provides a clearinghouse for information on the effects of drought based on reports from media, observers, impact records, and other sources.

According to the NDMC's Drought Impact Reporter, during the 20-year period from January 2000 through December 2019, 818 drought impacts were recorded for the State of Colorado, of which 71 were reported to affect Larimer County. Table 4-26 summarizes the number of impacts reported by category and the years impacts were reported for each category, where available. Note that the Drought Impact Reporter assigns multiple categories to each impact, so there is some duplication between categories.

Table 4-26 NDMC Drought Impact Reporter, 2000-2019

Impact Category	# of Impacts
Agriculture	18
Business & Industry	3
Fire	14
Plants & Wildlife	23
Relief, Response & Restrictions	26
Society & Public Health	7
Tourism & Recreation	9
Water Supply & Quality	18
Total Impacts	**71**

Source: National Drought Mitigation Center Drought Impact Reporter (https://droughtreporter.unl.edu/map/)

People

Drought can affect people's physical and mental health. For those economically dependent on a reliable water supply, drought may cause anxiety or depression about economic losses, reduced incomes, and other employment impacts. Larimer County has many agricultural workers, who can be particularly

vulnerable to these impacts. Drought may also cause health problems due to poorer water quality from lower water levels.

Though physical injury or death are not typically a result of drought, extreme heat can cause heat stroke or even fatality. The most dangerous place to be during an extreme heat incident is in a permanent home, with little or no air conditioning. Those most vulnerable to heat-related illness include people 65 years of age and older, young children, people with chronic health problems such as heart disease, people who are obese, people who are socially isolated, and people who are on certain medications. Low income families are less likely to have air conditioning and may be disproportionately impacted by rising water costs. Even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather or are not acclimated to hot weather. Those who are homeless and are limited in their ability to seek shelter from extreme temperatures are also more vulnerable to extreme heat.

Aside from direct health impacts, in extreme cases of drought, conflicts may arise over water shortages. People may be forced to pay more for water, food, and utilities affected by increased water costs. Utilities may increase water prices to cover revenue losses from water restrictions, and to incentivize customers to use less so the shortage does not result in a supply disruption. Larimer County has the greatest number of dams in the State, which infers a capability to ensure a greater amount of water resources in times of drought. However, if drought is prolonged these stored resources could be depleted, making the County more reliant on snowpack from year to year.

General Property

Drought does not typically have a direct impact on buildings, although an increase in expanding/collapsing soils could affect building foundations. Developed areas may experience damages to landscaping if water use restrictions are put in place, however these losses are not considered significant.

According to the 2017 Census of Agriculture, there are 2,043 farms in Larimer County covering 482,456 total acres. The market value of agricultural products sold by these farms is estimated at over $150M. Approximately 24,554 acres, or 5.1% of the total farm acreage, is covered by crop insurance. The United States Department of Agriculture (USDA) Risk Management Agency (RMA) maintains a database of all crop insurance claims across the country by location and cause of loss. This data helps to quantify the economic impact of drought on agriculture. In Larimer County, crop insurance claims were made as a result of drought 8 years between 2007 and 2019. In total, 2,384 acres were affected and $119,474 in losses were claimed, for an average annualized loss of $9,956 per year. An additional $375,924 (or $31,327/year) in losses were claimed due to excessive heat during the same period. Exposure of agricultural property to drought is high in Larimer County.

Table 4-27 Crop Insurance Claims Paid Due to Drought, 2007-2018

Year	Net Acres	Indemnity Amount
2007	54	$1,714
2008	187	$11,427
2009	21	$985
2011	617	$28,009
2012	86	$8,547
2013	475	$29,609
2017	937	$39,168
2018	5	$15
Total	**2,384**	**$119,474**

Source: USDA RMA

Critical Facilities and Infrastructure

Buildings and infrastructure are not vulnerable to direct impact from drought; however, critical systems related to water supply can be affected. Decreased water levels in dams can cause structural damage. Low water levels can also affect wildfire protection capability.

Secondary hazards exacerbated by drought, such as wildfire and expansive soils, can cause direct structural impacts on critical facilities and infrastructure.

Prolonged heat exposure can have devastating impacts on infrastructure. Prolonged high heat exposure increases the potential of pavement deterioration, as well as railroad warping or buckling. High heat also puts a strain on energy systems and consumption, as air conditioners are run at a higher rate and for longer. Extreme heat can also reduce transmission capacity over electric systems. While firefighting will always be a prioritized water use, a severe supply disruption could impact fire suppression both in the mountains and in urban areas.

Economy

The main industry to experience the effects of drought is agriculture. Farmers may face crop losses or increased livestock costs, and businesses that depend on farming may experience secondary impacts. Extreme drought also has the potential to impact local businesses in landscaping, recreation and tourism, and public utilities. Additionally, there are many businesses in the cities that rely on outdoor water use such as nurseries, landscapers, and car washes; these can be impacted when water restrictions are put in place. Many large facilities require water for building cooling towers, and limited supply could impact industrial processes that require cooler temperatures. Impacts from more severe restrictions could be much more far reaching and could potentially affect indoor use and industries and quality of life the rely on indoor water use.

Other industries may also face impacts from drought due to reduced water availability. Lower reservoir levels in popular recreation areas such as Horsetooth and Carter reservoirs may impede access for boats and curb recreational activities. Additionally, the rafting and kayaking industry, such as those that utilize the Cache la Poudre River, that depend on flows for business viability may face adverse impacts caused by drought and decreased water levels.

Historic, Cultural and Natural Resources

Drought can affect local wildlife by shrinking food supplies and damaging habitats. Sometimes this damage is only temporary, and other times it is irreversible. Wildlife may face increased disease rates due to limited access to food and water. Increased stress on endangered species could cause extinction. Reduced food supply can also drive wildlife into greater proximity with humans. Extreme heat can have similar direct health impacts on natural resources such as plants, wildlife, and livestock.

Drought conditions can also provide a substantial increase in wildfire risk. As plants and trees die from a lack of precipitation, increased insect infestations, and diseases – all of which are associated with drought – they become fuel for wildfire. Long periods of drought can result in more intense wildfires, which bring additional consequences for the economy, the environment, and society. Drought may also increase likelihood of wind and water erosion of soils. Wildfire and soil erosion/deposition can in turn affect water quality, further complicating drought conditions.

Future Land Use and Development

Drought vulnerability is likely to be impacted by future development. Public demand for water, which impacts water availability, can exacerbate drought. Larimer County has a semi-arid climate, which means precipitation is already limited under normal climate conditions. Per the State's Drought Mitigation and Response Plan, all of Colorado depends on precipitation for its water supply. As the gap between water

supply and water demand shrinks, departures from normal hydrologic conditions may be felt more frequently in Larimer County. Water rights issues further complicate this matter.

Risk Summary

- Larimer County has an estimated 40% chance of experiencing drought in any given year. This frequency is likely to increase with the warming climate.
- Annualized crop loss due to drought in Larimer County is estimated at $9,956
- Related hazards: Wildfire

4.3.5 Earthquake

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Earthquake	Unlikely	Significant	Catastrophic	Medium

Description

An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10 – 20 miles of the Earth's crust. Earthquakes can affect hundreds of thousands of square miles, cause extensive damage to property and infrastructure, result in loss of life and injury to hundreds of thousands of people, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake (FEMA, 1997).

Earthquake Mechanics

Regardless of the source of the earthquake, the associated energy travels in waves radiating outward from the point of release. When these waves travel along the surface, the ground shakes and rolls, ground fractures can form, and water waves may be generated. Earthquakes generally last a matter of seconds, but the waves may travel for long distances and cause damage well after the initial shaking at the point of origin has subsided.

Breaks in the earth's crust associated with seismic activity are known as "faults" and are classified as either active or inactive. Faults may be expressed on the surface by sharp cliffs or scarps or may be buried below surface deposits.

"Foreshocks," minor releases of pressure or slippage, may occur months or minutes before the actual onset of the earthquake. "Aftershocks," which range from minor to major, may occur for months after the main earthquake. In some cases, strong aftershocks may cause significant additional damage, especially if the initial earthquake impacted emergency management and response functions or weakened structures.

Factors Contributing to Damage

The damage associated with each earthquake is subject to four primary variables:

- The nature of the seismic activity
- The composition of the underlying geology and soils
- The level and quality of development of the area struck by the earthquake
- The time of day

Seismic Activity: The properties of earthquakes vary greatly from event to event. Some seismic activity is localized (a small point of energy release), while other activity is widespread (e.g., a major fault shifting or slipping all at once). Earthquakes can be very brief (only a few seconds) or last for a minute or more.

The depth of release and type of seismic waves generated also play roles in the nature and location of damage; shallow quakes will hit the area close to the epicenter harder but tend to be felt across a smaller region than deep earthquakes.

Geology and Soils: The surface geology and soils of an area influence the propagation (conduction) of seismic waves and how strongly the energy is felt. Generally, stable areas (e.g., solid bedrock) experience less destructive shaking than unstable areas (e.g., fill soils). The siting of a community or even individual buildings plays a strong role in the nature and extent of damage from an event.

Development: An earthquake in a densely populated area which results in many casualties and considerable damage may have the same magnitude as a shock in a remote area that has no direct

impacts. Building stock construction materials, type, age, and design all contribute to susceptibility for damage.

Time of Day: The time of day of an event controls the distribution of the population of an affected area. On workdays, the majority of the community will transition between work or school, home, and the commute between the two. The relative seismic vulnerability of each location can strongly influence the loss of life and injury resulting from an event.

Types of Damage

Often, the most dramatic evidence of an earthquake results from the vertical and/or horizontal displacement of the ground along a fault line. This displacement can sever transportation, energy, utility, and communications infrastructure potentially impacting numerous systems and persons. These ground displacements can also result in severe and complete damages to structures situated on top of the ground fault. However, most damage from earthquake events is the result of shaking. Shaking also produces a number of phenomena that can generate additional damage

- Additional ground displacement
- Landslides and avalanches
- Liquefaction and subsidence
- Seismic Seiches

Shaking: During minor earthquake events, objects often fall from shelves and dishes rattle. In major events, large structures may be torn apart by the forces of the seismic waves. Structural damage is generally limited to older structures that are poorly maintained, poorly constructed, or improperly (or not) designed for seismic events. Un-reinforced masonry buildings and wood frame homes not anchored to their foundations typically sustain the worst damage from earthquakes.

Loose or poorly secured objects also pose a significant hazard when they are loosened or dropped by shaking. These "non-structural falling hazard" objects include bookcases, heavy wall hangings, and building facades. Home water heaters pose a special risk due to their tendency to start fires when they topple over and rupture gas lines. Crumbling chimneys may also be responsible for injuries and property damage.

Dam and bridge failures are significant risks during stronger earthquake events, and due to the consequences of such failures, may result in considerable property damage and loss of life. In areas of severe seismic shaking hazard, shaking Intensity levels of VII or higher (see Table 35) can be experienced even on solid bedrock. In these areas, older buildings especially are at significant risk.

Ground Displacement: Ground displacement can also occur due to shaking, resulting in similar damages as mentioned previously.

Landslides and Avalanches: Even small earthquake events can cause landslides. Rock falls are common as unstable material on steep slopes is shaken loose, but significant landslides or even debris flows can be generated if conditions are ripe. Roads may be blocked by landslide activity, hampering response and recovery operations. Avalanches are possible when the snowpack is sufficient.

Liquefaction and Subsidence: Soils may liquefy and/or subside when impacted by the seismic waves. Fill and previously saturated soils are especially at risk. The failure of the soils has the potential to cause widespread structural damage. The oscillation and failure of the soils may result in increased water flow and/or failure of wells as the subsurface flows are disrupted and sometimes permanently altered. Increased flows may be dramatic, resulting in geyser-like waterspouts and/or flash floods. Similarly, septic systems may be damaged creating both inconvenience and health concerns.

Seiches: Seismic waves may rock an enclosed body of water (e.g., lake or reservoir), creating an oscillating wave referred to as a "seiche." Although not a common cause of damage in past Colorado earthquakes, there is a potential for large, forceful waves similar to a tsunami ("tidal waves") to be generated on the large reservoirs. Such a wave would be a hazard to shoreline development and pose a significant risk on dam-created reservoirs. A seiche could either overtop or damage a dam leading to downstream flash flooding.

Environmental impacts of earthquakes can be numerous, widespread, and devastating, particularly if indirect impacts are considered. Some examples of impacts are listed below:

- Induced flooding and landslides
- Poor water quality
- Damage to vegetation
- Breakage in sewage or toxic material containments

Past Occurrences

Earthquakes are relatively infrequent in Colorado and records of historical earthquakes in and around Larimer County are limited. Table 4-28 provides a list of Colorado's larger earthquakes recorded since 1870.

Table 4-28 Notable Earthquake Events in Colorado (1870 – 2020)

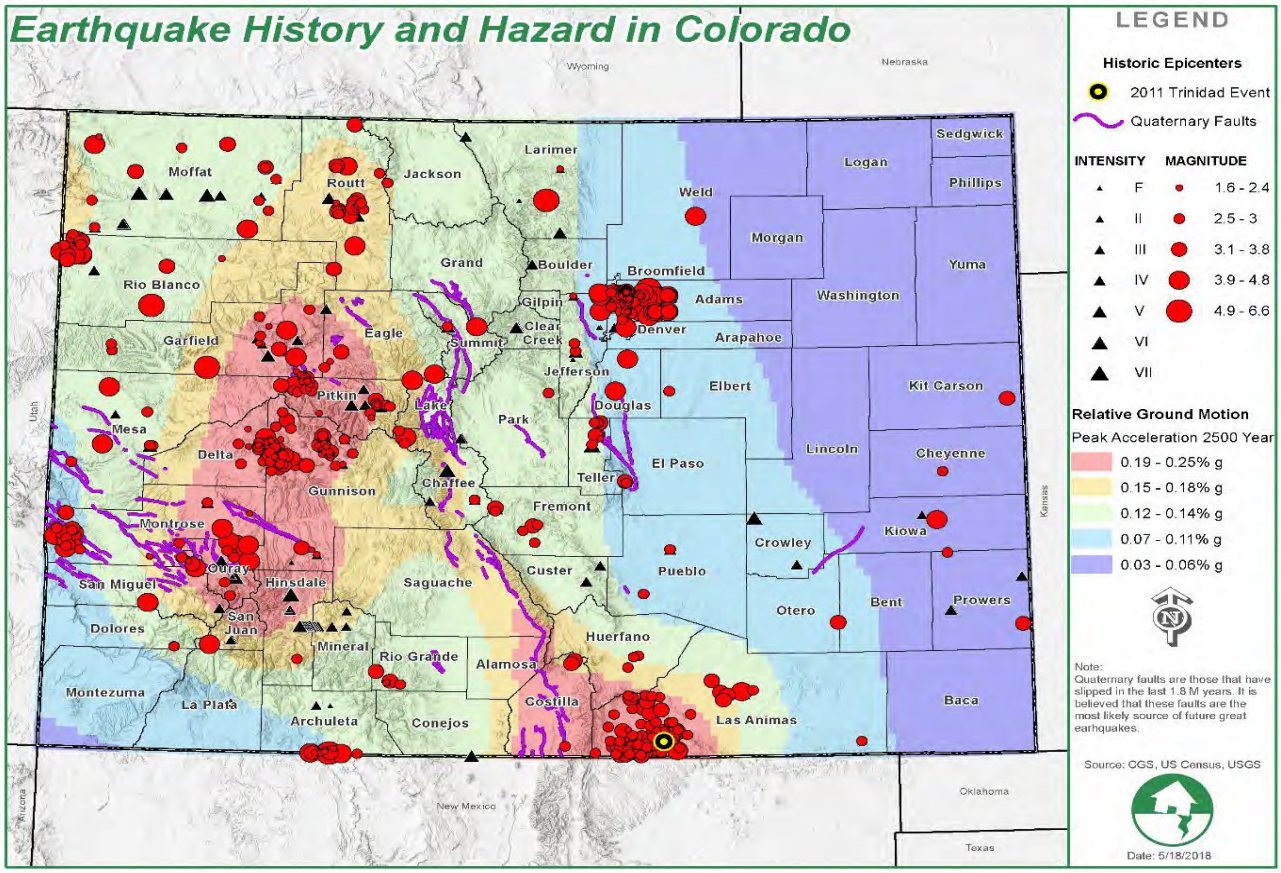
Date	Location	Magnitude	Intensity
1870	Pueblo/Ft. Reynolds	-	VI
1871	Lily Park, Moffat County	-	VI
1880	Aspen	-	VI
1882	Larimer County	6.6*	VII
1891	Axial Basin (Maybell)	-	VI
1901	Buena Vista	-	VI
1913	Ridgeway Area	-	VI
1944	Montrose/Basalt	-	VI
1955	Lake City	-	VI
1960	Montrose/Ridgeway	5.5	V
1966	NE of Denver	5.0	V
1966	CO-NM border, near Dulce, NM	5.5	VII
1967	NE Denver	5.3	VII
1967	NE Denver	5.2	VI
2011	Southwest of Trinidad	5.3	VIII

Source: Colorado Geological Survey, *Estimated, based on historical felt reports

Colorado's largest earthquake in modern history was believed to have originated in the foothills of Larimer County on November 7, 1882. The location of this earthquake has been the subject of much debate and controversy over the years, but the general scientific consensus was it occurred to the west of Fort Collins and near Estes Park. While the region was less populated and developed at the time, the earthquake was felt across Colorado into Wyoming and parts of Utah, with Intensity levels of VII.

The map below shows the location of past earthquake epicenters and Quaternary age faults in Colorado, as well as the Peak Ground Acceleration from the 2500 year (2% in 50 years) probabilistic shaking.

Figure 4-13 Colorado Seismic Hazard Map



Source: Colorado State Hazard Mitigation Plan 2018

The most economically damaging earthquake in Colorado's history occurred on August 9th, 1967 in the Denver metro area. The 5.3 magnitude earthquake caused more than a million dollars of damage in Denver and the northern suburbs. The August 1967 earthquake was followed by an earthquake of magnitude 5.2 three months later in November 1967. Although these two earthquake events cannot be classified as "major earthquakes" they are significant because of their location along the Front Range Urban Corridor, an area where nearly 75 percent of Colorado residents and many critical facilities are located. Historically, earthquake risk in Colorado has been rated lower than most subject experts consider justified. It is critically important that local emergency managers in and around Larimer County become fully aware of the size and consequences of an earthquake that could occur.

Location

Studies indicate that there are about 100 potentially active fault lines in Colorado. Over 500 earthquake tremors of magnitude 2.5 or higher have been recorded across the state since 1870. It is likely that more earthquakes of similar magnitude occurred during that time but were not recorded due to low population densities and limited coverage of sensors across most of the state. For comparison, over 20,500 similarly sized events have been recorded in the State of California since 1870.

Relative to other western states, Colorado's earthquake risk is higher than Kansas or Oklahoma, lower than Utah, and much lower than Nevada and California (Colorado OEM, 2003). Despite Colorado's lower earthquake risk, based on geologic observations and characteristics of faults located in the region,

seismologists predict that Colorado will indeed experience a magnitude 6.5 earthquake at some point in the future.

Earthquakes are extremely difficult to predict, and their occurrence rate is determined in one of two ways. If geologists can find evidence of distinct, datable earthquakes in the past, the number of these ruptures is used to define an occurrence rate. If evidence of ruptures is not available, geologists estimate fault slip rates from accumulated scarp heights and estimated date for the oldest movement on the scarp. Because a certain magnitude earthquake is likely to produce a displacement (slip) of a certain size, we can estimate the rate of occurrence of earthquakes of that magnitude.

Recurrence rates are different for different assumed magnitudes thought to be "characteristic" of that fault type. Generally, a smaller magnitude quake will produce a faster recurrence rate, and for moderate levels of ground motion, a higher hazard risk. Future earthquakes are assumed to be likely to occur where earthquakes have produced faults in the geologically recent past. Quaternary faults are faults that have slipped in the last 1.8 million years and it is widely accepted that they are the most likely source of future large earthquakes. For this reason, quaternary faults are used to make fault sources for future earthquake models.

Magnitude/Severity

The impact an earthquake event has on an area is typically measured in terms of earthquake intensity. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. A detailed description of the Modified Mercalli Intensity Scale is shown in the table below.

Table 4-29 Modified Mercalli Intensity Scale, PGA, and Richter Scale Comparison

SCALE	INTENSITY	DESCRIPTION OF EFFECTS	PGA (g)	RICHTER SCALE MAGNITUDE
I	Instrumental	Detected only on seismographs	< 0.0017	< 4.2
II	Feeble	Some people feel it	0.0018 – 0.014	
III	Slight	Felt by people resting; like a truck rumbling by		
IV	Moderate	Felt by people walking	0.015 – 0.039	
V	Slightly Strong	Sleepers awake; church bells ring	0.040 – 0.092	< 4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	0.093 – 0.18	< 5.4
VII	Very Strong	Mild alarm, walls crack, plaster falls	0.19 – 0.34	< 6.1
VIII	Destructive	Moving cars uncontrollable, masonry fractures, poorly constructed buildings damaged	0.34 – 0.65	< 6.9
IX	Ruinous	Some houses collapse, ground cracks, pipes break open	0.65 – 1.24	
X	Disastrous	Ground cracks profusely, many buildings destroyed, liquefaction and landslides widespread	> 1.24	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse, roads, railways, pipes and cables destroyed, general triggering of other hazards	> 1.24	< 8.1
XII	Catastrophic	Total destruction, trees fall, ground rises and falls in waves	> 1.24	> 8.1

Source: USGS

Another way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this manner. PGA represents the rate in change of motion of the earth's surface during an earthquake as a percent of the established rate of acceleration due to gravity. PGA can be partly determined by what soils and bedrock characteristics exist in the region. Unlike the Richter scale, PGA is not a measure of the total

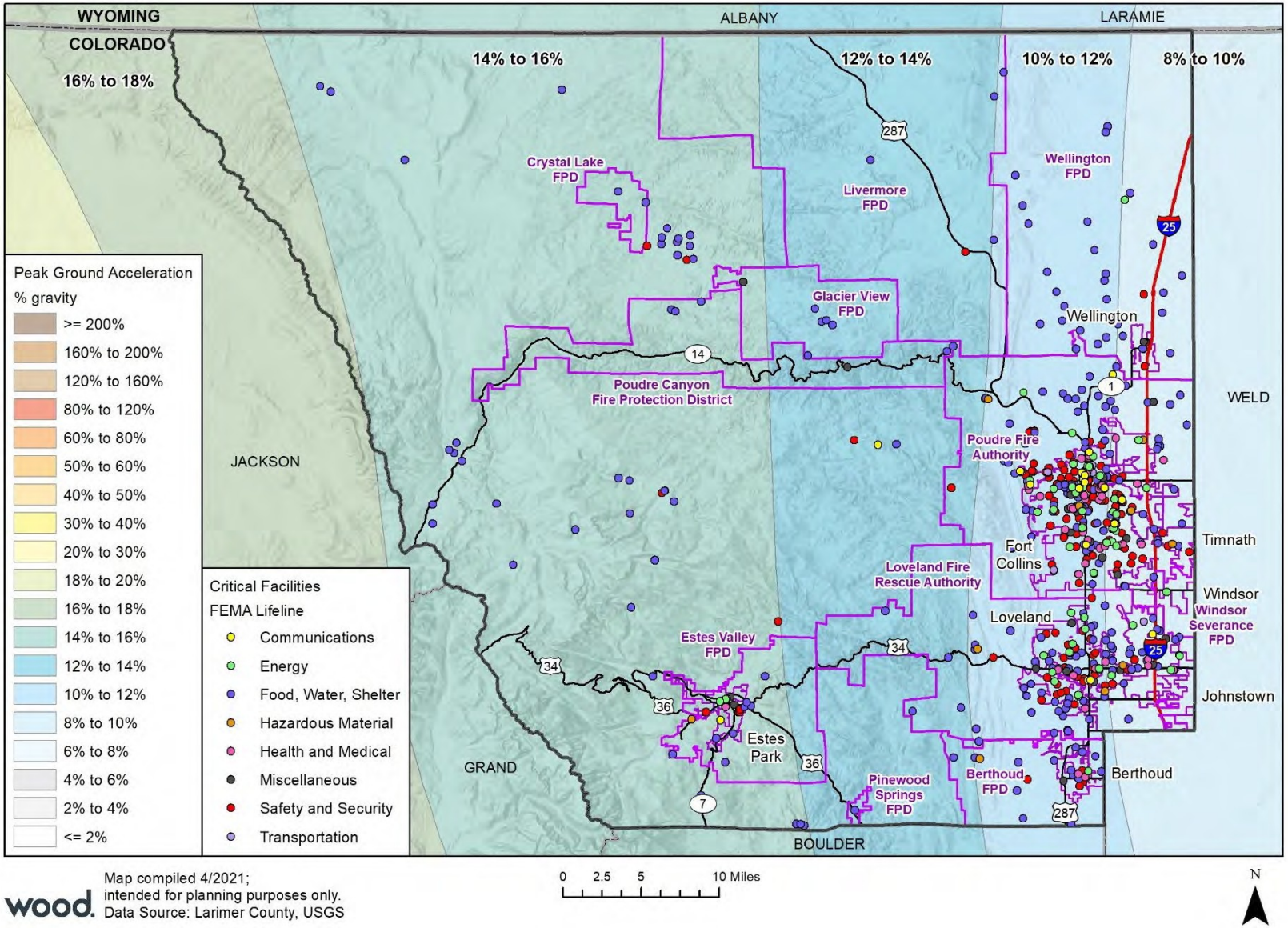
energy released by an earthquake, but rather of how hard the earth shakes at a given geographic area (the intensity). PGA is measured by using instruments including accelerographs and correlates well with the Mercalli scale.

When the peak ground acceleration nears 0.04 – 0.092g, an earthquake can be felt by people walking outside. As PGA nears 0.19 – 0.34g the intensity is considered to be very strong. At this level, plaster can break off and fall away from structures and cracks in walls often occur. PGA magnitudes of 1.24g are considered to be very disastrous. This magnitude of ground acceleration represents an earthquake of roughly 6.9 to 8.1 on the Richter Scale. Figure 4-14 shows estimated Peak Ground Acceleration from a 2500 year earthquake.

Speed of Onset: Earthquakes typically occur quickly with little to no warning; foreshocks may be a precursor to a larger event.

Duration: Earthquakes occur quickly and suddenly, and the duration of the event is typically measured in seconds except for the larger earthquakes which may last 1-3 minutes. Aftershocks can occur in the days, weeks and months following a significant earthquake and continue to cause damage to weakened buildings and infrastructure, even though typically smaller in magnitude.

Figure 4-14 Larimer County 2500 Year Earthquake Peak Ground Acceleration



Probability of Future Occurrences

Even though the seismic hazard risk in Larimer County is low to moderate, it is likely that earthquakes will occur in the county in the future. It is reasonable to expect future earthquakes as large as magnitude 6.5, the largest event on record in Colorado. Calculations based on the historical earthquake records and geological evidence of recent fault activity suggest that an earthquake of magnitude 6 or greater may be expected somewhere in Colorado every several centuries. Earthquakes are not a seasonal hazard, and thus can be experienced year-round. This fact presents its own set of planning and preparedness concerns.

Ultimately, the probability of an earthquake occurring in Larimer County is low. Additionally, if an earthquake were to occur in the near future it is likely to be of a low magnitude, with expected damages to property and people to be minimal. History has shown, however, that Larimer County and Colorado are at risk to a larger magnitude seismic event. Should that type of event occur, major damages and losses should be expected. This fact makes these low probability, high impact hazards a challenge to deal with when planning a mitigation strategy to combat all hazards faced by a community.

Climate Change Considerations

Climate change is not expected at this time to have any impacts on geological hazards such as earthquakes. There is potential for increased heat and reduced soil moisture to contribute to the instability of regional soils. In theory, these subtle changes to the surface of the earth may affect the damage profile of local earthquake events in the future. However, it is unlikely that earthquake events in Larimer County will be affected by climate change in a measurable way.

Vulnerability Analysis

As noted above, earthquakes strike with little to no warning and can have multiple impacts on an area. After-effects from an earthquake can include impacted roadways, downed power and communication lines, fires, and damages to structures (especially poorly built, or those already in disrepair).

The most appropriate risk assessment methodology for seismic hazards involves scenario modeling using FEMA's HAZUS loss estimation software. HAZUS is a regional earthquake loss estimation model developed by FEMA and the National Institute of Building Science. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake loss at a regional scale. HAZUS is a very useful planning tool because it provides a standard method for estimating earthquake damage, loss of function of infrastructure, and casualties, among many other factors. There are three levels of HAZUS analysis, from Level 1, which uses the default FEMA-derived datasets and damage functions, to Level 3, which uses independently compiled and accurately verified structure and infrastructure inventories and damage functions.

Utilizing HAZUS 4.2, FEMA's loss estimation and hazard modeling software, a Level 1 earthquake loss analyses was conducted for Larimer County, based on an inventory database compiled at a national level aggregated to Census Tracts. As with any model there are uncertainties, and the results should be considered approximate for planning purposes.

To evaluate potential losses associated with earthquake activity in the planning area, a HAZUS 2,500-year probabilistic scenario was run for the entire County. The methodology utilizes probabilistic seismic hazard contour maps developed by the U.S. Geological Survey (USGS). The 2,500-year return period analyzes ground shaking estimates from the various seismic sources in the area with a 2 percent probability of being exceeded in 50 years.

People

Casualties: Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related injuries result from collapsing walls, flying glass, and falling objects as a result of the ground shaking, or people trying to move more than a few feet during the shaking. HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four severity levels that describe the extent of the injuries. The levels are described as follows:

- Severity Level 1: Injuries will require medical attention, but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening.
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is at its maximum. The 2:00 PM estimate considers that the educational, commercial, and industrial sector loads are at their maximum. The 5:00 PM represents peak commute time. The model shows that the 2:00 PM would result in the most casualties. Most of these would be minor injuries (95 Level 1 and 13 Level 2), and only 1 hospitalization (Level 3) and 2 fatalities (Level 4) are estimated.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates that approximately 199 households will be displaced due to the earthquake, and 124 people will seek temporary shelter in public shelters.

General Property

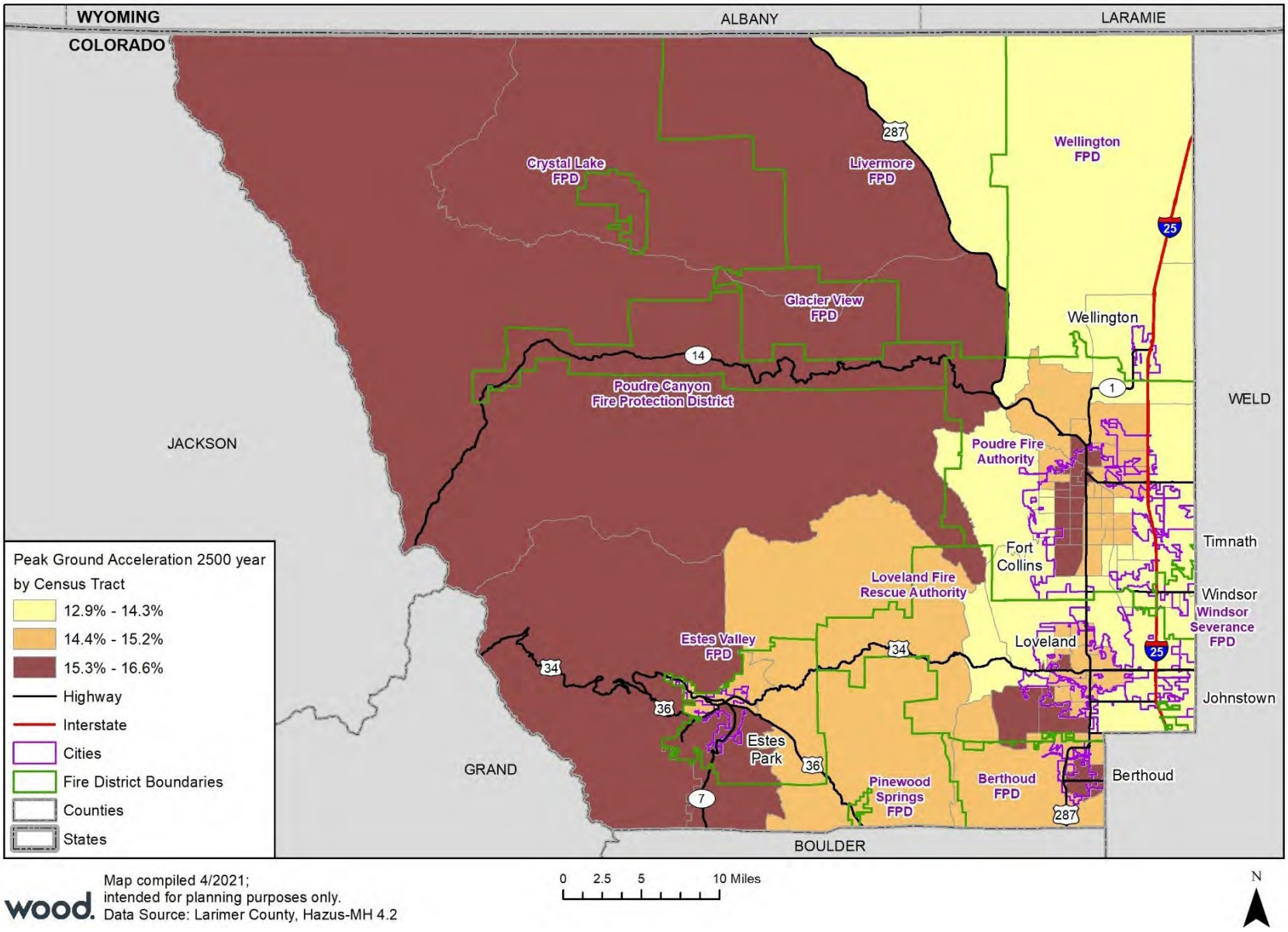
There are an estimated 119,000 buildings in Larimer County with a total building replacement value (excluding contents) of $33.6 Billion. In terms of building construction types found in the HAZUS region, wood frame construction makes up 68% of the building inventory.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents.

The categories of damages defined by HAZUS are:

- **Slight** damage includes diagonal hairline fractures on most shear wall surfaces and hairline cracks on most infill walls.
- **Moderate** damage includes cracks on most walls and failure of some shear walls.
- **Extensive** damage means that most shear wall surfaces in the structure have reached or exceeded their capacity exhibited by large, through-the-wall diagonal cracks.
- **Complete** damage means that the structure has collapsed or is in danger of collapse.

Figure 4-15 Larimer County HAZUS 2500 Year Earthquake Peak Ground Acceleration



HAZUS estimates that about 4,610 buildings will be at least moderately damaged. This is over 4% of the total number of buildings in the County. There are 26 buildings that will be damaged beyond repair. Most of the damage modeled as extensive and complete is associated with unreinforced masonry buildings.

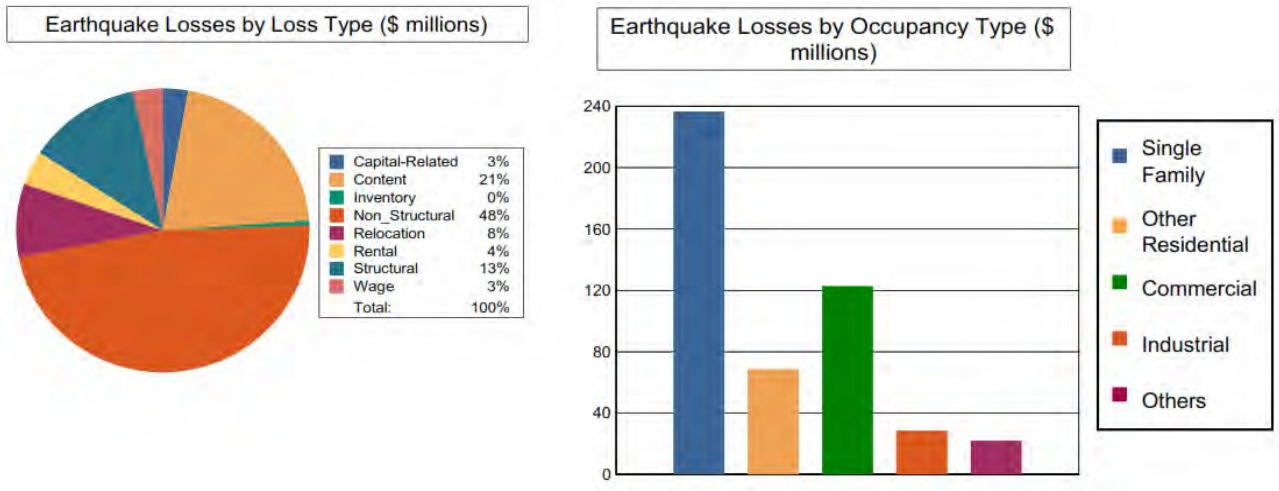
The total building-related losses were $478 million, with detail shown in Table 4-30. By far, the largest loss was sustained by the residential occupancies which made up over 64% of the total loss.

Table 4-30 Building-Related Economic Loss Estimates in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	1.1339	13.5597	0.5605	0.7706	16.0247
	Capital-Related	0.0000	0.4824	12.1244	0.3330	0.1937	13.1335
	Rental	5.6459	4.0181	7.7680	0.2717	0.3512	18.0549
	Relocation	19.9172	3.5030	11.4236	1.6197	2.8317	39.2952
	Subtotal	**25.5631**	**9.1374**	**44.8757**	**2.7849**	**4.1472**	**86.5083**
Capital Stock Losses							
	Structural	32.2455	7.7486	13.5460	3.5483	3.2182	60.3066
	Non_Structural	127.6113	40.0686	39.2886	12.4060	8.6846	228.0591
	Content	51.0728	11.5558	24.4349	8.3652	5.7904	101.2191
	Inventory	0.0000	0.0000	0.6015	1.4282	0.1328	2.1625
	Subtotal	**210.9296**	**59.3730**	**77.8710**	**25.7477**	**17.8260**	**391.7473**
	Total	**236.49**	**68.51**	**122.75**	**28.53**	**21.97**	**478.26**

Source: HAZUS 4.2 Global Summary Report, Wood analysis

Figure 4-16 Earthquake Losses by Type



Source: HAZUS 4.2 Global Summary Report, Wood analysis

The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake. 18% of the estimated losses were related to business interruption.

Critical Facilities and Infrastructure

Critical Facility Inventory: HAZUS breaks critical facilities into two groups: essential facilities and high potential loss (HPL) facilities. Essential facilities include hospitals, medical clinics, schools, fire stations,

police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

Essential Facility Damage: The model estimates the region had 725 hospital beds total, and due to the earthquake only 621 (86%) would be available for use. After one week 95% of the beds will be back in service. The model did not predict there would be any damage to schools, police, fire stations, or EOCs.

Transportation Systems Inventory: Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are 7 transportation systems that include highways, railways, light rail, bus, ports, ferry, and airports. The transportation systems inventory includes over 339 miles of highways and 546 bridges. The model estimated approximately $3 million in damage to transportation systems, mostly to railways, bridges, and an airport facility.

Utility Lifeline Systems Inventory: There are 6 utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power, and communications. The replacement value of the utility lifeline systems combined is estimated to be $6.4 billion including 16,994 miles of pipes, and related economic losses to these systems would be around $229 million, with the largest losses to wastewater and electrical power systems.

The expected utility system facility damages in terms of Economic losses in millions of dollars are found in Table 4-31.

Table 4-31 Utility System Economic Losses in Millions of Dollars

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	64.6020	2.6443	4.09
	Distribution Lines	341.3948	0.4453	0.13
	Subtotal	**405.9968**	**3.0896**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	4288.4359	175.0048	4.08
	Distribution Lines	204.8369	0.2237	0.11
	Subtotal	**4493.2728**	**175.2285**	
Natural Gas	Pipelines	23.4846	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Distribution Lines	136.5579	0.0766	0.06
	Subtotal	**160.0425**	**0.0766**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	0.0000	0.0000	0.00
	Subtotal	**0.0000**	**0.0000**	
Electrical Power	Facilities	1385.6710	51.5307	3.72
	Subtotal	**1385.6710**	**51.5307**	
Communication	Facilities	0.6790	0.0265	3.90
	Subtotal	**0.6790**	**0.0265**	
	Total	**6,445.66**	**229.95**	

Source: HAZUS 4.2 Global Summary Report - analysis by Wood

Economy

The total economic loss estimated for the earthquake is $711 million, which includes building and lifeline related losses based on the County's available inventory. $86 million is estimated to result from business interruption.

Historic, Cultural and Natural Resources

Earthquake effects on the environment, natural resources, and historic and cultural assets would likely be minor. The biggest impact would likely be on the older historic properties constructed with unreinforced masonry in Estes Park, Loveland, and Fort Collins.

Future Land Use and Development

With the unpredictable nature of earthquake epicenter locations, it is not feasible to identify specific areas where development may exacerbate the risk to an earthquake. It should be assumed that all development increases the risk to the County from the threat of earthquakes. As population and development continue to expand in Larimer County, continued enforcement of the unified construction code has great potential to mitigate increasing vulnerability and development pressure.

Standard building codes have the opportunity to provide Larimer County with reasonable guidance for development throughout unincorporated and incorporated areas. Contractors and builders should be aware of applicable codes and regulations designed to reduce losses sustained by new and existing construction due to seismic hazards.

For example, the light weight of wood frame buildings results in less force from inertia, which means less damage. Wood's natural flexibility also is an advantage when seismic forces are brought to bear and the nailed joints in wood frame buildings dissipate energy and motion. Wood's inherent earthquake resistance must be accompanied by design and construction techniques that take advantage of those characteristics.

Structural wood panels nailed to wall framing add rigid bracing, help resist lateral loads and help tie framing members together. Bolted connections at the sill plate/foundation joint help keep the structure in one spot. Securely connected wall, floor, and roof framing also help tie a structure together and make it a single, solid structural unit. Proper connections will do more to hold a house together during an earthquake than any other single seismic design element.

As development grows in the County and its municipalities, it will be important for citizens to consult with local building codes as modern building codes generally require seismic design elements for new construction.

Risk Summary

Earthquakes are relatively uncommon in Larimer County and the probability is low that they will occur regularly in the future. However, if an event was to occur within the county, there is potential for significant structural damage to occur. HAZUS does not break out loss by jurisdiction, but areas in Larimer County with high population densities and large numbers of structures and critical facilities are expected to experience greater damage and loss from an earthquake event. This includes jurisdictions located primarily in the southern, central eastern and southwestern portion of the county, including:

- Fort Collins
- Loveland
- Windsor
- Berthoud
- Johnstown
- Estes Park

Communities located in the eastern part of the County, may experience differential impacts from an earthquake event if transportation or utility infrastructure is damaged and prevents communities from responding or evacuating.

- The overall significance of earthquakes is Moderate due to the potential for high economic losses.
- A large earthquake occurring in or near Larimer County could result in injuries, property damage, and disruption of normal government, community services and activities, and economic and business activity.

- The HAZUS 2,500-year probabilistic scenario modeling of worst-case ground shaking estimates approximately $711 M in total economic damages, but relatively minor casualties and sheltering needs. Economic losses to utility lifeline systems would be around $229 million, with the largest losses to wastewater and electrical power systems.
- Earthquakes can cause many cascading effects such as fires, dam incidents, hazardous materials spills, landslide and debris flows, utility disruptions, and transportation emergencies. Ground shaking may cause seiches, the rhythmic sloshing of water, in the lakes and reservoirs in the county.
- Related hazards: Landslide/Rockslide, Dam Incident.

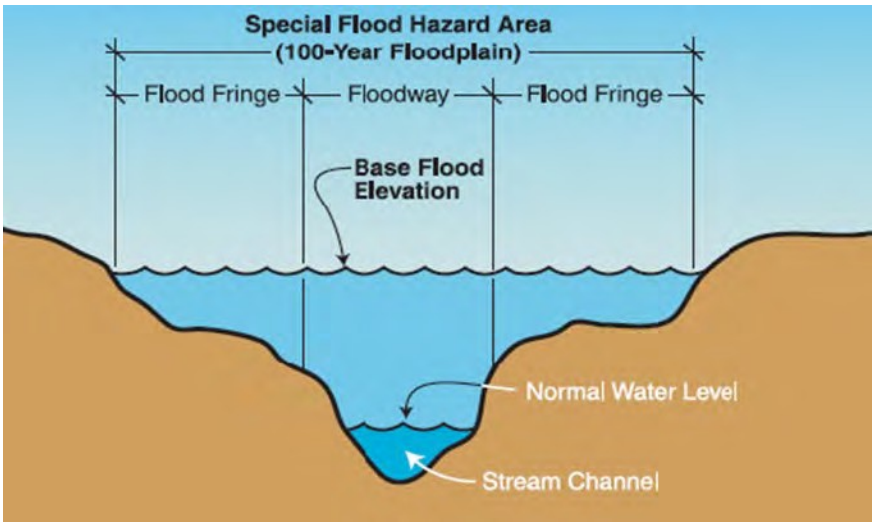
4.3.6 Flood

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Flood	Highly Likely	Significant	Catastrophic	High

Description

A flood is a naturally occurring event for rivers and streams and occurs when a normally dry area is inundated with water. Excess water from snowmelt or rainfall accumulates and overflows onto the stream banks and adjacent floodplains. As illustrated in Figure 4-17 below, floodplains are lowlands adjacent to rivers, streams, and creeks that are subject to recurring floods. Flash floods, usually resulting from heavy rains or rapid snowmelt, can flood areas not typically subject to flooding including urban areas. Additionally, extreme cold temperatures can cause streams and rivers to freeze, causing ice jams and creating flood conditions.

Figure 4-17 Floodplain Terminology



Floods are considered hazards when people and property are affected. Nationwide, hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories. Most injuries and deaths from flooding happen when people are swept away by flood currents and most property damage results from inundation by sediment-filled water. Fast-moving water can wash buildings off of their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can also cause extensive damage. Flooding can cause extensive damage to crop lands and bring about the loss of livestock. Several factors determine the severity of floods including rainfall intensity and duration, topography, and ground cover.

Riverine flooding originates from a body of water, typically a river, creek, or stream, as water levels rise onto normally dry land. Water from snowmelt, rainfall, freezing streams, ice flows, or a combination thereof, causes the river or stream to overflow its banks into adjacent floodplains. Winter flooding usually occurs when ice in the rivers creates dams or streams freeze from the bottom up during extreme cold spells. Spring flooding is usually the direct result of melting winter snowpack, heavy spring rains, or a combination of the two.

Flash floods can occur anywhere when a large volume of water flows or melts over a short time period, usually from slow moving thunderstorms or rapid snowmelt. Because of the localized nature of flash floods, clear definitions of hazard areas do not exist. These types of floods often occur rapidly with significant impacts. Rapidly moving water, only a few inches deep, can lift people off their feet, and only a depth of a foot or two, is needed to sweep cars away. Most flood deaths result from flash floods.

Previous flash flooding events have occurred within Larimer County. Although data does not currently exist to perform robust assessments of flash flood risk within Larimer County, local jurisdictions have expressed a desire and a need for data and information specifically related to flash flooding so that appropriate mitigation strategies can be identified and implemented.

Urban flooding is the result of development and the ground's decreased ability to absorb excess water without adequate drainage systems in place. Typically, this type of flooding occurs when land uses change from fields or woodlands to roads and parking lots. Urbanization can increase runoff two to six times more than natural terrain. The flooding of developed areas may occur when the amount of water generated from rainfall and runoff exceeds a storm water system's capability to remove it.

Stream bank erosion is measured as the rate of the change in the position or horizontal displacement of a stream bank over a period of time. It is generally associated with riverine flooding and may be exacerbated by human activities such as bank hardening and dredging.

Ice jams are stationary accumulations of ice that restrict flow through a waterway. Ice jams can cause considerable increases in upstream water levels, while at the same time, downstream water levels may drop. Types of ice jams include freeze up jams, breakup jams, or combinations of both. When an ice jam releases, the effects downstream can be similar to that of a flash flood or dam failure. Ice jam flooding generally occurs in the late winter or spring.

Flooding that results from a dam failure or incident is covered in Section 4.4.3 **Dam Inundation**.

Flooding events are typically measured in terms of magnitude and the statistical probability that they will occur. The 1% annual chance flood event is the standard national measurement for flood mitigation and insurance. A 1% annual chance flood, also known as the '100-year flood', has a 1 in 100 chance of being equaled or exceeded in any 1 year and has an average recurrence interval of 100 years. It is important to note that this recurrence interval is an average; it does not necessarily mean that a flood of such a magnitude will happen exactly every 100 years. Sometimes, only a few years may pass between one 1% annual chance flood and another while two other 1% annual chance floods may be separated by 150 years. The 0.2% annual chance flood event, or the '500-year flood', is another measurement which represents a 0.2% chance (or 1 in 500 chance) of occurring in a given year.

Past Occurrences

Seasonally, Larimer County is confronted with the possibility of flooding and flood-related hazards. Floods have the potential to inflict tremendous damages with significant losses of life and property. They can also pose a threat to the health, safety, and welfare of Larimer County citizens. Previous flooding events in the region have caused thousands of dollars in damage in just a few hours or days, or even millions of dollars in severe floods such as the 2013 floods. Current development and population growth trends necessitate a heightened awareness that the impact of flooding may likely increase in Larimer County over time.

Flood events impact businesses by damaging property and by interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs or permanently. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. Responses to business damages can include funding to assist owners in elevating or relocating flood-prone business structures.

During flooding events, homes, businesses, and people face the threat of explosions and fires caused by leaking gas lines along with the possibility of being electrocuted. Domestic and wild animals forced out of their homes and brought into contact with humans by floodwaters can also pose a threat. In rural areas, property damage caused by flooding can be devastating to ranchers and farmers. When flooding occurs during the growing season, farmers can suffer widespread crop loss. Stock growers may lose livestock if they are unable to find safety from rising floodwaters. Flooding may also cause damage to pastureland, fences, barns, and outbuildings.

Publicly owned facilities are a key component of daily life for all citizens of the county. Public buildings are of particular importance during flood events because they house critical assets for government response and recovery activities. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of the government to deliver services. Loss of power and communications can be expected. Drinking water and wastewater treatment facilities may be temporarily out of operation.

Mitigation against flood events is accomplished through sensible floodplain management and regulations as well as identifying flood prone areas, tributary watersheds that experience instability or sediment loading problems, and channel instability hazards. This involves strategies to modify flooding and to modify infrastructure to decrease the likelihood of damage. To modify the impact of flooding, measures must be taken to decrease susceptibility to flood damage and disruptions. Natural and cultural resources must also be protected and managed. Coordination with mitigation plans by Floodplain Managers will increase effectiveness of flood mitigation projects. City and County Planners will be valuable resources to incorporate flood mitigation plans into their respective plans.

The National Centers for Environmental Information (NCEI) documents significant flood events going back to 1950. Table 4-32 provides a history of major flood events that affected Larimer County between 1996 and 2020. The database does not show any new flood events since the 2016 plan update.

Table 4-32 Larimer County Historical Flood Events (1996 – 2020)

Date	Hazard Type	Injuries	Deaths	Property Damage	Crop Damage
9/14/1996	Flood	0	0	0	0
6/2/1997	Flash Flood	0	0	$500,000	0
6/13/1997	Flood	0	0	0	0
7/28/1997	Flood	0	0	0	0
7/28/1997	Flash Flood	5	40	$190,000,000	0
8/4/1997	Flash Flood	0	0	0	0
9/1/1998	Flash Flood	0	0	0	0
4/28/1999	Flood	0	0	0	0
5/1/1999	Flood	0	0	$200,000	0
8/4/1999	Flood	0	0	0	0
8/16/2000	Flash Flood	0	0	0	0
7/12/2001	Flash Flood	0	0	0	0
6/18/2003	Flash Flood	0	0	0	0
8/18/2004	Flash Flood	0	0	0	0
6/3/2005	Flash Flood	0	0	0	0
8/2/2007	Flash Flood	0	0	$20,000	0
6/22/2009	Flash Flood	0	0	$10,000	$50,000
7/4/2010	Flash Flood	0	0	$10,000	$5,000
7/6/2012	Flash Flood	0	0	$20,000	$20,000

Date	Hazard Type	Injuries	Deaths	Property Damage	Crop Damage
7/7/2012	Flash Flood	0	0	$10,000	$25,000
7/16/2012	Flash Flood	0	0	$15,000	$10,000
7/27/2012	Flash Flood	0	0	$15,000	$10,000
7/5/2013	Flash Flood	0	0	$25,000	0
7/12/2013	Flash Flood	0	0	$10,000	$10,000
7/18/2013	Flash Flood	0	0	$10,000	$5,000
7/25/2013	Flash Flood	0	0	0	0
9/6/2013	Flash Flood	0	0	$5,000	$5,000
9/11/2013	Flash Flood	0	0	0	0
9/12/2013	Flood	2	0	$109,000,000	0
9/14/2013	Flash Flood	0	0	0	0
5/23/2014	Flash Flood	0	0	$10,000	0
5/23/2014	Flash Flood	0	0	$15,000	0
6/24/2014	Flash Flood	0	0	$10,000	$5,000
7/13/2014	Flash Flood	0	0	$10,000	$5,000
7/14/2014	Flash Flood	0	0	$10,000	$10,000
7/29/2014	Flash Flood	0	0	$25,000	$50,000
7/29/2014	Flash Flood	0	0	$10,000	$20,000
5/9/2015	Flood	0	0	$100,000	$10,000
6/4/2015	Flash Flood	0	0	$15,000	$10,000
6/11/2015	Flash Flood	0	0	$10,000	0
	TOTAL:	7	40	$300,075,000	$255,000

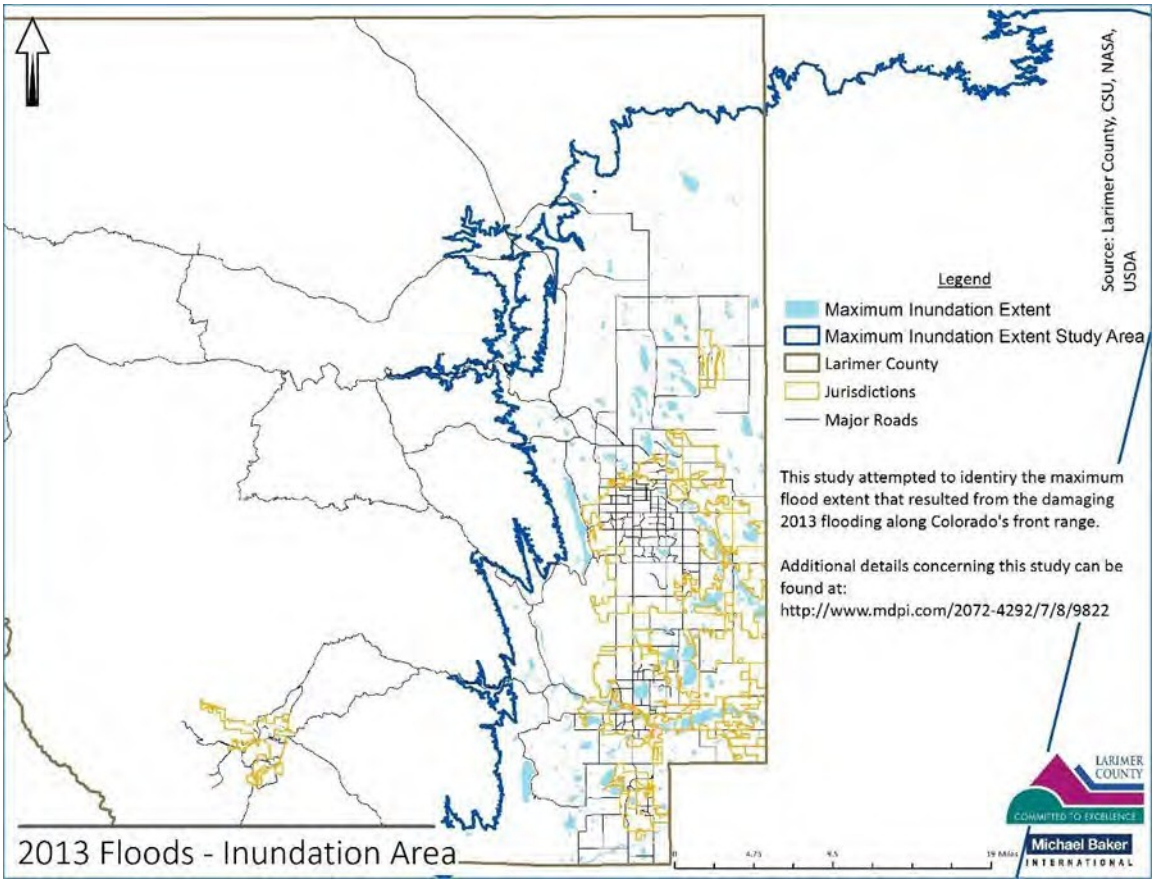
Source: NOAA (NCEI Storm Events Database)

Notable flood events from 1864 to 2013 are discussed below by the rivers and creeks that have been the sources of flood problems in the past. These events include event-related injuries, deaths, and property or crop damages as applicable.

- **2013 Colorado Floods** - The most extensive and damaging flooding event to collectively impact the State of Colorado occurred during September 2013. During the week beginning on September 9th, a slow moving cold front circulated over the state, clashing with warm, humid monsoonal air from the south. The extended storm duration escalated flooding as soils became saturated, thereby, increasing runoff potential. The flooding resulted in considerable changes to channel geometry and alignment, damage to property infrastructure, and caused 10 fatalities. Total damage was estimated at over $2 billion.
- **Big Thompson River** – One of the most significant, and deadly, flood disasters in the State's history occurred within the county on the Big Thompson River, July 31 to August 1, 1976. Intense precipitation over an approximate 60-square-mile area between Lake Estes and Drake, with rainfall depths up to 12 inches, generated a flood discharge of approximately 31,200 cubic feet per second (cfs) at the mouth of the canyon. The 1976 flood claimed 144 lives and caused $35 Million in damages. Floods on the Big Thompson River caused damage in 1864 and 1894, but no discharge or damage estimates were recorded. Floods also occurred on the Big Thompson River in 1919, 1923, 1945, and 1949 with discharges of 8,000, 7,000, 7,600, and 7,750 cfs, respectively.
- **Big Thompson River, Buckhorn Creek** - On August 2 and 3, 1951, intense rains over much of the Big Thompson River basin caused a dam to break on the Buckhorn Creek on August 3.
- **Buckhorn Creek** – The largest floods were in 1923, 1938, 1948, and 1951 with discharges of 10,500, 10,200, 5,750 and 14,000 cfs, respectively.

- **Boxelder Creek** – Floods have been recorded in the Boxelder Creek watershed on 13 occasions since 1900.
- **Cooper Slough** – The Cooper Slough floodplain is predominantly flat. Channel capacity is limited in places, promoting overbank flows and divided-flow conditions. Channel flow is restricted by relatively small culverts at Vine Drive, the Colorado and Southern Railroad (C&SRR), and State Highway 14. Due to an undersized culvert at State Highway 14, a ponded area will form north of the highway, and eventually overtop the highway during storm events. In places, the width of the l00-year floodplain averages over 1,000 feet, although the depth of flooding is generally less than 3 feet, except in areas where ponding occurs.
- **Dry Creek** – In 1904, a flood occurred that resulted in the drowning death of a child when floodwaters overtopped the Eaton Ditch (which intercepts Dry Creek near Willox Road). Numerous irrigation canals cross the Dry Creek channel and directly intercept drainage flows. In the past, much of the excess drainage in the lower Dry Creek basin (below Eaton Ditch) was intercepted by irrigation canals. However, the impact of development has increased the magnitude and frequency of drainage flow, and many of the canals no longer have the capacity to intercept the increased drainage flows. Several of the canals, including the Larimer and Weld Canal (Eaton Ditch), Larimer County Canal, Terry Inlet, Poudre Valley Canal, and North Poudre Ditch, have large enough flow capacities to impact flood magnitudes on Dry Creek.
- **Dry Creek, Cache La Poudre River** – Flooding occurred, in Dry Creek, in 1924 with depths of flows several feet deep. However, it is unclear as to whether the flooding was due to overflow from the Cache La Poudre River.
- **Fish Creek, Fall River** – Fall River did overflow its banks in 1965 and cause some damage. In July 1982, extensive damage occurred throughout the Town of Estes Park because of the failure of Lawn Lake Dam located in the headwaters of the Fall River. On July 15, 1982, the Lawn Lake Dam on the Roaring River failed. The 1965 peak of 1,640 cubic feet per second (cfs) was the most damaging flow in recent history, although flows of this magnitude were also recorded in 1949, 1951, 1953, and 1957. Damage from the 1965 event was the result of continued encroachment upon the river channels and blockage of the Fall River culvert at Elkhorn Avenue that diverted flows through the center of town.
- **Redstone Creek** – An intense rainstorm on September 10, 1938, caused flooding in some of the lower areas of the floodplain.
- **Spring Creek** – A devastating flash flood occurred on July 28, 1997, on Spring Creek. Over 14.5 inches of rain fell between 4:00 PM on July 27th and 11:00 PM on July 28th, with over 10 inches of that amount occurring during a six hour time period on July 28th. There were five deaths and over $200 million in property damage. The discharge was estimated at 8,250 cfs going into the detention pond behind the Burlington Northern Railroad just west of College Avenue. This event was greater than a 0.2% annual chance flood event. Previous flooding on Spring Creek occurred in 1902, 1904, 1938, 1949, and 1951, prior to the completion of the Horsetooth Reservoir, and again in 1975 and 1977, causing flooding in several basements.

Figure 4-18 2013 Flood Inundation Area – Larimer County



The preceding figure was created utilizing data produced by a team which included Colorado State University, NASA, and USDA, who performed a study attempting to better identify areas which were inundated by the 2013 floods (note the study area, which only covers portions of Larimer County). Maximum flood extent—a key data need for disaster response and mitigation—is rarely quantified due to storm-related cloud cover and the low temporal resolution of optical sensors. While change detection approaches can circumvent these issues through the identification of inundated land and soil from post-flood imagery, their accuracy can suffer in the narrow and complex channels of increasingly developed and heterogeneous floodplains. The data depicted above is from a study that explored the utility of the Operational Land Imager (OLI) and Independent Component Analysis (ICA) for addressing these challenges in the unprecedented 2013 Flood along the Colorado Front Range, USA. The approach was able to simultaneously distinguish flood-related water and soil moisture from pre-existing water bodies and other spectrally similar classes within the narrow and braided channels of the study site. Visual assessment against aerial orthophotography showed close agreement with high water marks and scoured riverbanks, and a pixel-to-pixel validation with WorldView-2 imagery captured near peak flow yielded an overall accuracy of 87% and Kappa of 0.73. Additional tests showed a twofold increase in flood class accuracy over the commonly used modified normalized water index. Although flooding beneath moderate and sparse riparian vegetation canopy was captured, dense vegetation cover and paved regions of the floodplain were main sources of omission error, and commission errors occurred primarily in pixels of mixed land use and along the flood edge. Nevertheless, the unsupervised nature of ICA, in conjunction with the global availability of Landsat imagery, offers a straightforward, robust, and flexible approach to flood mapping that requires no ancillary data for rapid implementation. Finally, the spatial layer of flood

extent and a summary of impacts were provided for use in the region's ongoing hydrologic research and mitigation planning. The analysis within the study has not updated since 2013 but it is still relevant.

Location

Floods and the damaging effects of flooding can occur wherever water or precipitation is present, and the entire county is susceptible to flooding. Some regions and residents however are more vulnerable to floods and in many areas, the risk of flooding is rare. Large streams or rivers are obvious examples of where to expect floods, though intense, short-duration storms, or high snowmelt runoff can create significant flash floods, or damaging floods even where the risk is rare. FEMA Flood Insurance Rate Maps (FIRMs) and flood risk products such as the maps presented in Figure 4-19 and Figure 4-20are available to express some of the spatial variation of risk to residents throughout the county.

The maps below depict the current special flood hazard areas (SFHA) for Larimer County. The SFHA areas span roads, infrastructure, property, and jurisdictions across the county and show areas mapped through the Colorado Hazard Mapping Program (CHAMP) and FEMA's current Risk Mapping, Analysis, and Planning Program (Risk MAP). CHAMP is a State of Colorado funded study, managed by the Colorado Water Conservation Board, to provide a mitigation and land use framework in areas likely to be affected by future flooding, erosion and debris flow events. The program was initiated by State Legislature following the statewide 2013 flooding. The data from the Study will be incorporated into the FEMA Risk Map program, a program to provide high quality flood maps and information, tools to better assess the risk from flooding, and planning and outreach support to communities to help them take action to reduce (or mitigate) flood risk.

Larimer County entirely falls within the South Platte River Basin, which has Hydrologic Unit Code 6 (HUC 6) 101900. The major sub-basins in Larimer County, which are classified as HUC 8, are listed, and briefly described in Table 4-33. The most significant sources of flooding are the Big Thompson and Cache La Poudre rivers; smaller basins and tributaries to these rivers have caused floods that are described further below.

Table 4-33 Larimer County Basin Characteristics

Sub-Basin	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Big Thompson	Big Thompson River	Largest watershed within Larimer County.	7,212
Cache La Poudre	Cache La Poudre River	Affects northern portion of Larimer County. Crosses Colorado and Wyoming.	1,915
Lone Tree-Owl	Lone Tree Creek	Affects small portion of northern Larimer County. Crosses Colorado and Wyoming.	578
St. Vrain	St. Vrain Creek	Small portion of watershed affecting northern Larimer County.	754
Upper Laramie	Laramie River	Small portion of watershed affecting north western Larimer County.	2,273

Source: FEMA Flood Insurance Study for Larimer County, Colorado (Preliminary 3/8/2019)

Figure 4-19 Special Flood Hazard Areas – Larimer County

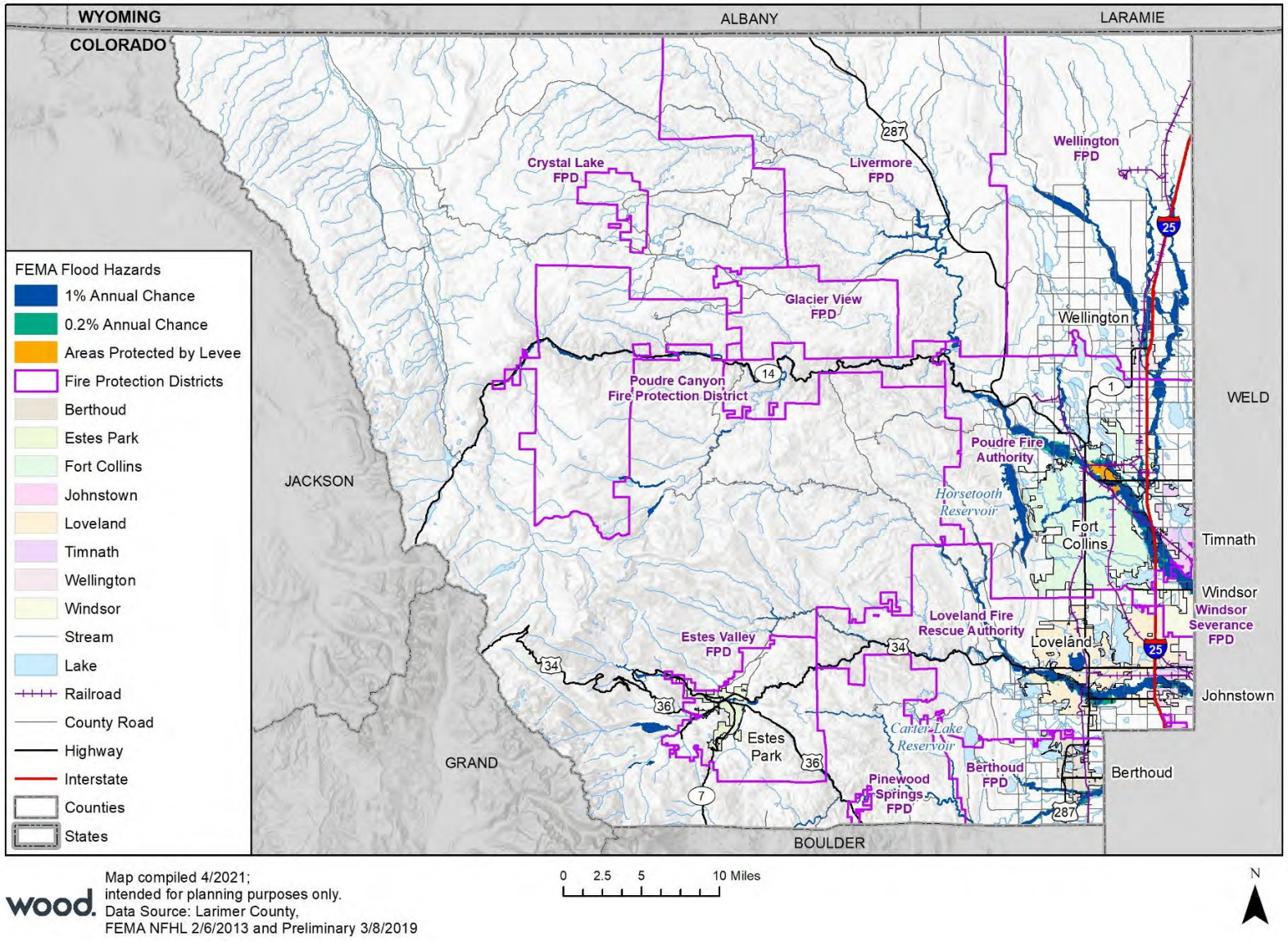


Figure 4-20 Special Flood Hazard Areas – CHAMP Studies

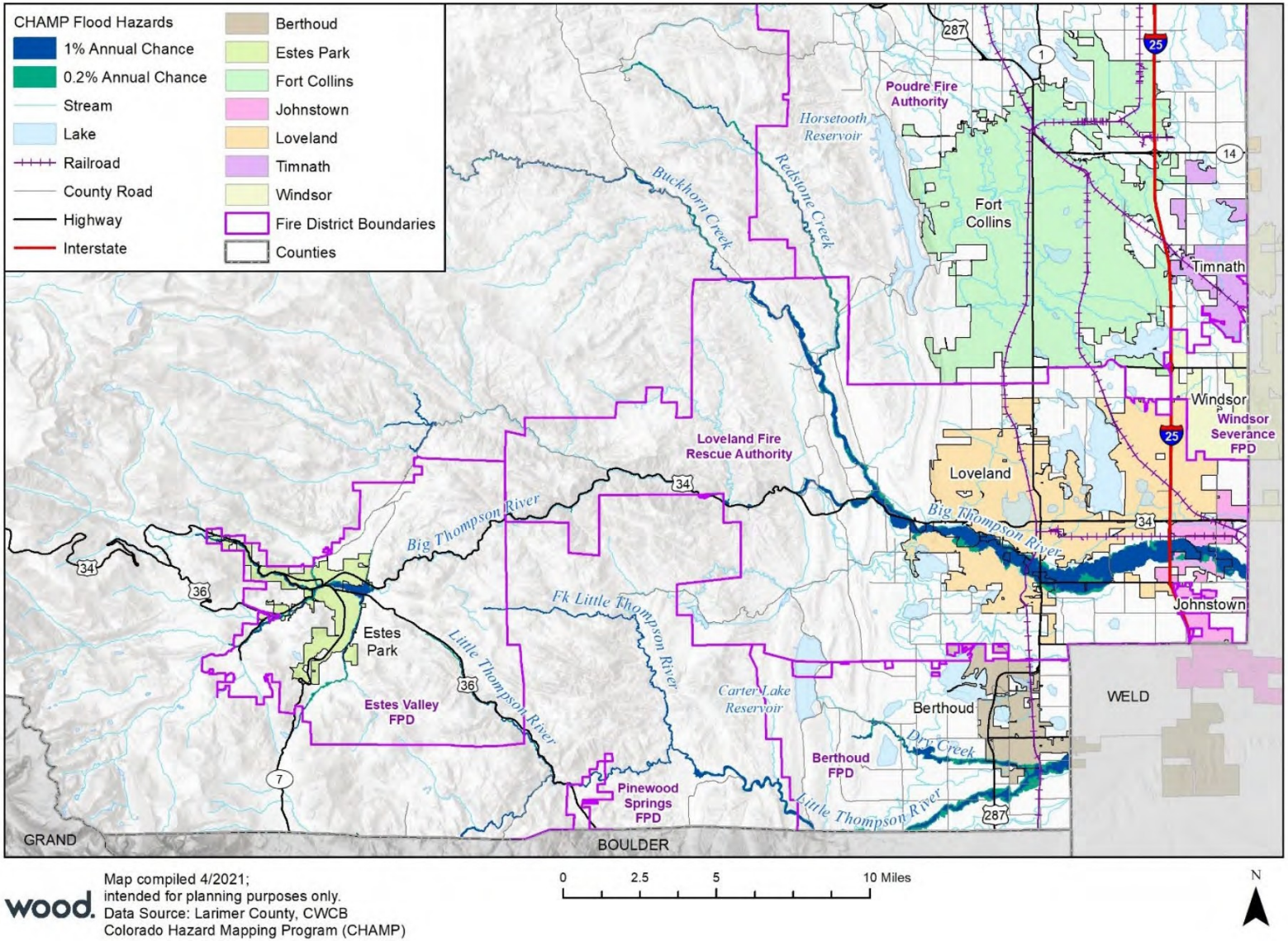


Figure 4-21 Special Flood Hazard Areas – FEMA Risk Map Projects on the Cache La Poudre River and Boxelder Creek

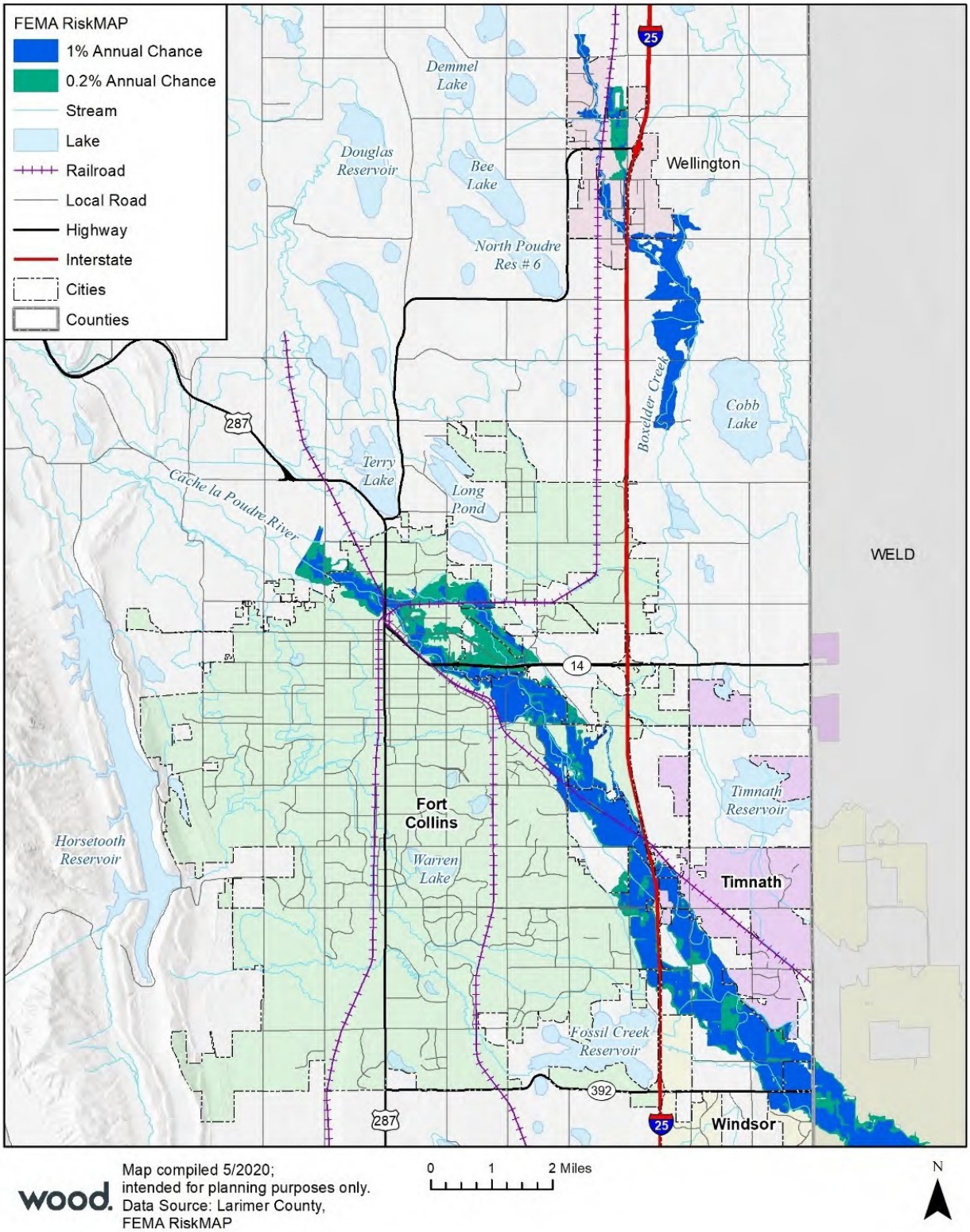
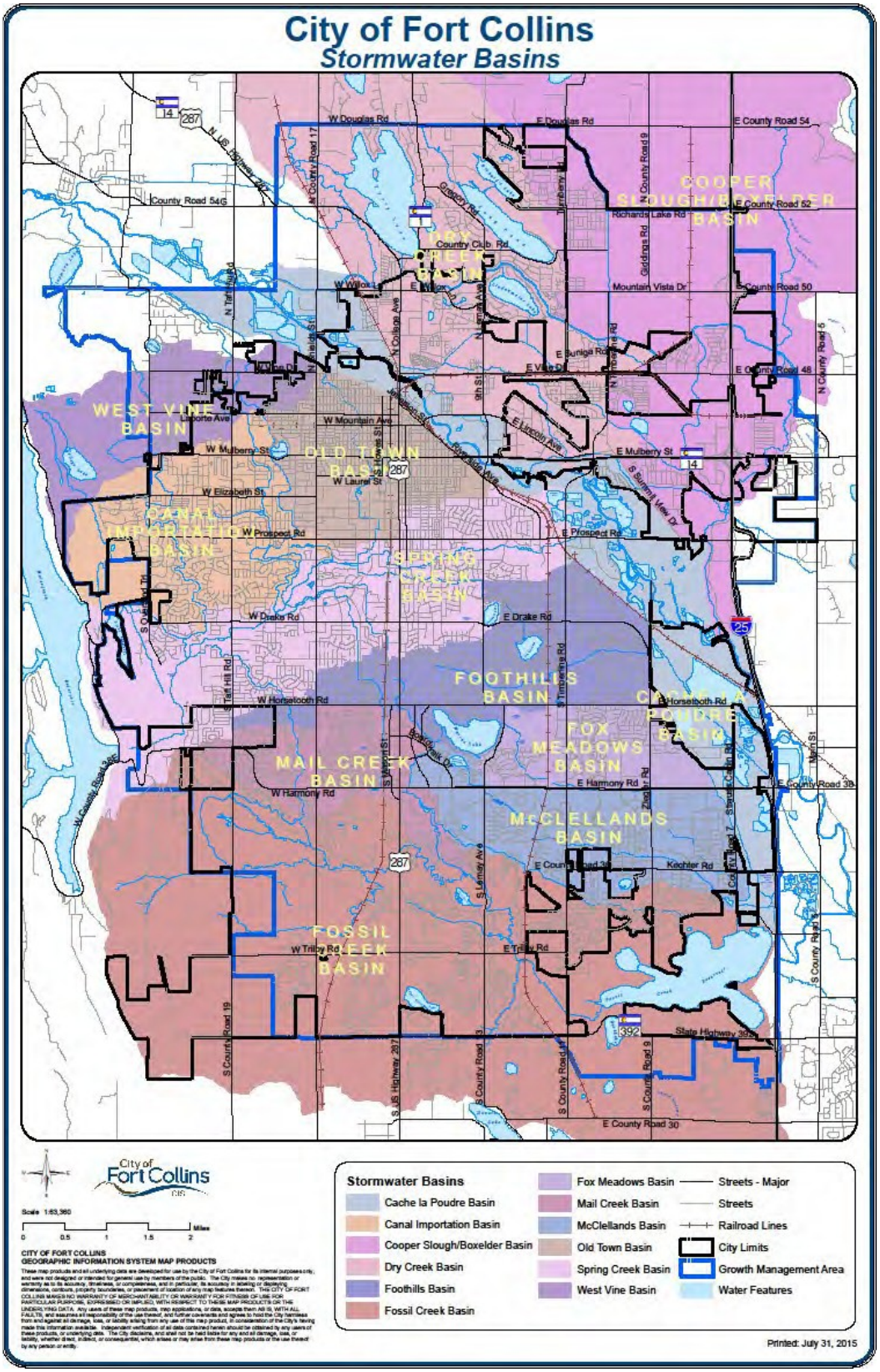


Figure 4-22 City of Fort Collins Stormwater Basins



As shown in Figure 4-22, the City of Fort Collins has 12 drainage basins: The Cache la Poudre, Dry Creek, Cooper Slough/Boxelder, West Vine, Old Town, Canal Importation, Spring Creek, Foothills, Mail Creek, Fox Meadows, McClellands and Fossil Creek. All have flooded in the past for various reasons and have different features that must be taken into account when considering safety. The Drainage Basin Master Plan, approved by City Council in June 2004, describes the flooding history of each basin, identifies potential problem areas and recommends improvements. There are continuous updates occurring for each of the plans. Maps of these drainage basins are included in Appendix E.

The water bodies, rivers, creeks, and tributaries are the primary causes of flooding in Larimer County are described previously in the Past Occurrences section; and describes who is generally impacted by that flooding by that flooding.

Magnitude/Severity

The magnitude or severity of flooding hazards in Larimer County is potentially **Catastrophic**.

The severity of a flooding event is determined by the following key aspects: 1) a combination of stream and river basin topography and physiography; 2) precipitation and weather patterns; 3) recent soil moisture conditions; 4) the degree of vegetative clearing, and 5) effects on life, property, the environment, and the economy in terms of injuries and deaths, and damages or losses to structures, crops, resources, and critical facilities.

As previously discussed, major floods can induce property damages that threaten structural integrity, result in death and injuries, and impact critical services, facilities, and infrastructure. Flooding impacts a community only to the degree that it affects the lives or property of its citizens and the community's overall ability to function. Therefore, the most vulnerable areas of a community will be those most affected by floodwaters in terms of potential losses, damages, and disruption of community services and utilities. For example, an area with large developments on the floodplain is significantly more vulnerable to the impacts of flooding than a rural or undeveloped zone where potential floodwaters would have little impact on the community due to lack of the built environment and human presence.

A number of factors contribute to the relative vulnerabilities of certain areas in the floodplain. Development, or the presence of people and property in the hazardous areas, is a critical factor in determining vulnerability to flooding. Additional factors that contribute to flood vulnerability range from specific characteristics of the floodplain to characteristics of the structures located within the floodplain. The following is a brief discussion of some of these flood factors which pose risk.

- **Flood depth:** The greater the depth of flooding, the higher the potential for significant damages due to larger availability of flooding waters.
- **Flood duration:** The longer duration of time that floodwaters are in contact with building components, such as structural members, interior finishes, and mechanical equipment, the greater the potential for damage.
- **Velocity:** Flowing water exerts forces on the structural members of a building, increasing the likelihood of significant damage (e.g., such as scouring).
- **Elevation:** The lowest possible point where floodwaters may enter a structure is the most significant factor contributing to its vulnerability to damage, due to the higher likelihood that it will come into contact with water for a prolonged amount of time.
- **Construction Type:** Certain types of construction and materials are more resistant to the effects of floodwaters than others. Typically, masonry buildings, constructed of brick or concrete blocks, are the most resistant to damages simply because masonry materials can be in contact with limited depths of flooding without sustaining significant damage. Wood frame structures are

more susceptible to damage because the construction materials used are easily damaged when inundated with water.

Floods may also be caused by structural or hydrologic failures of dams or levees. Each of these causes results in floods that have distinct characteristics relative to flow rate, rate of rise, volume, duration, and flood season. For more information on dam and structural inundation hazards, refer to Section 4.3.3 Dam Inundation.

Probability of Future Occurrences

The probability of future occurrence of this flooding hazard in Larimer County is **Highly Likely**.

Periodic flooding of lands adjacent to rivers and streams is a natural occurrence in the County, and it can be expected to take place based upon established flood recurrence intervals. Additionally, large burn scars from the 2012 High Park Wildfire and the 2020 Cameron Peak Wildfire both increase the risk of flooding in those areas due to burn severity, charred soil and lack of vegetation in those areas.

A *100-year* flood, which has a 1% chance (1 in 100) of occurring in a given year, is a regulatory standard used by federal agencies, states, and NFIP- participating communities to administer and enforce floodplain management programs, as well as set insurance requirements nationwide.

The *500-year* flood event, which has a 0.2% chance (1 in 500) chance of occurring in a given year, is another commonly mapped and studied event by FEMA flood related programs and efforts.

For context, the main flood recurrence intervals used in planning, floodplain studies, and other regulatory contexts are summarized in Table 4-34, and more detailed descriptions of FEMA special flood hazard zones applicable to Larimer County are given in Table 4-35. The most recent FEMA special flood hazard areas mapped, which contain the 100- and 500-year events and hence where riverine flooding is expected to primarily occur in the future, are shown in

Figure 4-19 above.

Table 4-34 Annual Probability of Flooding Based on Recurrence Intervals

Flood Recurrence Interval	Annual Chance of Occurrence
10-year	10%
50-year	2%
100-year	1%
500-year	0.2%

Source: FEMA

Table 4-35 FEMA Special Flood Hazard Zones Present in Larimer County

Flood Zone	Definitions
FEMA Special Flood Hazard Areas (SFHAs) Subject to Inundation by the 100- or 500-Year Floods	
Zone A	100-year floodplain, or areas with a 1% annual chance of flooding. Because detailed analyses are not performed these areas, no depths or base flood elevations are shown in Zone A areas.
Zone AE	Detailed studies for the 100-year floodplain. The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 zones.
Zone AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed

Flood Zone	Definitions
	analyses are shown at selected intervals within these zones.
Zone AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Average flood depths derived from detailed analyses.
Other Flood Areas	
Floodway	A regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
Area with Reduced Flood Risk due to Levee	Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood.
Zone X (shaded)	Areas with a 0.2% annual chance flooding (1 in 500 chance), between the limits of the 100-year and 500-year floodplains. This zone is also used to designate base floodplains of lesser hazards, such as areas protected by levees from the 100-year flood, shallow flooding areas with average depths of less than one foot, or drainage areas less than 1 square mile.
Zone X (unshaded)	500-year floodplain (0.2% annual chance). Area of minimal flood hazard.

Source: FEMA Flood Map Service Center, 2020

Based on the details provided in this chapter, flooding remains a likely occurrence throughout the identified flood hazard areas in the county. Smaller floods caused by heavy rains or inadequate drainage capacity in urbanized areas may be more frequent, but not as costly as the large-scale floods, which may occur at much less frequent intervals. In addition, dam or flood control structure failure could additionally take place and lead to flooding in an unexpected manner, in which likelihood of occurrence estimations would be more difficult to obtain.

Climate Change Considerations

The two most common and most destructive hazards in Larimer County are severe flooding and wildfires. Both of these hazards are greatly affected by a changing climate. If we look at an accelerated process of evapotranspiration, both drought and severe weather events are more likely; as more water is pulled out of the soil and plants into the atmosphere, the soil becomes drier, the water table drops, and the chance of drought will increase.

In addition to increasing drought and wildfire potential (and therefore increasing runoff), climate change has the potential to intensify rain events and storms in the Colorado region. According to the National Oceanic and Atmospheric Administration, there is generally more rain and snow falling in the Northern Hemisphere and precipitation has increased by about 5% over the last century. An increase in precipitation alone is not immediately alarming, but "factors such as precipitation intensity, soil moisture and snow conditions, and basin topography are also important in determining the occurrence and severity of flooding." As with temperature, it is the extremes that matter most with regard to rainfall. According to Robert Hanson, author of The Thinking Person's Guide to Climate Change, "Data shows a clear ramp up in precipitation intensity for the United States, Europe, and several other areas over the last century, especially since the 1970s. When it rains or snows in these places, it now tends to rain or snow harder, over periods ranging from a few hours to several days." The 1997 and 2013 flood events caused widespread infrastructural damage, social instabilities and changes along the waterways throughout the County and in other areas of the state. Drought, precipitation intensity and changes in snowmelt patterns are overarching challenges Larimer County will face moving into the future.

These events can lead to increased infrastructure damage, injury, illness, and death. Additionally, warmer temperatures in the winters may cause increased precipitation to fall as rain instead of snow in mountain regions of Colorado. This may lead to elevated stream flows and increased flood risk across the state. As climate science and data evolves it will be important for communities in and around Larimer County to

address how our changing climate will affect how water moves through local streams and regional landscapes.

Vulnerability Assessment

The risk of flood is prevalent within all regions of Larimer County, however not all exposed areas have equal risk, and many areas may not experience serious flooding or flood related damages. This section summarizes the results of a countywide risk analysis intended to identify the vulnerability of population, property, and infrastructure. The vulnerability analysis was performed through the use of an address point layer to obtain more accurate property locations and the assessor's parcel layer to obtain different parcel types and improved values. Using GIS, this combined dataset was intersected with the effective FEMA special flood hazard area (SFHA) as well as preliminary mapping available at the time of this study to determine at risk population, infrastructure, and assets.

The type of property damage caused by flood events depends on the depths and velocity of the floodwaters. Faster moving floodwaters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges, and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by basement flooding and landslide damage related to soil saturation from flood events. Seepage into basements is common during flood events. Most flood damage is caused by water saturating materials susceptible to loss (e.g., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances). Homes in flooded areas can also suffer damage to septic systems and drain fields. In many cases, flood damage to homes renders them uninhabitable.

Severe flooding has the potential to inflict significant damage to people and property in Larimer County. Mitigating flood damage requires that communities throughout the county remain diligent and notify local officials of potential flood (and flash flood) prone areas near infrastructure such as roads, bridges, and buildings. While the potential for flooding is always present, Larimer County has existing land-use policies and regulations for development to help lessen potential damage due to floods.

People

Population counts of those living in the flood hazard area were generated by analyzing tax assessor building locations of residential structure locations that intersect with the SFHA. Total estimates were derived by multiplying then number of residential properties exposed to the SFHA by the Average household size by the respective community, as listed in Section 2.6 and the jurisdictional annexes. Through this approach, an estimated 2,373 residents live within the 100-year floodplain, an additional 2,262 within the 500-year floodplain, and 782 within SFHA areas protected by certified levees throughout the County.

Floods can cause significant impacts to the life, safety, and health of the public and responders. Flood waters may prevent access to areas in need of response or to the critical facilities themselves which may prolong response time. The public must understand that they should never drive through flooded streets. The Centers for Disease Control and Prevention report that over half of flood-related drownings occur when a vehicle is driven into flood water, and the next highest percentage of deaths is due to people walking into or near flood waters. The National Weather Service warns that just 6 inches of fast-moving flood water can knock down an adult, 12 inches can carry away a small car, and 2 feet can carry away most vehicles. When someone drives through floodwaters, they put their life and the lives of first responders at risk. First responders are at risk when attempting to rescue people from floodwaters. They are subject to the same health hazards as the public and are more likely to be exposed to these hazards during their response efforts.

Certain health hazards are common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry

anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept, or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E. coli and other disease causing agents. Residents with private wells will need to have their water quality tested to ensure it is safe for use.

The second type of health problem arises after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. Flooding can also cause extensive mold growth in building walls and floors, which also poses a respiratory health hazard.

If the County's water systems lose pressure, a boil order may be issued to protect people and animals from contaminated water.

The long-term psychological impact of having been through a flood and seeing one's home damaged and personal belongings destroyed must also be considered. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Another health risk from flooding comes from animals, such as snakes and rodents, that make their way through floodwaters and come into contact with people. Animals can pose a risk of physical attack and/or spread of disease.

Debris also poses a risk both during and after a flood. During a flood, debris carried by floodwaters can cause physical injury from impact. During the recovery process, people may often need to clear debris out of their properties but may encounter dangers such as sharp materials or rusty nails that pose a risk of tetanus. People must be aware of these dangers prior to a flood so that they understand the risks and take necessary precautions before, during, and after a flood.

Timely emergency public information and warning are one of the most important measures in reducing the risk of flooding to people in at risk areas. The Emergency Notification and Warning Annex to the Larimer County Comprehensive Emergency Management Plan (CEMP) addresses procedures and methods for timely emergency information across departments, agencies, and partners, and for communicating emergency alerts and warnings to the public, to include residents and visitors. The Annex covers roles and responsibilities, and a concept of operations for notifications, along with several alert and warning tools in use such as Everbridge, Wireless Emergency Alerts, media releases, website and social media posts, and door-to-door notifications.

The Larimer County CEMP Evacuation and Re-Entry Annex contains procedures for the safe and orderly evacuation of people threatened by flood or other hazards in Larimer County, as well as providing for the safe re-entry of the affected area. The authority for evacuation in Larimer County rests with the Larimer County Sheriff's Office, who will make determinations regarding the evacuation of residents and visitors

from affected areas within Larimer County. Additionally, Fire Districts have the authority to issue evacuations within their jurisdictions according to C.R.S. 24-32-2109. Evacuation orders and notifications will be issued in accordance with the Emergency Notification and Warning Annex described above. The Annex describes the designation of evacuation routes, establishment of evacuation centers, provisions for people unable to self-evacuate, and provisions for large animals and livestock. Detailed provisions for controlled re-entry into evacuated areas further help to ensure public health and safety.

The Larimer County Recovery Plan outlines policies and procedures to recover from floods and other disasters. The plan includes roles and responsibilities, the concept of operations, direction and coordination, and financial management, along with 17 Recovery Support Functions (RSFs). Post-flood recovery should focus on activities to protect public health and safety, such as providing safe drinking water, monitoring for disease and contaminants, and cleaning up debris.

General Property

Exposed structures and associated value of asses within the flood hazard areas were estimated using a similar methodology to the population estimates. Improved properties were intersected with the SFHA, and tax assessor valuations of the at-risk properties were totaled. Additionally, potential monetary loss estimates were calculated for all assets within the SFHA 25% of the total property value. In total, an estimated 1,533 buildings (0.9% of all structures) at a valuation of $712,967,464 lie within the 100-year floodplain, with a total loss estimate of 0.66% of the countywide property value. An Additional 1,844 structures (1.1% of all structures) lie within the extents of the 500-year floodplain at a valuation of $205,018,046, and with a loss estimate of 0.24% of the countywide property value.

Table 4-36 Improved Properties at Risk of 1% Annual Chance Flood Hazard in Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Loss Estimate	Population
Estes Park	Commercial	17	19	$8,257,080	$8,257,080	$16,514,160	$4,128,540	
	Exempt	2	2	$348,175	$348,175	$696,350	$174,088	
	Multiple Unit	1	8	$3,150,000	$3,150,000	$6,300,000	$1,575,000	
	Residential	31	46	$10,858,775	$5,429,386	$16,288,161	$4,072,040	90
	Total	**51**	**75**	**$22,614,030**	**$17,184,641**	**$39,798,671**	**$9,949,668**	**90**
Fort Collins	Agricultural	1	1	$7,122	$7,122	$14,244	$3,561	
	Commercial	36	57	$12,807,166	$12,807,166	$25,614,332	$6,403,583	
	Exempt	8	17	$18,703,762	$18,703,762	$37,407,524	$9,351,881	
	Industrial	1	1	$4,072,442	$6,108,663	$10,181,105	$2,545,276	
	Residential	74	88	$20,425,275	$10,212,637	$30,637,912	$7,659,478	216
	Total	**120**	**164**	**$56,015,767**	**$47,839,350**	**$103,855,117**	**$25,963,779**	**216**
Loveland	Agricultural	1	1	$4,600	$4,600	$9,200	$2,300	
	Commercial	37	58	$19,495,054	$19,495,054	$38,990,108	$9,747,527	
	Exempt	5	6	$3,244,573	$3,244,573	$6,489,146	$1,622,287	
	Industrial	2	2	$431,436	$647,154	$1,078,590	$269,648	
	Residential	19	19	$7,744,344	$3,872,172	$11,616,516	$2,904,129	45
	Total	**64**	**86**	**$30,920,007**	**$27,263,553**	**$58,183,560**	**$14,545,890**	**45**
Wellington	Commercial	5	6	$2,362,491	$2,362,491	$4,724,982	$1,181,246	
	Exempt	3	9	$11,826,911	$11,826,911	$23,653,822	$5,913,456	
	Mobile Home	1	2	$11,000	$5,500	$16,500	$4,125	6
	Residential	34	35	$7,775,575	$3,887,784	$11,663,359	$2,915,840	106
	Total	**43**	**52**	**$21,975,977**	**$18,082,686**	**$40,058,663**	**$10,014,666**	**112**
Unincorporated	Agricultural	62	73	$19,263,190	$19,263,190	$38,526,380	$9,631,595	
	Commercial	150	205	$56,256,310	$56,256,310	$112,512,620	$28,128,155	
	Exempt	15	62	$14,758,810	$14,758,810	$29,517,620	$7,379,405	
	Industrial	17	17	$3,757,848	$5,636,778	$9,394,626	$2,348,657	
	Mobile Home	10	130	$28,704,389	$14,352,195	$43,056,584	$10,764,146	320
	Multiple Unit	6	23	$2,990,089	$2,990,089	$5,980,178	$1,495,045	
	Residential	554	646	$154,722,306	$77,361,139	$232,083,445	$58,020,861	1,589

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Loss Estimate	Population
	Total	**814**	**1,156**	**$280,452,942**	**$190,618,511**	**$471,071,453**	**$117,767,863**	**1,909**
	Grand Total	**1,092**	**1,533**	**$411,978,723**	**$300,988,741**	**$712,967,464**	**$178,241,866**	**2,373**

Source: FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

Table 4-37 Improved Properties at Risk of 0.2% Annual Chance Flood Hazard in Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Loss Estimate	Population
Berthoud	Residential	38	38	$11,002,643	$5,501,319	$16,503,962	$4,125,991	95
	Total	**38**	**38**	**$11,002,643**	**$5,501,319**	**$16,503,962**	**$4,125,991**	**95**
Estes Park	Commercial	35	57	$16,334,775	$16,334,775	$32,669,550	$8,167,388	
	Exempt	2	2	$2,257,225	$2,257,225	$4,514,450	$1,128,613	
	Multiple Unit	1	1	$3,150,000	$3,150,000	$6,300,000	$1,575,000	
	Residential	15	15	$3,534,944	$1,767,473	$5,302,417	$1,325,604	29
	Total	**53**	**75**	**$25,276,944**	**$23,509,473**	**$48,786,417**	**$12,196,604**	**29**
Fort Collins	Commercial	11	11	$9,532,244	$9,532,244	$19,064,488	$4,766,122	
	Exempt	4	7	$8,578,537	$8,578,537	$17,157,074	$4,289,269	
	Industrial	3	4	$6,839,330	$10,258,995	$17,098,325	$4,274,581	
	Multiple Unit	1	67	$65,082,972	$65,082,972	$130,165,944	$32,541,486	
	Residential	189	203	$54,228,344	$27,114,167	$81,342,511	$20,335,628	499
	Total	**208**	**292**	**$144,261,427**	**$120,566,915**	**$264,828,342**	**$66,207,086**	**499**
Johnstown	Residential	32	32	$9,544,776	$4,772,387	$14,317,163	$3,579,291	92
	Total	**32**	**32**	**$9,544,776**	**$4,772,387**	**$14,317,163**	**$3,579,291**	**92**
Loveland	Agricultural	1	1	$10,807	$10,807	$21,614	$5,404	
	Commercial	24	29	$13,345,885	$13,345,885	$26,691,770	$6,672,943	
	Exempt	1	1	$451,501	$451,501	$903,002	$225,751	
	Multiple Unit	2	305	$34,512,254	$34,512,254	$69,024,508	$17,256,127	
	Residential	44	44	$16,523,344	$8,261,668	$24,785,012	$6,196,253	105
	Total	**72**	**380**	**$64,843,791**	**$56,582,115**	**$121,425,906**	**$30,356,477**	**105**
Timnath	Commercial	3	6	$10,761,632	$10,761,632	$21,523,264	$5,380,816	
	Total	**3**	**6**	**$10,761,632**	**$10,761,632**	**$21,523,264**	**$5,380,816**	**0**
Wellington	Commercial	4	4	$2,268,938	$2,268,938	$4,537,876	$1,134,469	
	Exempt	12	142	$23,720,373	$23,720,373	$47,440,746	$11,860,187	
	Mobile Home	4	5	$52,966	$26,483	$79,449	$19,862	15
	Multiple Unit	1	4	$575,290	$575,290	$1,150,580	$287,645	
	Residential	170	173	$39,879,890	$19,939,940	$59,819,830	$14,954,958	526
	Total	**191**	**328**	**$66,497,457**	**$46,531,024**	**$113,028,481**	**$28,257,120**	**541**
Unincorporated	Agricultural	17	19	$8,026,079	$8,026,079	$16,052,158	$4,013,040	
	Commercial	29	210	$15,276,933	$15,276,933	$30,553,866	$7,638,467	
	Exempt	10	80	$9,929,773	$9,929,773	$19,859,546	$4,964,887	
	Industrial	14	18	$3,561,289	$5,341,939	$8,903,228	$2,225,807	
	Mobile Home	6	34	$3,784,135	$1,892,068	$5,676,203	$1,419,051	84
	Residential	320	332	$92,409,094	$46,204,554	$138,613,648	$34,653,412	817
	Total	**396**	**693**	**$132,987,303**	**$86,671,346**	**$219,658,649**	**$54,914,662**	**900**
	Grand Total	**993**	**1,844**	**$465,175,973**	**$354,896,211**	**$820,072,184**	**$205,018,046**	**2,262**

Source: FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

Table 4-38 Improved Properties in Protected by Certified Levees Zones Within County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Loss Estimate	Population
Fort Collins	Commercial	34	68	$54,954,548	$54,954,548	$109,909,096	$27,477,274	
	Exempt	13	17	$14,136,076	$14,136,076	$28,272,152	$7,068,038	
	Industrial	1	2	$11,588,014	$17,382,021	$28,970,035	$7,242,509	
	Multiple Unit	161	340	$53,983,967	$53,983,967	$107,967,934	$26,991,984	
	Residential	221	238	$64,449,619	$32,224,812	$96,674,431	$24,168,608	585
	Total	**430**	**665**	**$199,112,224**	**$172,681,424**	**$371,793,648**	**$92,948,412**	**585**
Unincorporated	Agricultural	1	1	$166,664	$166,664	$333,328	$83,332	
	Commercial	264	360	$138,149,055	$138,149,055	$276,298,110	$69,074,528	
	Exempt	9	9	$2,387,305	$2,387,305	$4,774,610	$1,193,653	
	Industrial	34	50	$30,299,752	$45,449,628	$75,749,380	$18,937,345	

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Loss Estimate	Population
	Mobile Home	2	79	$2,422,487	$1,211,244	$3,633,731	$908,433	194
	Residential	1	1	$115,000	$57,500	$172,500	$43,125	2
	Total	**311**	**500**	**$173,540,263**	**$187,421,396**	**$360,961,659**	**$90,240,415**	**197**
	Grand Total	**741**	**1,165**	**$372,652,487**	**$360,102,820**	**$732,755,307**	**$183,188,827**	**782**

Source: FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

Data from the National Flood Insurance Program shows that $14,831,750 in flood loss claims have been paid out in Larimer County and its jurisdictions since 1978. 71% of those losses ($10.5M) were in the unincorporated County, with 13% ($2M) in Estes Park, 10% ($1.5M) in Loveland, and 5% ($688K) in Fort Collins.

A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. As of January 2021, there were a total of 6 repetitive loss properties, as shown in Table 4-39.

Table 4-39 Repetitive Loss Properties

Community	Building Type	# of Losses
Bellvue	Single Family	2
Berthoud	Single Family	2
Fort Collins	Other-Nonresidential	2
Fort Collins	Single Family	3
Fort Collins	Single Family	2
Laporte	2-4 Family	3
	TOTAL	**14**

Source: Colorado Water Conservation Board

Severe repetitive loss properties (SRL) are those for which the program has either made at least four payments for buildings and/or contents of more than $5,000 or at least two building- only payments that exceeded the value of the property. As of January 2021, there were no severe repetitive loss (SRL) structures located within the unincorporated areas Larimer County.

Critical Facilities and Infrastructure

Residential, commercial, and public buildings, as well as critical infrastructure such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. Floods can severely disrupt normal operations, especially when there is a loss of power. This can affect the operations of critical facilities, which affects response times. Loss of power also puts the public at risk. Downed power lines pose a serious hazard and should always be treated as if they are still energized. When a building loses power during a flood, electricity should be turned off and not used until the wiring can be inspected, to avoid risk of electrocution or fire. Damage to electrical equipment can also result from exposure to flood waters contaminated with chemicals, sewage, oil, and other debris.

The critical facility exposure analysis estimates that there is a total of 44 critical facilities in Larimer County within the mapped FEMA SFHA. The tables below summarize the results of the critical facility flood exposure analysis.

Table 4-40 Critical Facilities Within the FEMA 1% Annual Chance Flood Hazard

FEMA Lifeline	Jurisdiction				
	Fort Collins	Loveland	Wellington	Unincorporated	Total
Energy	1	-	-	-	**1**
Safety and Security	1	1	1	1	**4**
Food, Water, Shelter	-	-	-	17	**17**
Miscellaneous	-	-	-	1	**1**
Total	**2**	**1**	**1**	**19**	**23**

Source: Cascarta, FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

Table 4-41 Critical Facilities Within the FEMA 0.2% Annual Chance Flood Hazard

FEMA Lifeline	Fort Collins	Wellington	Unincorporated	Total
Hazardous Material	1	-	-	**1**
Safety and Security	2	1	2	**5**
Food, Water, Shelter	1	-	1	**2**
Miscellaneous	-	1	-	**1**
Total	**4**	**2**	**3**	**9**

Source: Cascarta, FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

Table 4-42 Critical Facilities Within the FEMA SFHA Protected by Levee

FEMA Lifeline	Fort Collins	Unincorporated	Total
Health and Medical	1	-	**1**
Transportation	2	-	**2**
Safety and Security	3	1	**4**
Food, Water, Shelter	1	3	**4**
Miscellaneous	1	-	**1**
Total	**8**	**4**	**12**

Source: Cascarta, FEMA NFHL Effective 2/6/2013 and Preliminary 3/8/2019, Larimer County Assessor's Office, Wood analysis.

A discussion of actions completed, underway, or planned by the jurisdictions to reduce the vulnerability of critical facilities to flooding can be found in Section 6.3.1.

Economy

Flooding can have a major economic impact on the economy, including indirect losses such as business interruption, lost wages, reduced tourism and visitation, and other downtime costs. Flooding often coincides with the summer tourism months and may hence impact, directly or indirectly (such as from the negative perception of potential danger to his hazard), the revenues of tourist agencies, hotel bookings, outdoor activity companies, and other such businesses in the commercial and industrial sectors.

The 2013 Flood had a major economic impact on Larimer County, with over $100M spent on recovery as of September 2020; while much of this funding came from grants, the County provided $16M in matching funds. In addition to physical damages, Estes Park suffered severe economic losses due to reduced tourism and recreation resulting from closed roads and damages throughout the area. Many businesses were damaged or destroyed and forced to close.

Historic, Cultural and Natural Resources

There are significant historic, cultural, and natural resources and assets located throughout the County (e.g., trails and natural spaces, lakes). Natural areas within the floodplain often benefit from periodic flooding as a naturally recurring phenomenon. These natural areas often reduce flood impacts by allowing absorption and infiltration of floodwaters. Natural resources are generally resistant to flooding except where natural landscapes and soil compositions have been altered for human development or after

periods of previous disasters such as drought and fire. Wetlands, for example, exist because of natural flooding incidents. Areas that are no longer wetlands may suffer from oversaturation of water, as will areas that are particularly impacted by drought. Areas which may have recently suffered from wildfire damage may erode because of flooding, which can permanently alter an ecological system.

Future Land Use and Future Development Trends

Severe flooding has the potential to inflict significant damage to people and property in Larimer County. Mitigating flood damage requires that communities throughout the County remain diligent and notify local officials of potential flood (and flash flood) prone areas near infrastructure such as roads, bridges, and buildings. While the potential for flooding is always present, Larimer County has existing land-use policies and regulations for development to help lessen potential damage due to floods.

Existing floodplain management ordinances are intended to address methods and practices to minimize flood damage to new and substantial home improvement projects as well as to address zoning and subdivision ordinances and state regulations. Additionally, Larimer County is a National Flood Insurance Program (NFIP) participant and continues to support floodplain management activity at the county and local scale.

The greatest protection against flooding is afforded by quality construction and compliance with local ordinances which exceed NFIP requirements. Code adoption by local jurisdictions, compliance by builders, and local government inspection of new homes can greatly reduce the risk of flooding. Moving forward, Larimer County will continue to support monitoring, analysis, modeling, and the development of decision-support systems and geographic information applications for floodplain management activities.

In addition to land-use planning, zoning, and codes applicable to new development, flood mitigation measures include structural and non-structural measures to address susceptibility of existing structures. Flood mitigation measures such as acquisition, relocation, elevation-in-place, wet/dry flood proofing, and enhanced storm drainage systems all have the potential to effectively reduce the impact of flood in Larimer County.

As population continues to increase in Larimer County, future development trajectories can be expected to create more impervious surfaces, which in turn can increase runoff and flood potential. While new building risk can be tempered by the implementation of floodplain management policies of the County and communities more people and property, the county as a whole should plan for the likelihood of increased exposure of humans to flood events as a factor of population growth.

Updates to flood mapping studies that are currently in progress are accounting for a more accurate depiction of the flood hazard across the County. New studies should begin to account for increased flood hazards as a result of changes in floodplain development, demographics, development in the watershed, and climate change. New mapping and analysis of flood hazards associated with releases from dams was completed by the Colorado DNR, as described in the Dam Inundation chapter.

Larimer County's floodplain management program includes mapping a "1% plus flood elevation", which is defined as a flood elevation derived by using discharges that include the average predictive error for the discharge calculation for the hydrologic analysis. This error is then added to the 1% annual chance discharge to calculate the new 1% plus discharge. It is meant to show the confidence limits of the hydrologic calculations and can be used to help identify possible future impacts.

Risk Summary

- Flash flooding that occurs with little or no warning will continue to impact the planning area, and deficiencies in radar coverage are a concern for appropriate alert and warning.

- The Town of Fort Collins and the Unincorporated Areas have significant and high flood risk; Estes Park, Loveland and Wellington have moderate risk.
- The intensity of storms contributing to flooding issues may increase due to climate change.
- Flooding may be exacerbated by other hazards, such as wildfires.
- Damages resulting from flood may impact tourism, which may have significant impacts on the local economy.
- Continued compliance with the NFIP and the promotion of flood insurance as a means of protecting private property owners from the economic impacts of frequent flood events should continue.

4.3.7 Hazardous Materials Incident

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Hazardous Materials Incident	Likely	Limited	Critical	High

Description

A hazardous material (also known as hazmat) is defined by the U.S. Department of Transportation as "a threat that poses an unreasonable risk to health and safety of operating or emergency personnel, the public, and/or the environment if not property controlled during handling, storage, manufacturing, processing, packaging, use, disposal, or transportation."

Hazardous materials are defined and regulated in the United States primarily by laws and regulations administered by the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA), the U.S. Department of Transportation (DOT), and the U.S. Nuclear Regulatory Commission (NRC). Each has its own definition of a "hazardous material." For the purpose of tracking and managing hazardous materials, the DOT divides regulated hazardous materials into nine classes:

Table 4-43 Hazardous Materials -- Classes and Descriptions

Hazard Class	Description
Class 1: Explosives	1.1 mass explosion hazard 1.2 projectile hazard 1.3 minor blast/projectile/fire 1.4 minor blast 1.5 insensitive explosives 1.6 very insensitive explosives
Class 2: Compressed Gases	2.1 flammable gases 2.2 non-flammable compressed 2.3 poisonous
Class 3: Flammable Liquids	Flammable (flash point below 141°) Combustible (flash point 141°-200°
Class 4: Flammable Solids	4.1 flammable solids 4.2 spontaneously combustible 4.3 dangerous when wet
Class 5: Oxidizers and Organic Peroxides	5.1 Oxidizer 5.2 Organic Peroxide
Class 6: Toxic Materials	6.1 Material that is poisonous 6.2 Infectious Agents
Class 7: Radioactive Material	Radioactive I Radioactive II Radioactive III
Class 8: Corrosive Material	Destruction of the human skin Corrode steel at a rate of 0.25 inches per year
Class 9: Miscellaneous	A material that presents a hazard during shipment but does not meet the definition of the other classes

Hazardous materials that are being transported must have specific packaging and labeling. Specific safety regulations also apply when handling and storing hazardous materials at fixed facilities. In general, there are three recognized sources for hazmat incidents within the County: delivery lines, fixed storage facilities and use locations, and transportation routes. Once a hazmat incident occurs, the area impacted will depend on the natural of the chemical and climate conditions. All areas should be considered at risk. However, some areas, such as those close to aquifers and other water supplies can expect greater impacts if a spill occurred in the area.

Transportation of hazardous materials through Larimer County happens at all times of day by way of rail, road, and air. Roadway transport account for the largest amount of hazardous materials moving though the county. That said, rail cars are able to carry much larger quantities of hazardous materials than trucks or cars and can be associated with a greater risk.

Figure 4-23 SB I-25 closed in Fort Collins after hazardous materials spill, March 2015



Source: KWGN

Title 42, Article 20 of the Colorado Revised Statutes governs the routing of hazardous materials by motor vehicles on all public roads in the state. The required criteria that the route must meet before it is brought before the Transportation Commission are as follows:

- The route(s) under consideration are feasible, practicable, and not unreasonably expensive for such transportation.
- The route(s) is continuous within a jurisdiction and from one jurisdiction to another.
- The route(s) does not unreasonably burden interstate or intrastate commerce.
- The route(s) designation is not arbitrary or intended by the petitioner merely to divert the transportation of hazardous materials to other communities.
- The route(s) designation will not interfere with the pickup or delivery of hazardous materials.
- The route(s) designation is consistent with all applicable state and federal laws and regulations; and
- The route(s) provides greater safety to the public than other feasible routes. Considerations include but are not limited to:
  - AADT, crash and fatality rates
  - Population within a one-mile swath of each side of the highway
  - Locations of schools, hospitals, sensitive environmental areas, rivers, lakes, etc.
  - Emergency response capabilities on the route
  - Condition of the route, i.e., vertical and horizontal alignment, pavement condition, level of access to the route, etc.

Troop 8-C is the Hazardous Materials Section of the Colorado State Patrol. Their mission is to contribute to the safety of hazardous materials transportation in order to protect citizens and the environment. Twenty-eight troopers trained as Hazardous Materials Technicians are deployed throughout the state.

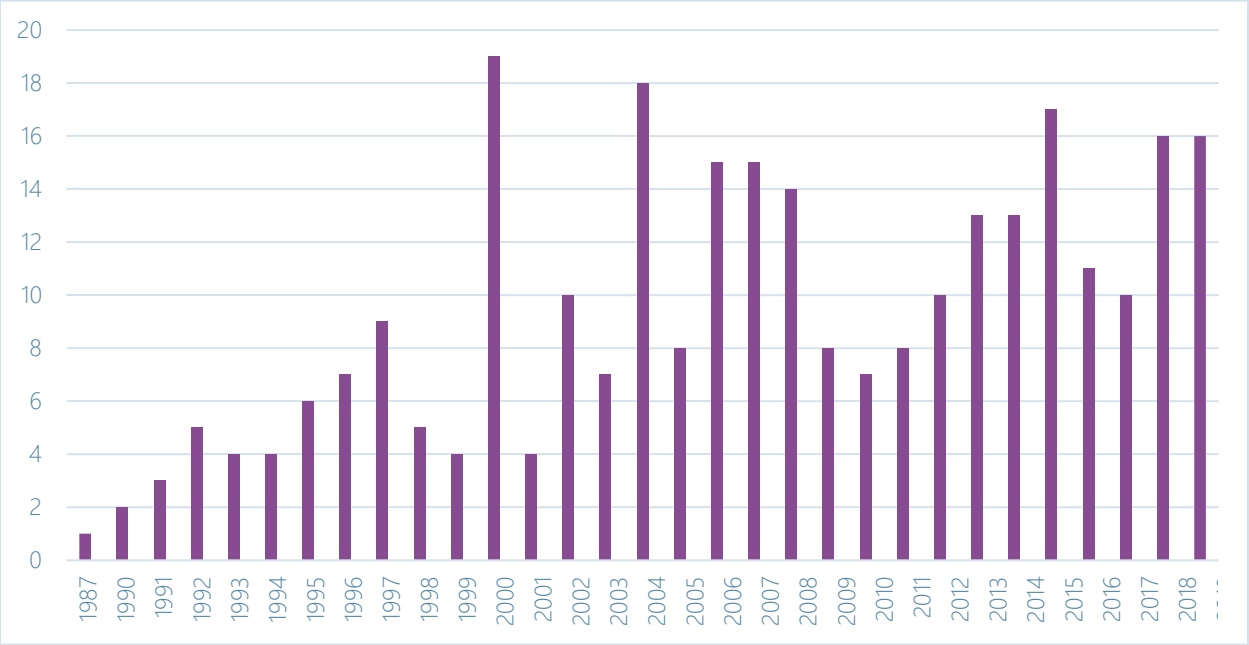
Local Hazardous Materials Response Teams (most often housed in local fire departments and fire protection districts) are the designated emergency response authority for hazardous substance incidents in all areas of Larimer County except on highways, where the State Patrol has jurisdiction.

Past Occurrences

Hazardous materials incidents occur regularly in Larimer County. The 2018 Colorado State Hazard Mitigation Plan ranks Larimer County as 8th in the top 10 of counties with the highest number of incidents in the state.

The U.S. Coast Guard's National Response Center (NRC) serves as the primary national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. NRC data shows that between 1987 and the end of 2019, 289 hazardous materials incidents were reported in Larimer County. Roughly half of these incidents occurred at fixed sites or storage tanks, and half occurred during transportation. This number almost certainly excludes a number of very small spills that were not reported to the NRC. This translates to an average of 9.32 incidents per year. As shown in Figure 4-24, the trend over the last 32 years shows fewer incidents in the 1990s (average of 5 incidents per year), with the number of incidents more than doubling during the 2000s (average of 12 incidents per year), an average that continued during the 2010s.

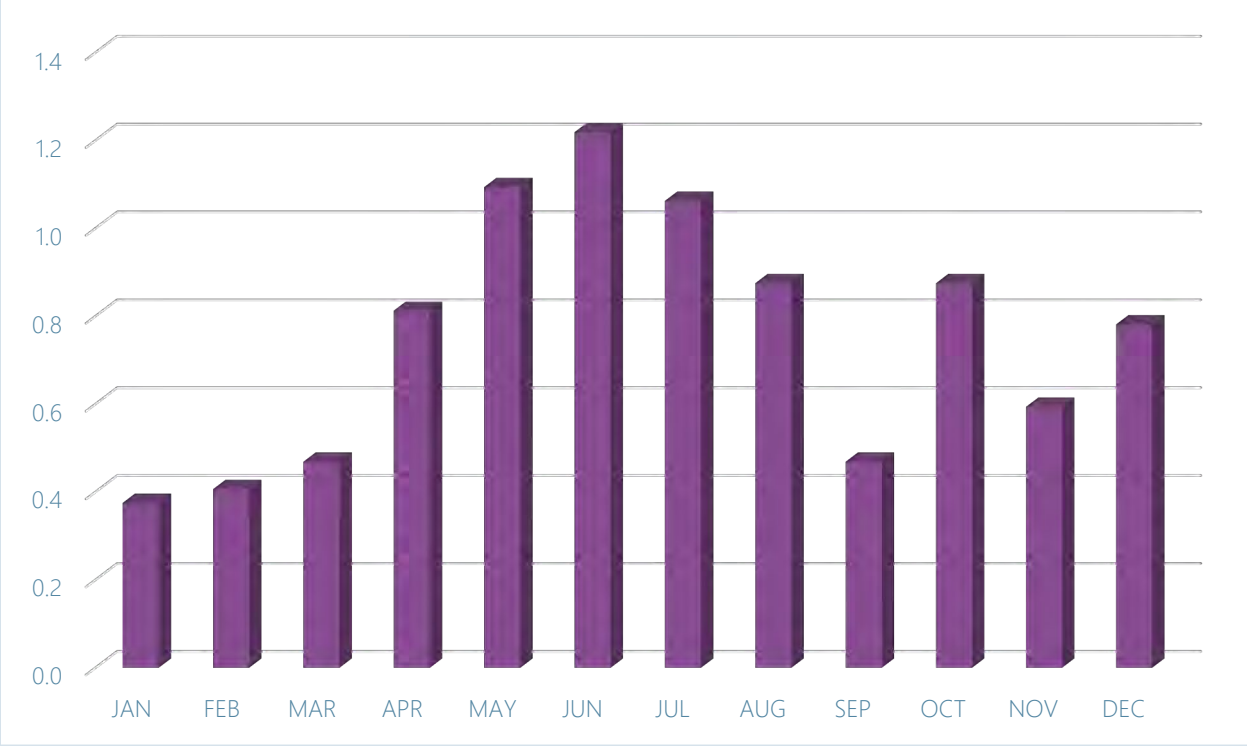
Figure 4-24 Hazardous Materials Spills in Larimer County, 1987-2019



Source: National Response Center https://nrc.uscg.mil/

Figure 4-25 shows the average number of hazmat incidents in Larimer County per month. Incidents are most common in the summer and fall.

Figure 4-25 Average Number of Hazardous Materials Spills in Larimer County by Month



Source: National Response Center https://nrc.uscg.mil/

The vast majority of these incidents resulted in little or no damage. NRC reports only 40 hazmat incidents from 1987-2019 that resulted in injuries, evacuations, or property damage. This translates to an average of 1.2 damaging hazmat incidents per year. Altogether, the NRC reports 10 fatalities, 29 injuries, 13 evacuations, and $200,000 in property damage associated with the 40 incidents. However, it is important to note that the NRC counts all injuries or damages resulting from an accident where hazardous materials were involved, whether or not the injuries or damages were caused by exposure to the hazardous substance; closer analysis shows that a majority of the injuries, fatalities, and property damages were from the physical impacts of the accident that caused the release, rather from exposure to hazardous materials themselves.

Location

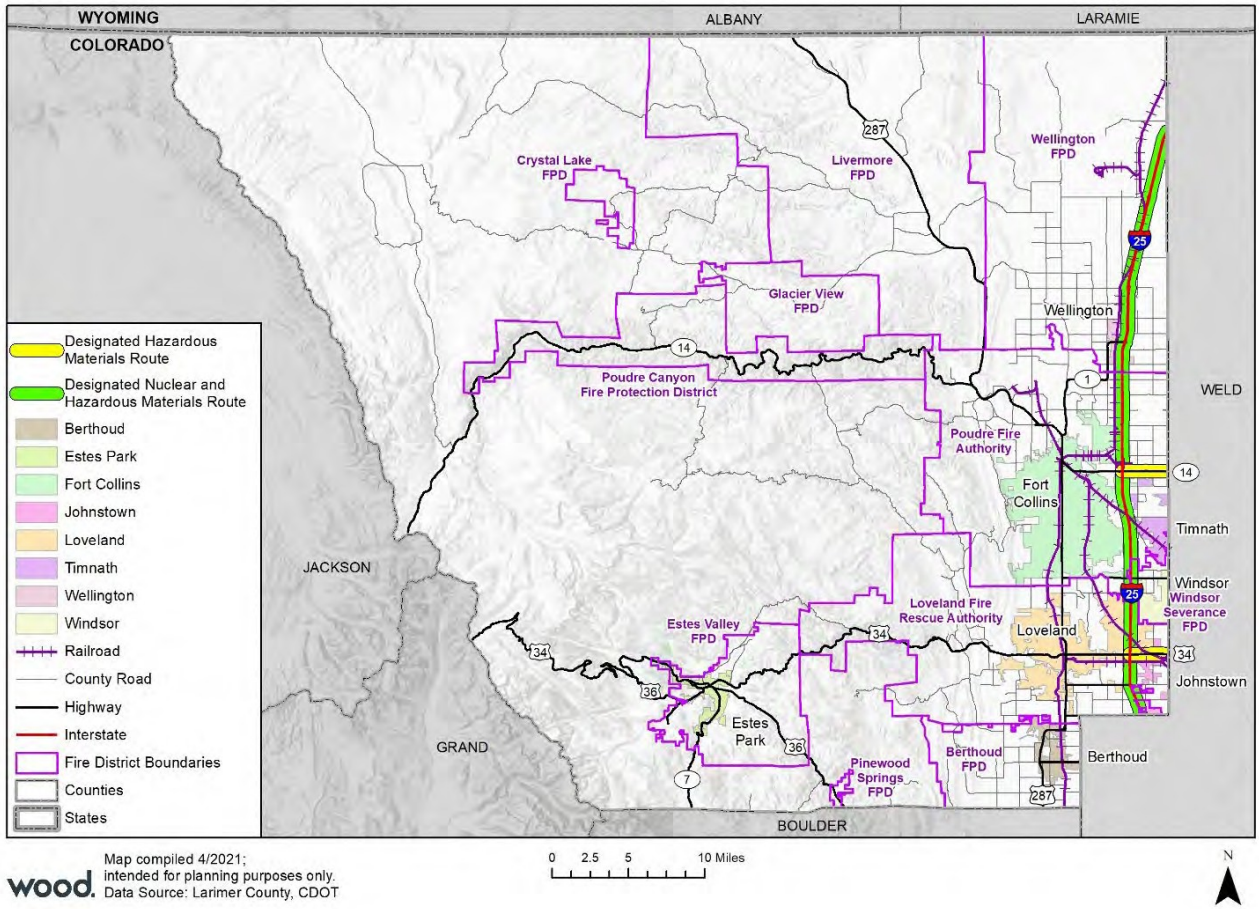
Limited - Hazmat incidents can occur at fixed facilities or during transportation, as discussed below. Overall, the geographic coverage of this hazard in Larimer County is limited, with less than 10% of the planning area affected based on historical experience. However, depending on the type and quantity of spills and the medium affected, the geographic area affected by a spill could potentially become much larger, for example if the material was spilled into a waterway.

Generally, with a fixed facility, the hazards are pre-identified. The U.S. Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 requires industries to report on the storage, use, and releases of hazardous substances to federal, state, and local governments. Facilities in Colorado must submit an emergency and hazardous chemical inventory form (Tier II form) to the Colorado Department of Public Health and Environment (CDPHE) and, if required by local reporting regulations, the Local Emergency Planning Committee (LEPC) and local fire departments annually. Tier II forms provide state and local officials and the public with information on the general hazard types and locations of hazardous chemicals present at facilities during the previous calendar year. The inventory forms require basic facility

identification information, employee contact information for both emergencies and non-emergencies, and information about chemicals stored or used at the facility. The EPA also requires facilities containing certain extremely hazardous substances to generate Risk Management Plans (RMPs) and resubmit these plans every five years. The Cities of Fort Collins and Loveland have the majority of the Risk Management Plan (RMP) facilities in the County.

The following map shows the state's designated nuclear, hazardous materials, and gasoline, diesel fuel, and liquid petroleum gas routes, many of which pass through the eastern portion of Larimer County.

Figure 4-26 Colorado Hazardous and Nuclear Materials Route Restrictions in Larimer County



Magnitude/Severity

A major hazardous materials incident could potentially have critical impacts, causing multiple deaths, property damage, and/or interruption of essential facilities and service for more than 72 hours. However, historically the impact of hazardous materials incidents in Larimer County has been limited.

The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night? All of these considerations matter when determining the risk and potential damages associated with a hazmat incident.

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazards can occur during production, manufacturing, storage, transportation, use, or disposal. Impacts from hazardous materials releases can include:

- Fatalities
- Injury
- Evacuations
- Property damage
- Animal fatalities (livestock, fish & wildlife)
- Air pollution
- Surface or ground water pollution/contamination
- Interruption of commerce and transportation

Numerous factors influence the impacts of a hazardous materials release, including the type and quantity of material, location of release, method of release, weather conditions, and time of day. This makes it difficult to predict precise impacts. The impact to life and property from any given release depends primarily on:

- The type and quantity of material released.
- The human act(s) or unintended event(s) necessary to cause the hazard to occur.
- The length of time the hazard is present in the area.
- The tendency of a hazard, or that of its effects, to either expand, contract, or remain confined in time, magnitude, and space.
- Characteristics of the location and its physical environment that can either magnify or reduce the effects of a hazard.

Speed of Onset: Hazardous material incidents may occur quickly with little to no warning.

Duration: While the event may occur quickly and suddenly, the duration of the event lasts until it is contained, or the area is decontaminated.

Probability of Future Occurrences

Likely - As noted above, Larimer County experiences 12 hazardous materials incidents per year on average, roughly one of which will cause damages or injuries. The probability is higher in the urban areas and along major transportation routes, but incidents are possible in the entirety of the county area.

As development continues to encroach into existing industrial areas and becomes denser along high-risk designated hazardous materials transportation routes, the risk of future occurrences becomes greater. Even if the frequency of hazmat spills remains the same over time, population growth will increase the probability of a disaster event.

Climate Change Considerations

There are no known effects of climate change on human-caused hazards such as hazardous materials incidents.

Vulnerability Assessment

When hazardous materials are being transported, they are particularly vulnerable to transportation related accidents, misuse, or terrorist threats. Most hazardous materials are transported in large quantities in order to reduce costs and security is difficult to maintain around moving vehicles that cross jurisdictional boundaries. When transported close to populated areas or critical infrastructure, hazmat releases can have serious consequences. The inventory that is most often exposed to hazmat risks are railways, roadways,

and fixed facilities that contain hazardous materials, and all assets that lie within a mile of the potential release areas. Due to the location of designated hazardous materials and nuclear material routes, communities on the Front Range and eastern plains are more vulnerable to the transportation of hazardous materials in comparison to the communities in the western portion of county. These communities are also vulnerable to impacts of incident at fixed facilities. All 10 RMP facilities are located in the eastern portion of the County, including 5 in the City of Fort Collins.

People

Hazardous materials incidents impact on people is highly dependent on the location of the incident, but can cause injuries, hospitalizations, and even fatalities to people nearby. People living near hazardous facilities and along transportation routes may be at a higher risk of exposure, particularly those living or working downstream and downwind from such facilities. For example, a toxic spill or a release of an airborne chemical near a populated area can lead to significant evacuations and have a high potential for loss of life.

Vulnerable populations can be more severely impacted by hazardous materials incidents. People with existing health risks or compromised immune systems could be severely affected by releases of even relatively low-impact materials. Low income families may be more likely to live in industrial areas or near hazardous materials routes. Individuals with disabilities may need more time to evacuate, so evacuation notices will need to be issued as soon as feasible, and communicated by multiple, inclusive methods.

General Property

The impacts of major hazardous materials incidents are potentially catastrophic, causing multiple deaths, property damage, and/or interruption of essential facilities and service for more than 72 hours. However, historically the impact of hazardous materials incidents in Larimer County have been limited. The impact of most fixed facility incidents is typically localized to the property where the incident occurs. The impact of small spills during transportation may also be limited to the extent of the spill and remediated if needed. While cleanup costs from major spills can be significant, they do not typically cause significant long-term impacts to property.

Critical Facilities and Infrastructure

Impacts of hazardous material incidents on critical facilities are most often limited to the area or facility where they occurred, such as at a transit station, airport, fire station, hospital, or railroad. However, they can cause long-term traffic delays and road closures resulting in major delays in the movement of goods and services. These impacts can spread beyond the planning area to affect neighboring counties, or vice-versa. While cleanup costs from major spills can be significant, they do not typically cause significant long-term impacts to critical facilities.

Table 4-44 shows the results of GIS analysis that overlaid hazard layers with the location of hazardous materials facilities as defined by FEMA Lifelines in the County.

Table 4-44 Hazardous Material Facilities and Potential Hazard Risk

Jurisdiction	Hazard	# of Hazardous Material Facilities*
Unincorporated	Dam Inundation	4
	Geologic	6
	Wildfire (Low Risk)	3
	Wildfire (Lowest Risk)	1
	Total	**14**
Fort Collins	Dam Inundation	5
	Flood (0.2% chance)	1

Jurisdiction	Hazard	# of Hazardous Material Facilities*
	Geologic**	17
	Expansive Soil	2
	Wildfire (Low Risk)	1
	Total	**26**
Loveland	Dam Inundation	1
	Geologic	1
	Total	**2**
Grand Total		**84**

Source: Larimer County GIS, Wood analysis
*As defined by FEMA Lifelines **Includes 1 facility within severe potential of hazard area

Economy
The primary economic impact of hazardous material incidents results from lost business, delayed deliveries, property damage, and cleanup costs. Large and publicized hazardous material-related events can deter tourists and recreationists and could potentially discourage residents and businesses. Even small incidents have cleanup and disposal costs, and for a larger scale incident these could be extensive and protracted. Evacuations can disrupt home and business activities. Large-scale incidents can easily reach $1 million or more in direct damages, with clean-ups that can last for years.

Historic, Cultural and Natural Resources
Hazmat incidents can cause serious environmental contamination to natural resources such as air, ground, and water sources. Hazardous material incidents may affect a small area at a regulated facility or cover a large area outside such a facility. Widespread effects occur when hazards contaminate the groundwater and eventually the municipal water supply, or they migrate to a major waterway or aquifer. Impacts on wildlife and natural resources can also be significant.

Future Land Use and Development
As Larimer County continues to experience population growth and development over time, it is anticipated that there will be increased exposure to potential life loss, injuries, and environmental damage resulting from a hazardous materials incident. Serious considerations must be made concerning land use and regulations as increasing development pressures push residential and commercial investment closer to railways and identified hazardous and nuclear materials routes.

Risk Summary

- There were 289 hazardous materials incidents reported between 1987-2019, an average of 9.32 incidents per year. Roughly half these incidents took place at fixed facility sites and half took place during transport.
- Only 40 of those incidents resulted in reported injuries, fatalities, evacuations or damages, an average of 1.2 per year.
- Only 3% of incidents were caused by a natural hazard event; most of the rest were due to accidents.
- There are 707 Tier II facilities and 10 Risk Management Plan facilities in Larimer County.
- Related Hazards: Dam Incident, Earthquake, Erosion/Deposition, Flood, Landslide/Rockslide, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire and Winter Storm.

4.3.8 Landslide/Rockslide

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Landslide / Rockslide	Likely	Limited	Critical	High

Description

Landslides are one of the most common geologic hazards in Colorado and are characterized by the downward and outward movement of loose material on slopes. They include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steep slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters such as seismic activity of heavy rain fall. Other contributing factors include the following:

- Erosion by rivers creating over-steepened slopes
- Rock and soil slopes weakened through saturation by snowmelt or heavy rains
- Earthquakes creating stresses that make weak slopes fail
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from manmade structures stressing weak slopes
- Floods or long duration precipitation events creating saturated, unstable soils that are more susceptible to failure

Slope material often becomes saturated with water and may develop a debris or mudflow. If the ground is saturated, the water weakens the soil and rock by reducing cohesion and friction between particles. Cohesion, which is the tendency of soil particles to "stick" to each other, and friction affect the strength of the material in the slope and contribute to a slope's ability to resist down slope movement. Saturation also increases the weight of the slope materials and, like the addition of material on the upper portion of a slope, increases the gravitational force on the slope. Undercutting of a slope reduces the slope's resistance to the force of gravity by removing much-needed support at the base of the slope. Alternating cycles of freeze and thaw can result in a slow, virtually imperceptible loosening of rock, thereby weakening the rock and making it susceptible to slope failure. The resulting slurry of rock and mud can pick up trees, houses, and cars, and block bridges and tributaries, causing flooding along its path. Additionally, removal of vegetation can leave a slope much more susceptible to superficial landslides because of the loss of the stabilizing root systems.

Geologists identify active landslides and areas subject to slope instability so that they may be avoided or mitigated. Together, geologists and civil engineers develop and implement measures to improve the stability of slopes, repair existing landslides, and prevent damage from future landslides. Slope stability can be improved by removing material from the top of the slope, adding material or retaining structures to the base of the slope, and reducing the degree of saturation by improving drainage within the slope.

Past Occurrences

There are a couple of data sources for landslide events in the last 30 years. Table 4-45 lists landslide incidents that blocked major transportation routes in Larimer County between 1989 and 2004 according to the Northern Colorado Regional Hazard Mitigation Plan. Highways 14 and 34 provide routes for essential services for communities in the Poudre Canyon, Big Thompson Canyon, Estes Park, Rocky Mountain National Park, and Towns of Granby and Grand Lake.

Table 4-45 Landslide/Rockslide Incidents That Blocked Roadways Between 1989 and 2004 in Larimer County

Date	Location	Length of Incident	Description
7/25/2004	Highway 14	closed – 24 hours	rockslide
7/14/2004	Highway 14	closed – 24 hours	rockslide
4/5/2002	Highway 34	closed – 24 hours	rockslide
6/19/1999	Highway 14	closed – 21 days	large rock/landslide
2/23/1993	Highway 14	closed – 72 hours	avalanche/rockslide
8/1/1989	Highway 34	closed – 8 hours	rockslide

Source: 2010 Northern Colorado Regional Hazard Mitigation Plan

Table 4-46 shows landslide/rockslide data from the NASA Global Landslide Catalog, and lists 13 landslide incidents in Larimer County between 2012 and 2019 (NASA 2020). Like most landslides, these were all triggered by heavy rain events.

Table 4-46 Landslides in Larimer County between 2012 and 2017

Year	Month	Event Description	Location
2012	July	Colorado Highway 14 in Poudre Canyon is closed from Ted's Place at U.S. Highway 287 to Poudre Park due to mudslides in the area.	Hwy 14, High, park, Poudre Canyon
2012	September	A roughly 100-foot mudslide was reported in Buckhorn Canyon.	Buckhorn Canyon, Larimer county, CO
2012	September	More rain in an area that burned in the High Park wildfire in Larimer County has led to at least two mudslides. One slide left about 50 yards of debris and rushing water on Colorado Highway 14, leaving that part of the road impassable Thursday afternoon. The Colorado Department of Transportation was working to clear the road.	Colorado Hwy, Larimer County, CO
2013	June	Highway officials have reopened Colorado 14 northwest of Fort Collins after clearing a mudslide that partially covered the road. The highway was closed west of Ted's Place to Stove Prairie at about 8:45 p.m. Friday as thunderstorms and hail pummeled northern Colorado. It was reopened at about 12:45 a.m. Saturday. Kari Bowen, a meteorologist for the National Weather Service in Boulder, tells The Denver Post that rain fell at the rate of 2.29 inches an hour in the Fort Collins area Friday night with thunderstorms and hail.	Colorado Highway 14, West of Fort Collins, Denver, Colorado
2013	July	About 4 p.m., the Sheriff's Office also reported "minor debris" on County Road 27 -- the Stove Prairie Road -- between County Road 52E and Colorado 14.	On County Road 27 -- Between County Road 52E And Colorado 14.
2013	July	Residents temporarily evacuated from their Rist Canyon homes were allowed to return home Sunday night after rains gave way to flooding, washing fine sediment down the roads and sweeping out parts of driveways. Authorities started receiving reports of mudslides and flooding in areas of Colorado 14 and Davis Ranch Road at about 5:15 p.m. An evacuation notice went out to more than 40 people in the Falls Creek Drive area just before 7 p.m., the Larimer County Sheriff's Office tweeted. It wasn't known whether there were any injuries or damage to structures reported, as of Sunday night.	Colorado 14, Roosevelt National Forest, Bellvue, Co

Year	Month	Event Description	Location
2013	July	One lane of Colorado Highway 14 has opened in the Poudre Canyon approximately 7 miles west of Ted's Place, after a mudslide. The road was closed at about 3:25 p.m. The lane was opened around the mudslide about 25 mins later. A flash flood warning is in effect for the area until 5 p.m. Doppler radar indicated heavy rain across the High Park burn scar just before 3 p.m. and said flash flooding was expected shortly. Some locations that will experience flooding include Poudre Park; the National Weather Service warned.	Colorado Highway 14 Has Opened in The Poudre Canyon
2013	July	Two mudslides in the Poudre Canyon trapped motorists and closed Colorado Highway 14 northwest of Fort Collins on Friday. Large rocks and logs were swept into the canyon after an afternoon thunderstorm dumped more than 2 inches of rain on slopes charred by last summer's High Park Fire. The afternoon deluge left travelers stranded as road crews worked into the evening to clear tons of debris. The two road-clogging mudslides were located about a mile west of the Mishawaka Amphitheatre and trapped vehicles between them.	Colorado Highway 14, Poudre Canyon, Co
2013	July	Thursday afternoon thunderstorm resulted in localized damage to the lower Fern Lake Trail, located on the east side of Rocky Mountain National Park, according to a park release. The debris flow originated on the slope to the north of the trail in an area burned by the Fern Lake Fire. The debris, consisting primarily of mud, rocks and trees, covered more than 150 yards of trail and in places is estimated to be 4 feet deep. The 2 mile section of the Lower Fern Lake Trail remains closed from the trailhead to The Pool until a damage assessment is complete.	Lower Fern Lake Trail, Rocky Mountain National Park, Co
2013	September	It's an amazing, but little-known September storm rescue story. A draft horse mired in a mudslide at an Estes Park resort was rescued by an excavator operator who "very gently" used a big metal bucket to scoop up the mud and the horse and move it to solid ground. The rescue happened on Sunday, Sept. 15, after torrential rains that unleashed flooding caused a massive mudslide that engulfed parts of the horse stables and parking lot at Aspen Lodge Resort & Spa on Highway 7, employee Kristina Naldjian told 7NEWS. Some parked cars were buried in a several feet of mud. There were 25 horses in the stable area, and all were unharmed, except for Rosie, a draft horse who became mired in several feet of watery mud. Employees tried unsuccessfully to help free the exhausted horse, which was buried up to its hips in mud, Naldjian said. "Rosie was basically giving up, she was a goner," Naldjian said. "The mud was very deep, and she totally was sucked into it. Fortunately, an excavator boom was used to scoop the mud under the horse, lifting Rosie with it. After the mudslide, 25 employees and six guests had to sleep in the lodge's restaurant until they could be evacuated, Naldjian said. The 25 horses were evacuated to an area ranch and later moved down to the Fort Collins area, she said. The lodge will be closed for several months because the mudslide damaged its water infrastructure and water treatment plant.	Aspen Lodge Resort, Estes Park, Co
2013	July	River rafters are still feeling the effects of 2012's High Park fire. Mudslides and debris in the Cache la Poudre River due to heavy rains in the High Park fire burn area have made for interesting rafting conditions, according to area outdoor adventure companies.	Cache La Poudre River Near High Park Fire Burn Area, Co

Year	Month	Event Description	Location
		A mudslide Friday stranded motorists for a brief time at highway marker 104 and blocked the river at "Three Way" rapids. "It went across the street and pretty much destroyed that rapid," said Sam LaBarre, a rafting guide with A1 Wildwater Rafting. "This whole thing that jetties out right here was all water. (The mudslide) came down the mountain and this whole road was covered with about three feet of silt, rock, leaves. Not even a kayak can get through there," said Branden Gunn on Monday at the site of the mudslide.	
2017	May	Rockslide blocks highway.	CR 43, near Drake CO
2017	May	Many small rockslides along Estes Park stretch of Route 36 due to storms.	80517, Estes Park, Colorado

Source: NASA Global Landslide Catalog

Location

Figure 4-27 shows historical and potential landslide and rockslide areas in Larimer County. The western mountainous portion of Larimer County are more susceptible to Landslides and Rockslides.

Figure 4-27 Larimer County Landslide Deposits

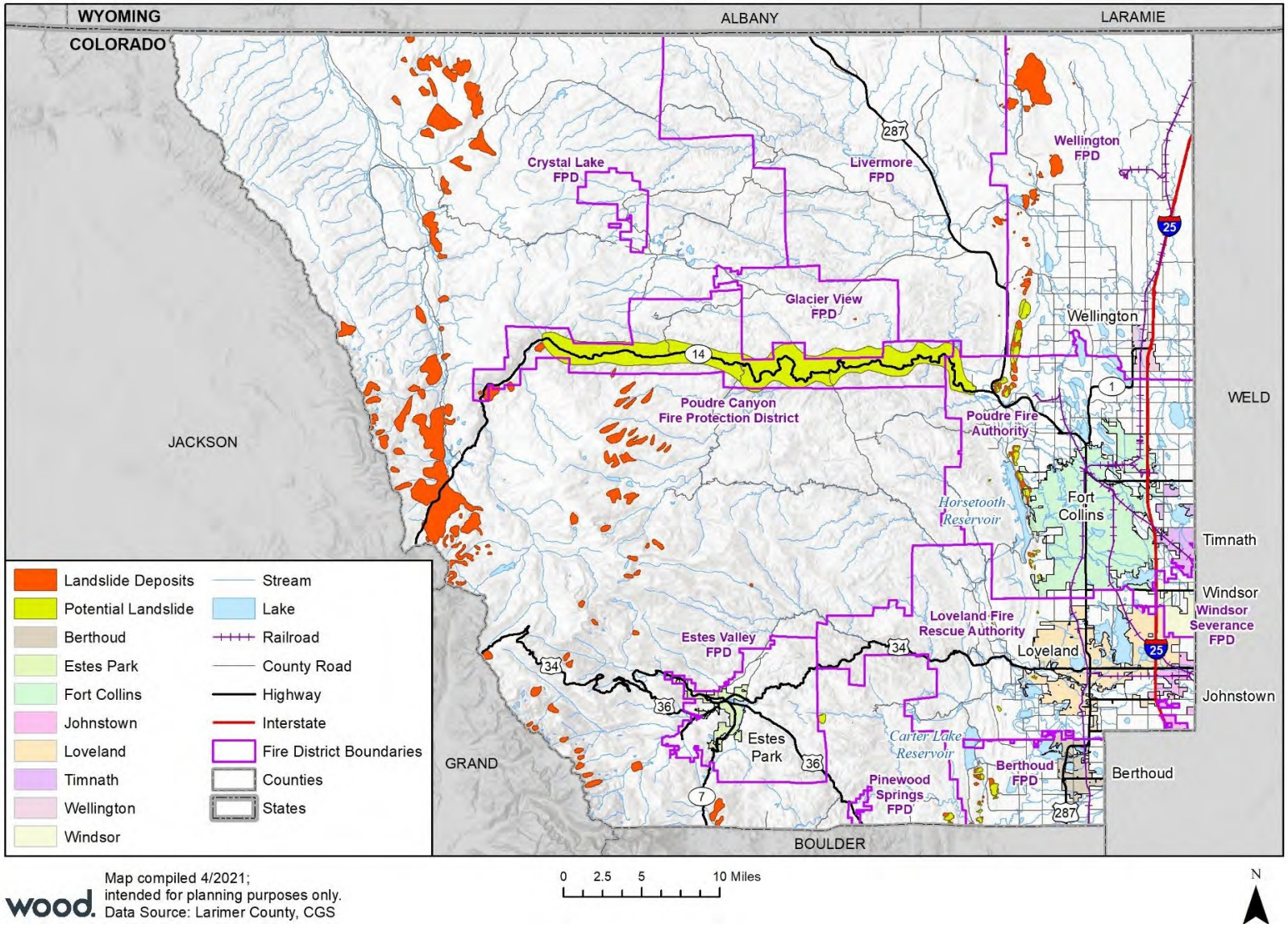
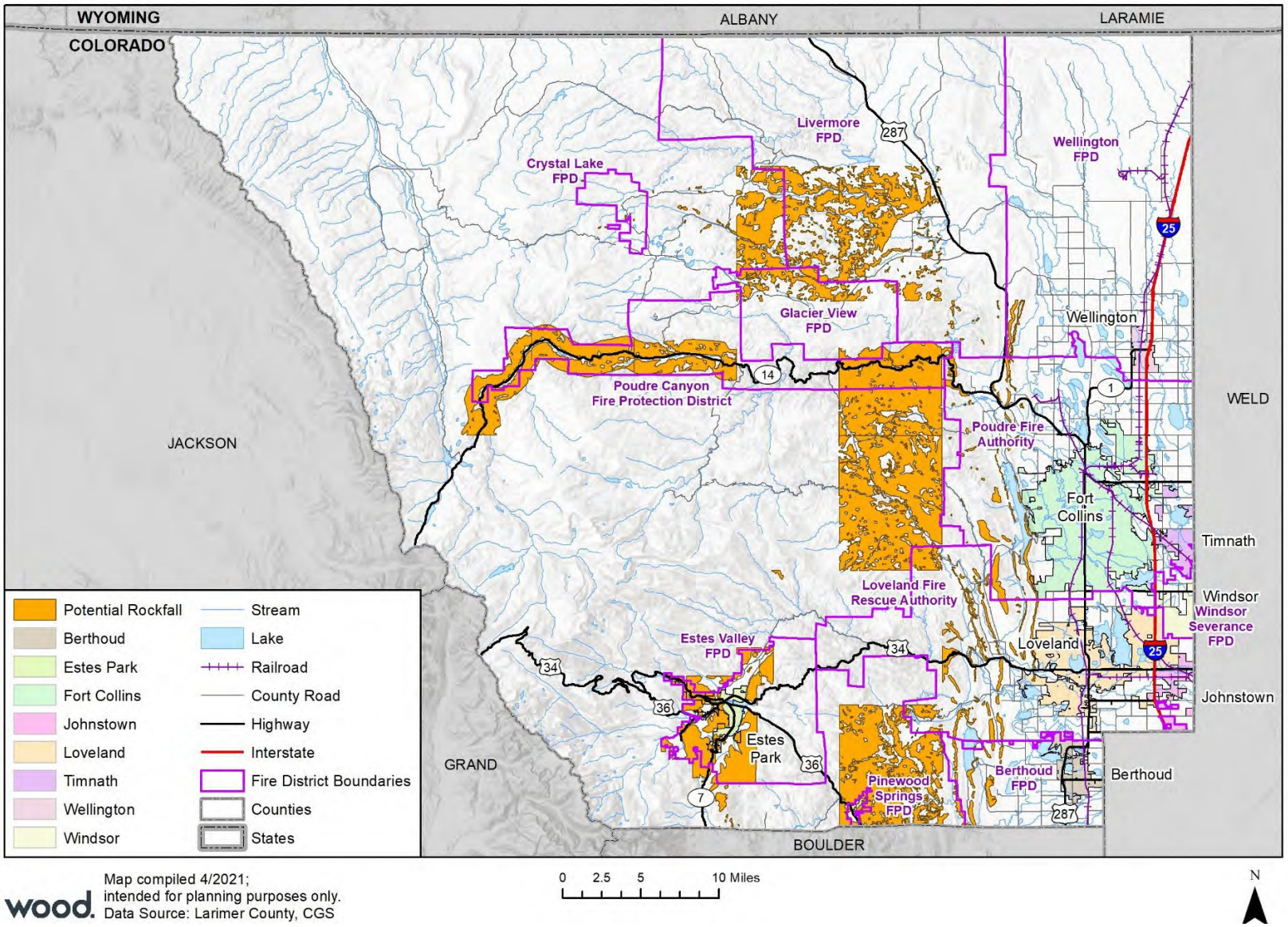


Figure 4-28 Larimer County Potential Rockslide Areas



Magnitude/Severity

Landslides and rockslides often come with minimal to no warning. The duration of an event is quick, in the range of seconds to minutes, but the effects can last up to a day or two if blocking a roadway or knocking out power. Common problems associated with landslides and rockslides include the loss of utilities or immobility. Loss of life is rare but could occur during landslides or rockfalls. Immobility can occur when roads become impassable due to landslides or rockslides. Interruption or loss of power lines or transportation pathways can occur due to landslides or rockslides.

The severity of landslides or rockslides depends on the amount of material (soil, debris, or rocks) moved and where it stops moving (e.g., on roadway).

Probability of Future Occurrences

Based on the NASA landslide inventory, there were 13 reported landslide/rockslide events between 2012 and 2017 in Larimer County which produces an annual average of just over two landslides. It should be noted that some landslides may not be reported due to smaller size or remote location. This data range also included the 2013 heavy precipitation events and floods, which likely increased landslide activity with 8 of the 13 reported landslides occurring in 2013.

Also, according to the Northern Colorado Regional Hazard Mitigation Plan, there were six events that blocked Highways 14 or 34 over 16 years. This comes to an average of about a landslide/rockslide event that closes Highway 14 or 34 in Larimer County every three years. The most recent wildfire in Larimer County, the 2020 Cameron Peak Fire, has increased the potential for landslides or rockslides along the Highway 14 corridor or along County Road 103 due to burn severity in that area.

Overall, the probability of future occurrences of rockslide and landslide events in Larimer County is likely with an occurrence likely in the next year. Many areas in the western portion of the county are prone to these types of hazard events due to their proximity to previous landslide events, their location at the base or top of steep slopes and drainage basins, or their location on infill or steep slope cuts. Moreover, as development and population increase in the county, increasing numbers of structures (and people) will be exposed to future landslide and rockslide events.

Climate Change Considerations

Average annual temperatures have increased since the 1970s in Larimer County (Doerr 2019). This has contributed to more water evaporation making drought more common, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. Wildfires and earthquakes destabilize soil on steep slopes increasing landslide risk. Erosion caused by development on steep hillsides increases risk of landslides. Since the 1950s, snow precipitation and duration of snowpack have both decreased while rising temperatures have increase rate of water evaporating into the air, creating drier soil conditions in Colorado (EPA 2016).

Vulnerability Assessment

People

Exposure is the greatest danger to people in remote locations in areas of steep slopes and higher precipitation areas in the western to central portion of the county. People who travel along these roadways or highways that are susceptible to landslides and rockslides are also exposed. Past landslides in Larimer County have not caused loss of life, injuries, or major property damage. Landslides have closed down highways for hours to days, which can affect essential services for rural populations. As population, tourism, and development increases in landslide prone areas, landslide occurrence interacting with people and development will also increase.

While not technically a landslide or rockslide, a backcountry skier was caught in an avalanche and died near Cameron Pass on Highway 14 in December of 2019. According to the History of Colorado Avalanche accidents, there have been eight fatalities due to avalanches between 1950 and 2006 (Atkins 2006).

General Property

Landslides and rockslides affect the entire planning area of Larimer County and affected jurisdictions that have steep slopes near roadways or critical infrastructure. Although damage or losses to transportation corridors and structures are typically minimal, there can be impacts with lost time, maintenance costs, and tourism.

Table 4-47 Improved Properties at Risk to Landslide by Parcel Type within Larimer County.

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Fort Collins	Residential	26	30	$13,845,739	$6,922,868	$20,768,607	74
	Total	**26**	**30**	**$13,845,739**	**$6,922,868**	**$20,768,607**	**74**
Loveland	Exempt	1	3	$850,320	$850,320	$1,700,640	
	Residential	5	5	$1,760,795	$880,398	$2,641,193	12
	Total	**6**	**8**	**$2,611,115**	**$1,730,718**	**$4,341,833**	**12**
Unincorporated	Agricultural	20	23	$7,001,251	$7,001,251	$14,002,502	
	Commercial	8	15	$1,745,554	$1,745,554	$3,491,108	
	Exempt	11	30	$25,835,857	$25,835,857	$51,671,714	
	Mobile Home	3	8	$861,396	$430,698	$1,292,094	20
	Residential	409	545	$91,184,540	$45,592,260	$136,776,800	1,341
	Total	**451**	**621**	**$126,628,598**	**$80,605,620**	**$207,234,218**	**1,360**
	Grand Total	**483**	**659**	**$143,085,452**	**$89,259,206**	**$232,344,658**	**1,446**

Source: CGS, Larimer County Assessor's Office, Wood analysis.

There were 659 buildings throughout 483 parcels in Fort Collins, Loveland, and unincorporated jurisdictions that were at risk to landslide and rockfall. The improved value of the buildings is over $143 million dollars with the total value over $232 million dollars.

Table 4-48 Improved Properties at Risk to Rockslides by Parcel Type within Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Estes Park	Commercial	35	50	$40,710,265	$40,710,265	$81,420,530	
	Exempt	7	7	$2,690,293	$2,690,293	$5,380,586	
	Multiple Unit	3	10	$3,825,000	$3,825,000	$7,650,000	
	Residential	568	597	$224,991,221	$112,495,614	$337,486,835	1,164
	Total	**613**	**664**	**$272,216,779**	**$159,721,172**	**$431,937,951**	**1,164**
Loveland	Residential	10	10	$4,555,168	$2,277,583	$6,832,751	24
	Total	**10**	**10**	**$4,555,168**	**$2,277,583**	**$6,832,751**	**24**
Unincorporated	Agricultural	109	128	$38,008,320	$38,008,320	$76,016,640	
	Commercial	12	18	$8,941,681	$8,941,681	$17,883,362	
	Exempt	15	57	$64,660,836	$64,660,836	$129,321,672	
	Mobile Home	1	1	$26,400	$13,200	$39,600	2

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
	Residential	1,391	1,545	$511,586,652	$255,793,329	$767,379,981	3,801
	Total	**1,528**	**1,749**	**$623,223,889**	**$367,417,366**	**$990,641,255**	**3,803**
	Grand Total	**2,151**	**2,423**	**$899,995,836**	**$529,416,121**	**$1,429,411,957**	**4,991**

Source: CGS, Larimer County Assessor's Office, Wood analysis.

There were 2,423 buildings throughout 2,151 parcels in Estes Park, Loveland, and Unincorporated jurisdictions that were at risk to rockfall and improved. The improved value of the buildings is over $899 million dollars with the total value over $1.4 billion dollars.

Most structures, including the County's critical facilities, should be able to provide adequate protection from smaller landslides or rockslides with mesh or cable nets, barriers, and fences, or catchment areas. These designed structures can stop, control, reduce or provide a safe location for landslides/rockslides (FHWA 2011).

Critical Facilities and Infrastructure

The critical facility exposure analysis estimates that there are seven critical facilities with potential landslide hazards and three facilities with potential rockslide hazards. These facilities consist of a health and medical facility in Fort Collins as well as nine other facilities for food/water/shelter, communications, and safety/security facilities in unincorporated areas. These facilities do not include miles of roadway that are susceptible to landslides and rockslides.

Table 4-49 Critical Facilities with Potential Landslide Hazards

Jurisdiction	FEMA Lifeline	Count
Fort Collins	Health and Medical	1
Unincorporated County	Food, Water, Shelter	5
	Miscellaneous	1
	Safety and Security	1
Total		**7**

Source: CGS, Cascarta, Larimer County, Wood analysis.

Table 4-50 Critical Facilities with Potential Rockslide Hazards

Jurisdiction	FEMA Lifeline	Count
Unincorporated County	Communications	1
	Food, Water, Shelter	2
Total		**3**

Source: CGS, Cascarta, Larimer County, Wood analysis.

Economy

Economic impact of landslides/rockslides is typically short term, although it can be significant. Landslide/rockslide events can cause road closures and structural damage. As noted in the Past Occurrences subsection above, landslides and rockslides in Larimer County have led to 13 events that have closed, damaged, or impacted roadways between 2012 and 2020. There were also 6 closures of Highways 14 and 34 between 1989 and 2004.

Historic, Cultural and Natural Resources

Landslides/rockslides are a natural environmental process. Environmental impacts include the removal of vegetation, soil, and rock.

Future Land Use and Development

As population growth brings new development into available land in the county, more inventory assets may become exposed to landslides and rockslides hazards.

Rapid and sustained population growth across Colorado and the Front Range has contributed to increasing trends in landslide/rockslide hazard risk, exposure, and vulnerability across Larimer County. There have been property and infrastructure damages associated with these hazards within the county and landslides and rockslides have been categorized as a high risk hazard. Based on historical data, the natural process of landslides and rockslides will continue over time occurring between once every three years and as many two times per year.

As of 2018, more than 87% of Larimer County's population lives in jurisdictions that are not in landslide/rockslide prone areas. Based on past and projected population growth, it is very likely that future development will lead to the intersection of landslides and rockslides-prone areas. As development pressures continue in undeveloped areas of the county, vulnerability to landslides and rockslides may increase across Larimer County.

Typically, the process of landslides and rockslides do not limit land use, especially if efforts are made to minimize it. Landslide and rockslide impacts can be reduced and controlled by road bank slope design, surface drainage management, and re-vegetation of disturbed lands. Ground modification and structural solutions can help mitigate the threats of localized landslides and rockslides. Proper drainage and water management are also important to prevent increasing vulnerability to landslide and rockslide hazards.

Risk Summary

- The central to western portion of the county is susceptible to the impacts of landslides and rockslides, especially in areas of steep slopes during high precipitation events in spring or summer.
- There have been 13 landslide/rockslide events between 2012 and 2020 resulting in road closures, road repairs, travel delays, and some home evacuations.
- There were six landslide/rockslide events that closed Highways 14 and 34 between 1989 and 2004.
- The total value of properties at risk to landslides and rockslides within Larimer County is over $1.6 billion, not including utilities or roadways.
- Related hazards: spring/summer storms, earthquakes, wildfires.

4.3.9 Soil Hazards

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Soil Hazards	Likely	Limited	Limited	Medium

Description

Erosion / Deposition

Erosion and deposition are the removal and transportation of earth materials from one location to another by water, wind, waves, or moving ice. Erosion occurs when soil is removed at a greater rate than it is formed. Deposition is the placing of the eroded earth in another location, typically by wind or water. The natural geologic process of erosion has occurred since the Earth's formation and continues at a very slow and uniform rate. Soil erosion hazard is the term used to describe how likely it is for soil in a given area to erode rapidly. It depends on the inherent properties of the soil, the topography, vegetative cover, soil disturbance (including over-grazing, drought, flooding, wind, etc.), and rainfall intensity.

Although soil erosion is a natural process, rapid erosion can lead to a serious loss of topsoil and a reduction of cropland productivity. It can also contribute to the pollution of adjacent watercourses, wetlands, and lakes. During the processes of wind and water erosion, infrastructure and mechanical equipment can be damaged by soil build-up and dust. Additionally, blowing soils can affect human and animal health and create public safety hazards.

Soil erosion and deposition have the potential to cause substantial losses to Larimer County assets. Erosion and deposition alone pose little harm to the county; however, when assets are placed in close proximity to erosion and deposition-prone environments such as a valley near a stream or riverbed, hazard vulnerability increases significantly. For example, when heavy rain and snowmelt result in increased stream flow, the erosion of riverbanks can pose significant risks to transportation infrastructure, including roads and bridges. Severe erosion can remove earth from beneath bridges, roads, and foundations of structures adjacent to streams. The deposition of material can block culverts, aggravate flooding, destroy crops and lawns, and reduce capacity in water reservoirs.

Land Subsidence

Land subsidence describes any depressions, cracks, and/or sinkholes in the earth's surface which can threaten people and property. Causes of subsidence include, but are not limited to, the removal or reduction of sub-surface fluids (water, oil, gas, etc.), mine subsidence, and hydro compaction. Of these causes, hydro-compaction and mine subsidence usually manifest as localized events, while fluid removal may occur either locally or regionally.

Collapsible Soils

Collapsible soils can quickly settle or collapse the ground. This settling of the ground can cause damage to manmade structures. The most common type of collapsible soil is Hydrocompactive soil. This type of soil occurs in semi-arid to arid climates and consist of low density and low moisture content soil. The soil grains in these areas are not compact tightly together but rather stacked loosely. These soils are considered strong while in a dry state. However, when moisture is introduced the stacked soil grains can collapse causing ground surface subsidence or settlement.

Expansive Soils

Expansive soils contain minerals that are capable of absorbing water. As the soil absorbs water it expands and increases in volume. The change in soil volume can cause damage to man- made structures such as foundations. As the soils begin to dry, they will then shrink. The shrinking of the soils can deplete the structural support of soil and cause damaging subsidence.

Past Occurrences

There are no good historical data available for erosion/deposition, subsidence, or expansive soil events in Larimer County.

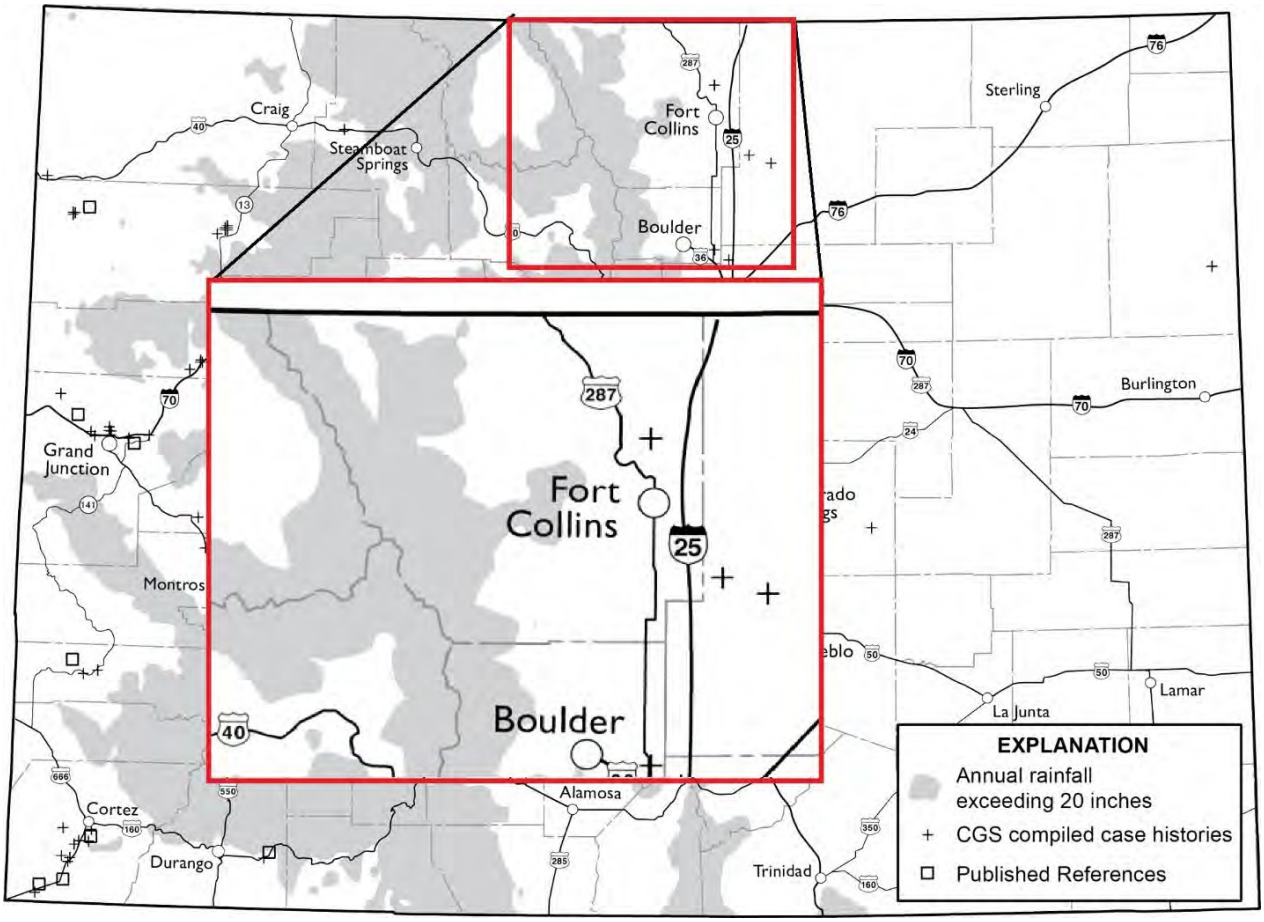
The erosion and deposition of soil by storm events, flooding, wildfires, irrigation, runoff, and traffic/snow removal operations is a regular occurrence in Larimer County. The deposited sediments in ditches and culverts require ongoing maintenance and routine cleaning.

In the 2013 flood events, material was eroded, moved, and deposited along riverbanks and riverbeds throughout Larimer County, including the Cache la Poudre River, Big Thompson, Little Thompson, and Fossil Creek. Mud and silt deposited during the 2013 floods presented numerous public health hazards to public and private property. In addition, the deposited material was likely covering hazardous waste and contaminated material from leach-fields and septic tanks (Board of Commissioners of Larimer County 2014).

Historically undermined areas are shown below in Figure 4-30. Historically undermined areas are prone to subsidence.

There is one collapsible soil event history north of Fort Collins as shown in Figure 4-29.

Figure 4-29 Collapsible Soil Case Histories in Larimer County



Source: Colorado Geological Survey

Location

A Significant portion of Larimer County is at risk from soil hazards, including the most populated jurisdictions in the southeastern portion of Larimer County. Additionally, due to the number of river and stream systems, soil erosion is likely throughout the County from runoff, flooding and wildfire events.

Figure 4-30 shows areas of historic (pre-1970s) coal and clay mining activity and potentially undermined areas throughout Colorado. This map reflects the extent of mining outlines. The dataset does not include hard rock mineral mines, prospects, etc. Due to incomplete historic mine records and survey errors, the dataset should NOT be considered complete or perfectly accurate. The dataset was developed from multiple sources and digitized by the Colorado Geological Survey in 2008.

There are hundreds of abandoned underground coal mines scattered throughout Colorado that present potential subsidence hazards to structures and surface improvements. The Colorado Geological Society (CGS) operates the Colorado Mine Subsidence Information Center (MSIC) which is the repository for all the known existing maps of inactive or abandoned coal mines in the state.

Where there are historic underground mines, special hazards exist such as subsidence because material has removed that supports the ground above. The overburden material above these underground mined areas change over time causing the underground mined areas to give out and fill in causing a surface level subsidence.

Figure 4-30 Historically Undermined Areas – Larimer County

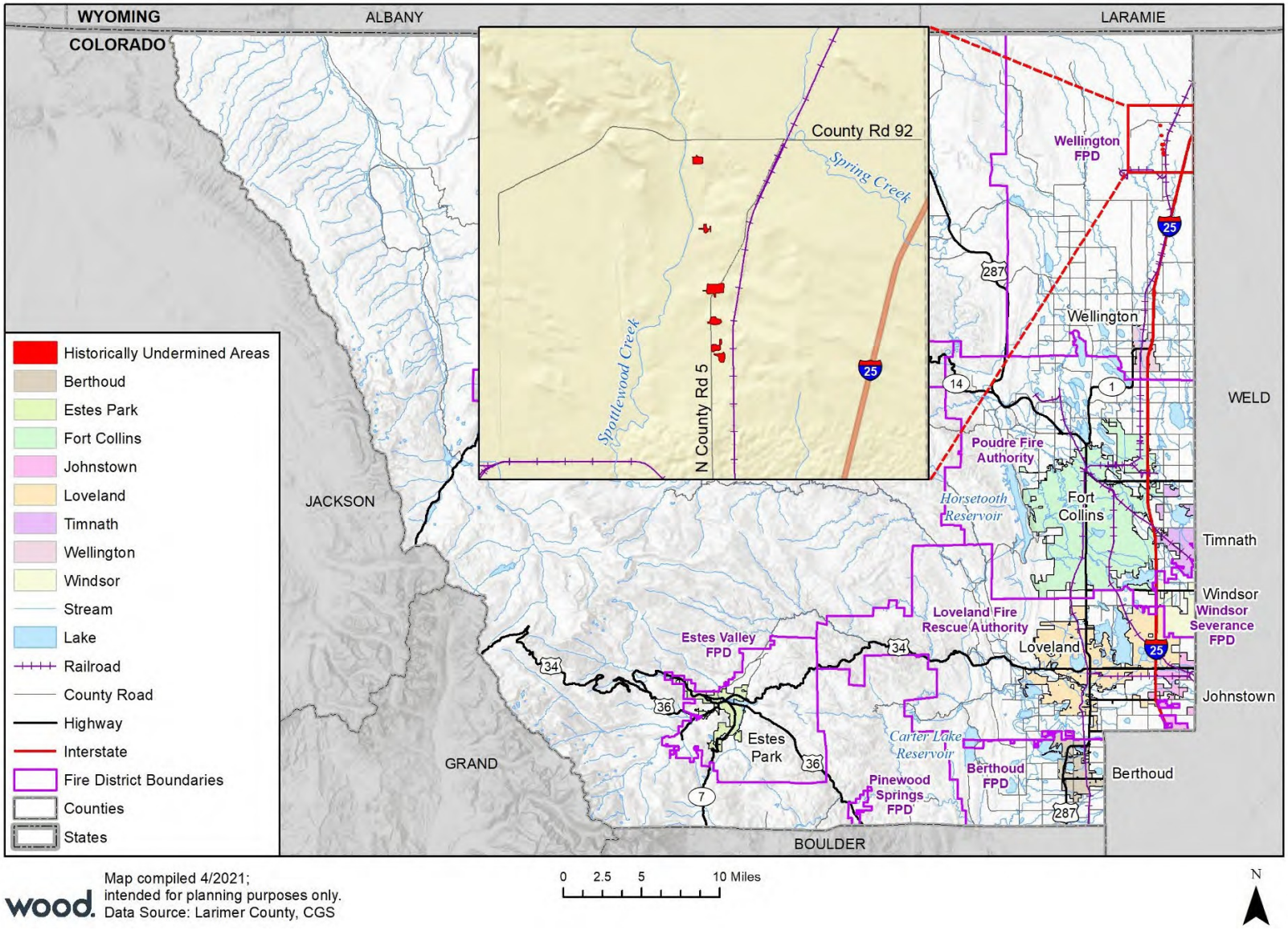
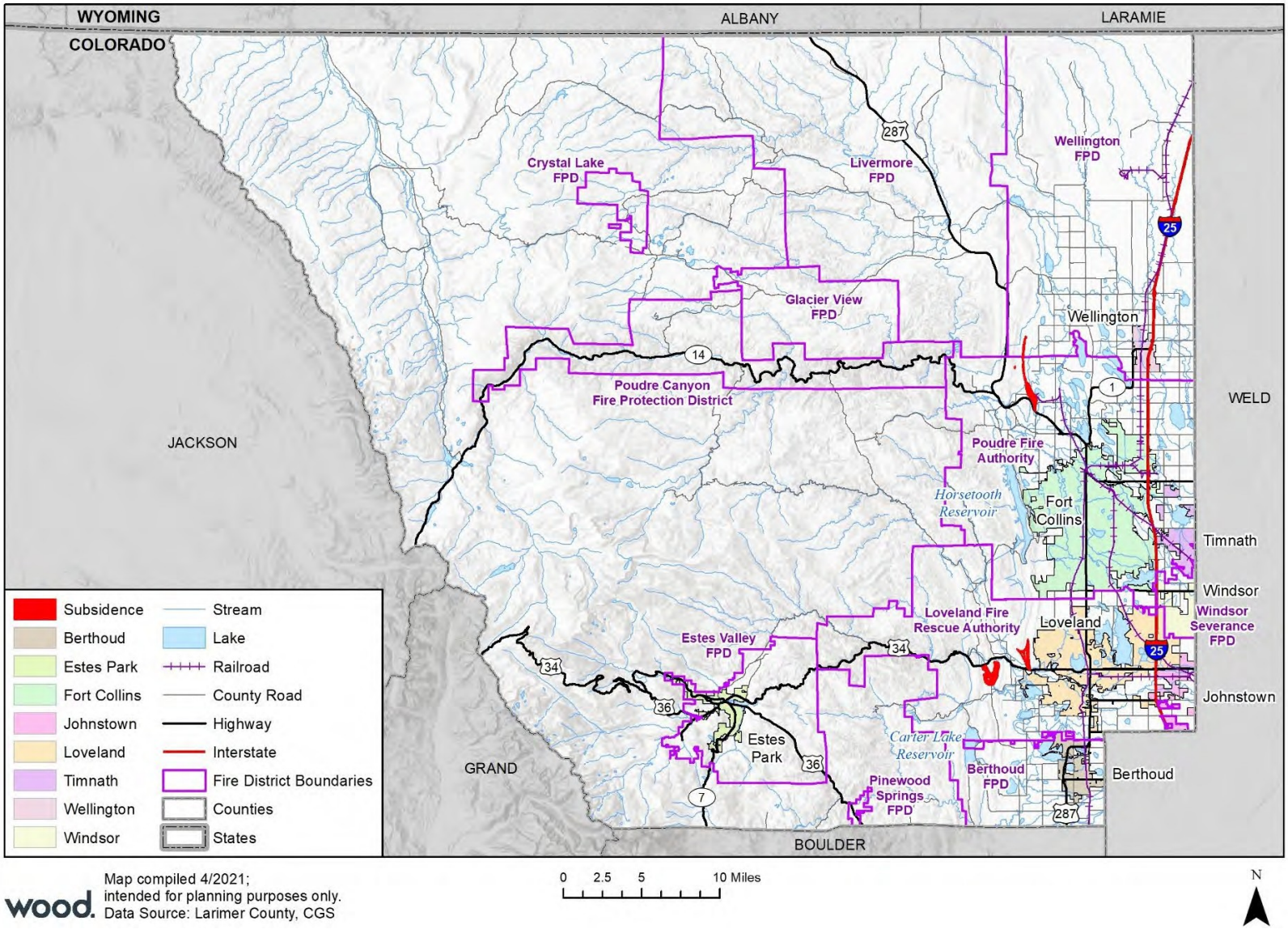


Figure 4-31 Potential Land Subsidence Areas – Larimer County



Undermined areas are areas of potential subsidence. In addition to the undermined areas, the Colorado Geological Survey has mapped out other potential subsidence areas based on geologic and soil composition and history as well as hydrologic features (Colorado Geological Survey 2020).

Subsidence tends to be most problematic along the Colorado Front Range, Western Slope, and in the central mountains near Eagle and Garfield Counties. Figure 4-31 presents a map identifying the locations within Larimer County that have potential for subsidence. The highest potential for land subsidence is in the eastern region of the County west of the urban area.

Collapsible Soils

Collapsible soils underlie most of the populated jurisdictions in the County.

Figure 4-30 presents a map identifying the locations within Larimer County that have potential for collapsible soil. The highest potential for collapsible soil is in the southeastern region of the County including areas in and around Loveland, Fort Collins, and Berthoud.

Expansive Soils

Expansive soils underly most of the highest populated jurisdictions in the county in the southeast. Figure 4-33 presents a map identifying the locations within Larimer County that have potential for expansive soil. The highest potential areas for moderately expansive soil are in the eastern region of the County including areas in and around Loveland, Fort Collins, and Berthoud.

Figure 4-32 Potential Collapsible Soils Areas – Larimer County

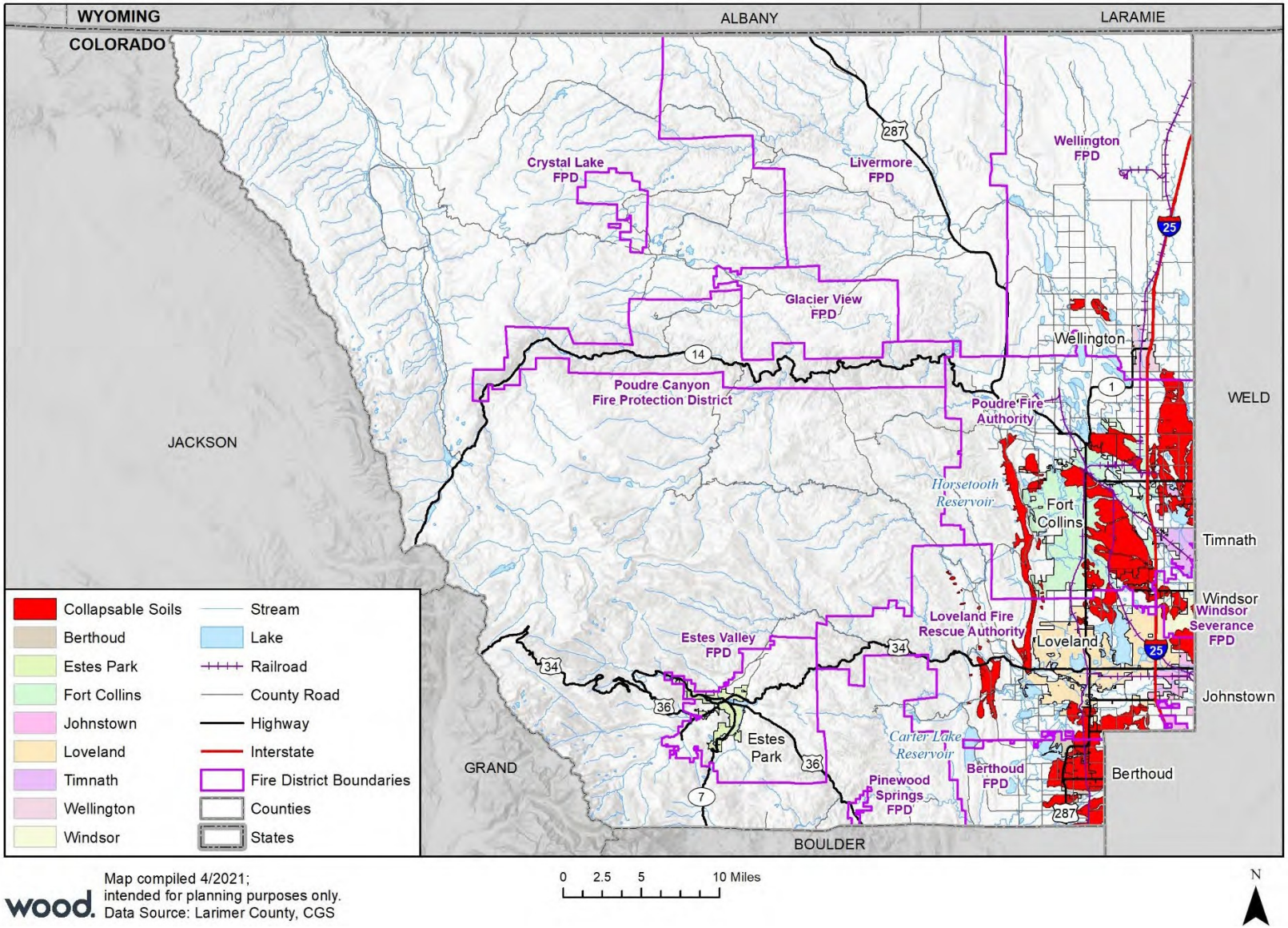
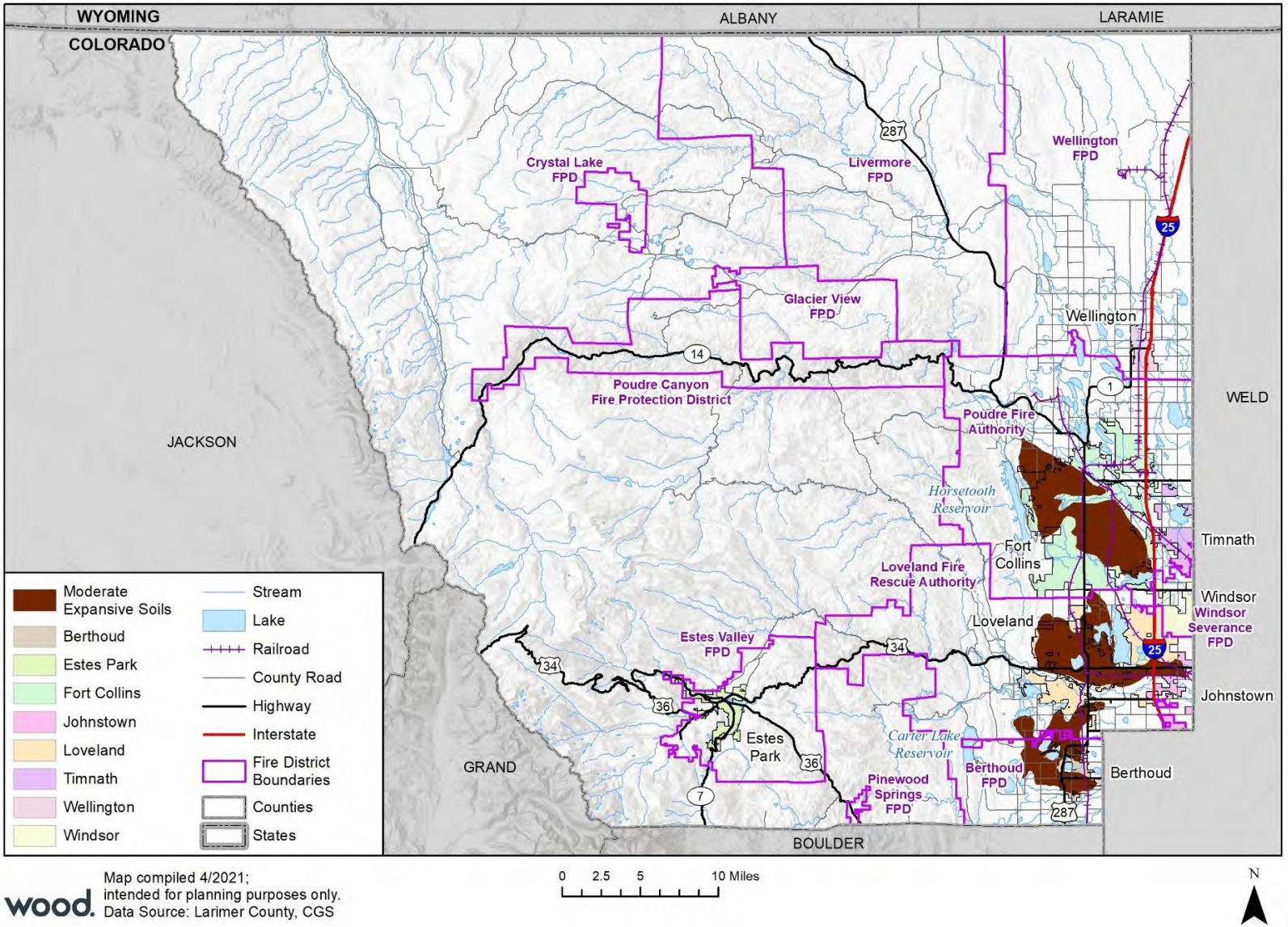


Figure 4-33 Potential Expansive Soils Areas – Larimer County



Magnitude/Severity

Damages from soil hazards can be classified as cosmetic, functional, or structural. Cosmetic damages refer to slight problems where only the physical appearance of a structure is affected (e.g., cracking in plaster or drywall). Functional damage refers to situations where the use of a structure has been impacted due to subsidence. Structural damages include situations where entire foundations require replacement due to subsidence-caused cracking of supporting walls and footings.

Most soil hazards have weeks to months of warning time. Subsidence has a shorter warning time (i.e., hours to days). However, these events can be ongoing over months or years, continuing to cause damage until mitigated.

Erosion / Deposition

The warning time for erosion and deposition is weeks to years, unless it is associated with a severe storm event such as the 2013 floods, then it would be days. The duration of the erosion and deposition are long lasting and often permanent changes to the landscape, unless intervention involves movement of deposited material and reclamation of eroded areas.

Land Subsidence

Land subsidence affects localized areas but can affect the region if it affects transportation corridors. Land subsidence can occur rapidly with only an hour or two of warning due to sinkholes, the collapse of underground mines, or during an earthquake. Subsidence can also take place slowly, becoming evident over the time span of many years. Subsidence events can pose significant risks to health, safety, and local agricultural economies and interruption to transportation, and other services.

Collapsible Soils

Collapsible soil, like land subsidence, affects localized areas but can affect the region if it affects transportation corridors such as a highway or roadway. Soils that tend to collapse and settle are those characterized by low-density materials that shrink in volume when they become wet and/or are subjected to weight from development. Collapsible soil events can occur rapidly with only an hour or two of warning. The effects of collapsible soil can last months to years for the small area of collapse. Collapsible soil events can occur in a remote field or near a residential community or roadway. The location of the event determines its effects and can pose significant risks to health, safety, and local agricultural economies and interruption to transportation, and other services.

Expansive Soils

Expansive soil occurs slowly over time, typically over months to years. Expansive soils affect localized areas such as foundations of a building or a section of a roadway. If expansive soils affect a transportation corridor, then it would affect the region to a greater extent. The effects are long lasting, often years, unless human intervention corrects or compensates for expansive soil properties.

Probability of Future Occurrences

Due to a lack of data, it is difficult to accurately estimate the likelihood of future soil events. Anecdotally, these events tend to occur every few years overall.

Erosion / Deposition

It is likely that erosion and deposition will continue to slowly alter the landscape of Larimer County in the coming years. In the last 10 years major erosion and deposition of material in riverbanks and roadways

along waterways only occurred during the 2013 floods. If another storm event of that magnitude happens, major erosion and deposition of material on roadways along waterways will occur again. In the semi-arid climate of Colorado, increases in seasonal precipitation, coupled with periods of prolonged drought, may accelerate processes of erosion. Areas burned by the 2020 Cameron Peak wildfire are likely to see increased erosion as well due to loss of plant life.

Land Subsidence

It is probable that the eastern region of Larimer County will experience more frequent land subsidence hazards over time as a result of local climate change and expansion of development. It is important that Larimer County consider future mitigation actions that will address this hazard, particularly in rapidly growing areas west of Loveland and northwest of Fort Collins. In the past, major land subsidence has occurred in agricultural settings where ground-water has been pumped for irrigation.

Collapsible Soils

Although there is only one documented case of a damaging collapsible soil event in Larimer County, based on the potential collapsible soils data from the Colorado Geological Survey it is likely that minor cases will continue to occur. With local climate and changes and increased development, the probability of a collapsible soil event will increase.

Expansive Soils

The damaging effects of expansive soils over time will occur to a higher degree with local climate changes and increased development in these highly populated jurisdictions.

Climate Change Considerations

Changing climate conditions are expected to affect soil resources in many ways. During hot, dry years annual grasses that stabilize and protect topsoil often fail to germinate or do not grow well. This leaves soil surfaces highly vulnerable to erosion from wind and precipitation runoff. Without the availability of nutrient- rich topsoil, crops struggle to survive and flourish. As discussed previously, higher rates of erosion can have a profound effect on agricultural production and on the economies of rural areas of the county.

In areas where climate change results in decreased precipitation in the summer months and reduced surface-water supplies, communities are often forced to pump more ground water to meet their needs. In Colorado, the major aquifers are composed primarily of compressed clay and silt, soil types that are prone to compact when ground-water is pumped, increasing the chances of collapsing or subsidence.

Many soils and rocks have the potential to swell or expand based on a combination of its mineralogy and water content. The actual swelling of expansive soils will be caused by a change in the environment (e.g., water content, stress, chemistry, or temperature) in which the material exists. Since the 1950s, snow precipitation and duration of snowpack have both decreased while rising temperatures have increase rate of water evaporating into the air and earlier runoff, creating drier soil conditions in Colorado (EPA 2016). More extremes in climate conditions (e.g., wet-dry conditions), could potentially exacerbate the swelling of expansive soil issues in the future.

Vulnerability Assessment

People

There are no reported injuries or deaths to these soil hazards in Larimer County, and direct impacts on people are likely to be very minimal.

General Property

Buildings and infrastructure across the county may be vulnerable to the impacts of erosion and deposition. Although damage or losses to structures are typically minimal, there can be impacts with mitigation and maintenance costs, lost time, and minor structural damage.

Table 4-51 Improved Properties at Risk to Potential Land Subsidence within Larimer County

Jurisdiction	Property Type	Improved Parcels	Building Count	Improved Value	Contents Value	Total Value	Population
Unincorporated County	Agricultural	3	4	$1,619,160	$1,619,160	$3,238,320	
	Commercial	1	1	$84,100	$84,100	$168,200	
	Exempt	1	3	$898,976	$898,976	$1,797,952	
	Residential	41	43	$21,104,288	$10,552,143	$31,656,431	131
	Total	**46**	**51**	**$23,706,524**	**$13,154,379**	**$36,860,903**	**131**

Source: CGS, Larimer County Assessor's Office, Wood analysis.

There were 51 buildings throughout 46 parcels at risk to land subsidence within the County. The improved value of the buildings at risk is over $23 million dollars with the total value over $36 million dollars. The Land Subsidence hazard is only mapped in the Unincorporated County, no jurisdictions are at risk.

Table 4-52 Improved Properties at Risk to Potential Collapsible Soil within Larimer County

Jurisdiction	Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Berthoud	Agricultural	7	9	$2,177,570	$2,177,570	$4,355,140	
	Commercial	187	218	$64,659,447	$64,659,447	$129,318,894	
	Exempt	24	156	$46,225,920	$46,225,920	$92,451,840	
	Industrial	11	11	$10,360,100	$15,540,150	$25,900,250	
	Mobile Home	8	193	$11,195,282	$5,597,642	$16,792,924	483
	Multiple Unit	17	39	$9,385,600	$9,385,600	$18,771,200	
	Residential	2,722	2,798	$834,403,320	$417,201,663	$1,251,604,983	6,995
	Total	**2,976**	**3,424**	**$978,407,239**	**$560,787,992**	**$1,539,195,231**	**7,478**
Fort Collins	Agricultural	13	18	$3,865,281	$3,865,281	$7,730,562	
	Commercial	1,038	2,374	$1,122,346,966	$1,122,346,966	$2,244,693,932	
	Exempt	263	1,413	$1,052,873,595	$1,052,873,595	$2,105,747,190	
	Industrial	13	22	$107,811,855	$161,717,782	$269,529,637	
	Mobile Home	8	567	$52,582,225	$26,291,112	$78,873,337	1,395
	Multiple Unit	228	2,864	$828,929,415	$828,929,415	$1,657,858,830	
	Residential	21,504	22,244	$8,209,609,790	$4,104,804,969	$12,314,414,759	54,720
	Total	**23,067**	**29,502**	**$11,378,019,127**	**$7,300,829,120**	**$18,678,848,247**	**56,115**
Loveland	Agricultural	1	1	$6,660	$6,660	$13,320	
	Commercial	9	18	$37,127,444	$37,127,444	$74,254,888	
	Exempt	3	100	$9,873,091	$9,873,091	$19,746,182	

Jurisdiction	Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
	Mobile Home	2	277	$22,378,807	$11,189,404	$33,568,211	662
	Multiple Unit	2	243	$63,599,996	$63,599,996	$127,199,992	
	Residential	998	1,001	$299,489,955	$149,744,974	$449,234,929	2,392
	Total	**1,015**	**1,640**	**$432,475,953**	**$271,541,569**	**$704,017,522**	**3,054**
Timnath	Agricultural	1	1	$20,956	$20,956	$41,912	
	Exempt	2	2	$704,246	$704,246	$1,408,492	
	Residential	324	325	$170,144,636	$85,072,313	$255,216,949	1,079
	Total	**327**	**328**	**$170,869,838**	**$85,797,515**	**$256,667,353**	**1,079**
Windsor	Commercial	89	99	$47,874,331	$47,874,331	$95,748,662	
	Exempt	5	5	$8,054,765	$8,054,765	$16,109,530	
	Industrial	1	1	$954,200	$1,431,300	$2,385,500	
	Residential	924	927	$441,890,614	$220,945,315	$662,835,929	2,605
	Total	**1,019**	**1,032**	**$498,773,910**	**$278,305,711**	**$777,079,621**	**2,605**
Unincorporated	Agricultural	226	265	$105,480,470	$105,480,470	$210,960,940	
	Commercial	25	31	$31,296,671	$31,296,671	$62,593,342	
	Exempt	21	88	$63,442,500	$63,442,500	$126,885,000	
	Industrial	4	4	$3,688,448	$5,532,672	$9,221,120	
	Mobile Home	31	436	$47,643,730	$23,821,864	$71,465,594	1,073
	Multiple Unit	3	19	$1,140,000	$1,140,000	$2,280,000	
	Residential	3,162	3,288	$1,402,014,166	$701,007,087	$2,103,021,253	8,088
	Total	**3,472**	**4,131**	**$1,654,705,985**	**$931,721,264**	**$2,586,427,249**	**9,161**
Grand Total		**31,876**	**40,057**	**$15,113,252,052**	**$9,428,983,171**	**$24,542,235,223**	**79,492**

Source: CGS, Larimer County Assessor's Office, Wood analysis.

There were 40,057 buildings throughout 31,876 parcels at risk to collapsible soil within the County. The improved value of the buildings at risk is over $15 billion dollars with the total value over $24 billion dollars. Fort Collins has the highest risk of all the jurisdictions with over $18 billion in total value.

Table 4-53 Improved Properties at Risk to Potential Expansive Soil within Larimer County

Jurisdiction	Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Berthoud	Agricultural	3	4	$821,162	$821,162	$1,642,324	
	Commercial	95	118	$30,597,319	$30,597,319	$61,194,638	
	Exempt	23	119	$39,717,272	$39,717,272	$79,434,544	
	Industrial	1	1	$310,600	$465,900	$776,500	
	Mobile Home	6	189	$12,324,747	$6,162,374	$18,487,121	473
	Multiple Unit	10	31	$24,977,995	$24,977,995	$49,955,990	

Jurisdiction	Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
	Residential	2,617	2,676	$803,591,127	$401,795,566	$1,205,386,693	6,690
	Total	**2,755**	**3,138**	**$912,340,222**	**$504,537,588**	**$1,416,877,810**	**7,163**
Fort Collins	Agricultural	8	11	$3,880,055	$3,880,055	$7,760,110	
	Commercial	1,241	3,016	$1,581,987,128	$1,581,987,128	$3,163,974,256	
	Exempt	395	3,082	$1,329,824,514	$1,329,824,514	$2,659,649,028	
	Industrial	14	24	$124,354,664	$186,531,996	$310,886,660	
	Mobile Home	8	713	$61,804,881	$30,902,441	$92,707,322	1,754
	Multiple Unit	550	6,799	$1,577,356,935	$1,577,356,935	$3,154,713,870	
	Residential	30,104	31,128	$10,939,460,732	$5,469,730,460	$16,409,191,192	76,575
	Total	**32,320**	**44,773**	**$15,618,668,909**	**$10,180,213,529**	**$25,798,882,438**	**78,329**
Johnstown	Commercial	68	80	$185,195,377	$185,195,377	$370,390,754	
	Exempt	1	1	$1,239,800	$1,239,800	$2,479,600	
	Multiple Unit	3	13	$139,044,525	$139,044,525	$278,089,050	
	Total	**72**	**94**	**$325,479,702**	**$325,479,702**	**$650,959,404**	**0**
Loveland	Agricultural	4	7	$778,541	$778,541	$1,557,082	
	Commercial	917	1,773	$801,682,878	$801,682,878	$1,603,365,756	
	Exempt	162	1,580	$379,633,347	$379,633,347	$759,266,694	
	Industrial	19	30	$31,115,244	$46,672,865	$77,788,109	
	Mobile Home	12	625	$61,563,930	$30,781,965	$92,345,895	1,494
	Multiple Unit	281	1,744	$338,196,778	$338,196,778	$676,393,556	
	Residential	16,566	17,217	$4,936,521,147	$2,468,260,580	$7,404,781,727	41,149
	Total	**17,961**	**22,976**	**$6,549,491,865**	**$4,066,006,954**	**$10,615,498,819**	**42,642**
Unincorporated	Agricultural	93	107	$42,512,256	$42,512,256	$85,024,512	
	Commercial	56	78	$38,714,649	$38,714,649	$77,429,298	
	Exempt	25	186	$69,428,115	$69,428,115	$138,856,230	
	Industrial	2	2	$443,621	$665,432	$1,109,053	
	Mobile Home	25	1,091	$93,444,714	$46,722,357	$140,167,071	2,684
	Multiple Unit	4	11	$1,583,596	$1,583,596	$3,167,192	
	Residential	3,605	3,761	$1,333,944,705	$666,972,364	$2,000,917,069	9,252
	Total	**3,810**	**5,236**	**$1,580,071,656**	**$866,598,769**	**$2,446,670,425**	**11,936**
Grand Total		**56,918**	**76,217**	**$24,986,052,354**	**$15,942,836,542**	**$40,928,888,896**	**140,070**

Source: CGS, Larimer County Assessor's Office, Wood analysis.

There were 76,217 buildings throughout 56,918 parcels at risk to expansive soil within the County. The improved value of the buildings at risk is over $24 billion dollars with the total value over $40 billion dollars. Fort Collins has the highest risk of all the jurisdictions with over $25 billion in total value.

Critical Facilities and Infrastructure

There are several critical assets across Larimer County are vulnerable to erosion and deposition. As population growth brings new development into available land in the county, more inventory assets may become exposed to erosion and deposition, subsidence, and collapsible and expansive soil hazards.

The critical facility exposure analysis estimates that there are no critical facilities within subsidence risk areas. The critical facility exposure analysis estimates that there 151 critical facilities with potential collapsible soil hazards, as shown in Table 4-54. This includes 15 facilities in Berthoud, 99 in Fort Collins, 5 in Loveland, 1 in Windsor, and the remaining 31 in unincorporated areas.

Table 4-54 Critical Facilities with Potential Collapsible Soil Hazards

Jurisdiction	FEMA Lifeline	Count
Berthoud	Energy	1
	Food, Water, Shelter	5
	Health and Medical	2
	Miscellaneous	1
	Safety and Security	6
	Total	**15**
Fort Collins	Communications	9
	Energy	12
	Food, Water, Shelter	13
	Health and Medical	20
	Miscellaneous	3
	Safety and Security	41
	Transportation	1
	Total	**99**
Loveland	Energy	1
	Food, Water, Shelter	2
	Health and Medical	1
	Safety and Security	1
	Total	**5**
Windsor	Energy	1
	Total	**1**
Unincorporated	Communications	1
	Food, Water, Shelter	19
	Health and Medical	3
	Safety and Security	8
	Total	**31**
	Grand Total	**151**

Source: CGS, Cascarta, Larimer County, Wood analysis.

The critical facility exposure analysis estimates that there 283 critical facilities with potential expansive soil hazards, as shown in Table 4-55. This includes 14 facilities in Berthoud, 171 in Fort Collins, 3 in Johnstown, 71 in Loveland, and the remaining 24 in unincorporated areas.

Table 4-55 Critical Facilities with Potential Expansive Soil Hazards

Jurisdiction	FEMA Lifeline	Count
Berthoud	Food, Water, Shelter	6
	Health and Medical	2
	Miscellaneous	1
	Safety and Security	5
	Total	**14**
Fort Collins	Communications	11
	Energy	20
	Food, Water, Shelter	46
	Hazardous Material	2
	Health and Medical	23
	Miscellaneous	9
	Safety and Security	59
	Transportation	1
	Total	**171**
Johnstown	Energy	1
	Health and Medical	2
	Total	**3**
Loveland	Communications	2
	Energy	6
	Food, Water, Shelter	23
	Health and Medical	8
	Miscellaneous	5
	Safety and Security	27
	Total	**71**
Unincorporated	Communications	3
	Energy	3
	Food, Water, Shelter	7
	Safety and Security	11
	Total	**24**
	Grand Total	**283**

Source: CGS, Cascarta, Larimer County, Wood analysis.

Economy

The economic cost of soil hazards is typically minor in the short term, although over time they can add up to significant impacts.

Historic, Cultural and Natural Resources

Erosion and deposition and associated collapsible and expansive soils are a natural environmental process. Nonetheless they have the potential to alter the landscape and cause damages to historic and cultural resources.

Land Use and Development Trends

Rapid and sustained population growth across Colorado and the Front Range has contributed to increasing trends in erosion/deposition hazard risk, exposure, and vulnerability across Larimer County. Larimer County and the surrounding areas are rich in natural resources and the continued development of industries related to these natural resources is a distinct possibility.

As of 2018, more than 87% of Larimer County's population lives in jurisdictions that have either moderately expansive soils or collapsible soils. Based on past and projected population growth, it is very likely that future development will take place on erosion-prone soils. As development pressures continue in un-developed areas of the County, vulnerability to soil hazards in those areas is likely to increase.

Typically, the process of erosion does not limit land use, especially if efforts are made to minimize it. Erosion impacts can be reduced and controlled by surface drainage management, re-vegetation or disturbed lands, controlling stream-carried eroded materials in sediment catchment basins, and riprapping of erosion-prone stream banks (especially adjacent to structures). Ground modification and structural solutions can help mitigate the threats of localize erosion and deposition. Proper drainage and water management are also important to prevent increasing vulnerability to erosion and deposition hazards.

Continued water and mineral resource extraction have the potential to exacerbate erosion/deposition and geologic hazards such as subsidence, collapsible soils, and expansive soils further and planning efforts should remain pro-active towards assessing changing geologic hazard risks.

In developments since 1999, engineered footing and foundation systems are used in areas of shrink/swell or expansive soils (Larimer County 1999).

Risk Summary

- Significant erosion and deposition of material resulted from the 2013 floods. The deposited mud and silt damaged public and private property including roadways and bridges.
- There is one collapsible soil event north of Fort Collins.
- There are known areas of undermined areas with potential subsidence in northeastern Larimer County north of Wellington near N County Rd 5 and County Rd 92.
- There are areas of potential subsidence west of Loveland and northwest of Fort Collins that would increase in risk as more development reaches these areas.
- The more densely populated southeastern portion of the county is more susceptible to the impacts of collapsible soils and moderately expansive soils.
- Related hazards: earthquake, wildfire, spring/summer storms, floods.

4.3.10 Spring/Summer Storm

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Thunderstorm, Hail, Windstorm, Lightning	Highly Likely	Extensive	Critical	High

Description

Spring is the season of the year that involves the transition period from winter to summer. As a result of this transition period, temperatures can swing back and forth causing extreme weather changes. Severe weather events occurring in the spring include heavy snow, thunderstorms, lightning, hail, strong winds, tornadoes and flooding. Summer storms consist typically of thunderstorms, lightning, and hail.

Lightning strikes can be hazardous under the right conditions and locations. Large hail can damage crops, dent vehicles, break windows, and injure or kill livestock, pets, and people. Strong winds can take down trees and damage property and infrastructure.

The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe. The National Weather Service considers a thunderstorm severe if it produces hail at least 3/4 inch in diameter, winds of 58 MPH or stronger, or a tornado. Every thunderstorm needs three basic components: (1) moisture to form clouds and rain, (2) unstable air which is warm air that rises rapidly, and (3) lift, which is a cold or warm front capable of lifting air to help form thunderstorms.

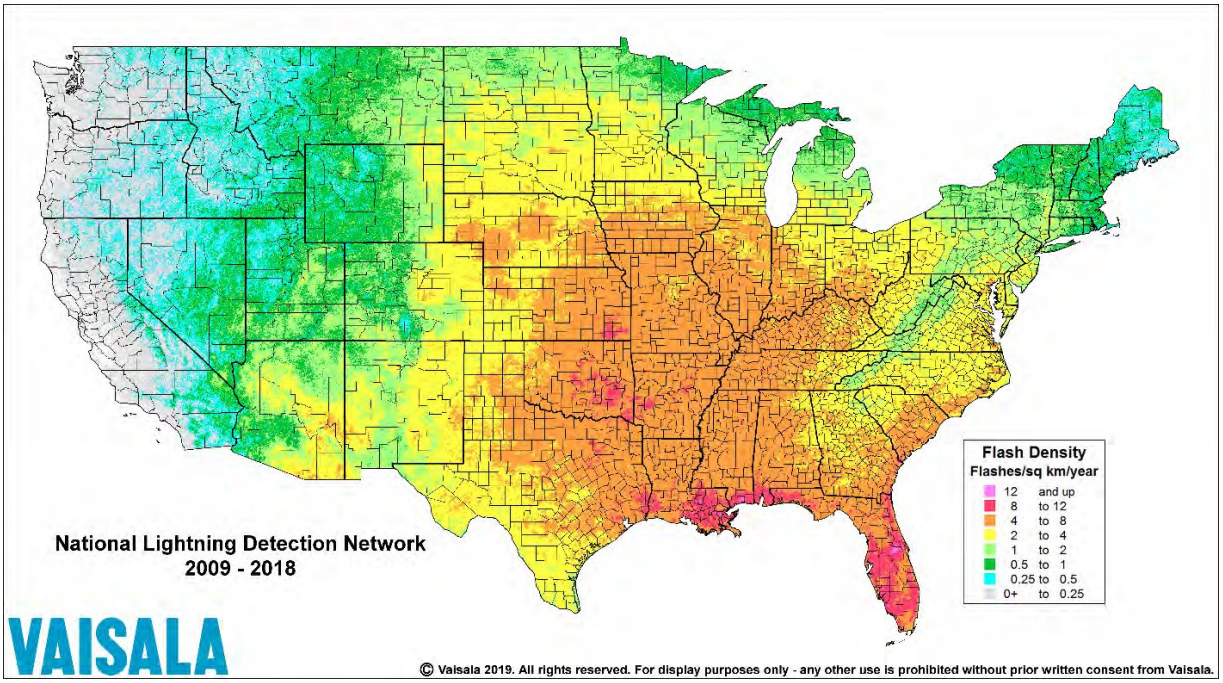
Thunderstorms can occur during strong winds, heavy rains, sleet, hail, snow, or even no precipitation at all. Thunderstorms are characterized by the presence of lightning and its audio effect on the Earth's atmosphere. Thunderstorms experience fast upward movement of warm air that contains moisture. When the air moves upwards it begins to cool and condense forming cumulonimbus clouds. Once the air cools enough to reach saturation water droplets and ice form and begin to fall. These falling droplets and ice create a downdraft of cold air, in turn causing rain, strong winds, and occasionally fog.

There are four types of thunderstorms: supercell, multicell lines, multicell cluster, and single cell. The strongest type of thunderstorm is the super cell and is associated with severe weather. Supercells are deep constantly rotating current of rising air called a mesocyclone.

Lightning, although not considered severe by the National Weather Service definition, can accompany heavy rain during thunderstorms. Lightning develops when ice particles in a cloud collide with other particles. These collisions cause a separation of electrical charges. Positively charged ice particles rise to the top of the cloud and negatively charged ones fall to the middle and lower sections of the cloud. The negative charges at the base of the cloud attract positive charges at the surface of the Earth. Invisible to the human eye, the negatively charged area of the cloud sends a charge called a stepped leader toward the ground. Once it gets close enough, a channel develops between the cloud and the ground. Lightning is the electrical transfer through this channel. The channel rapidly heats to 50,000 degrees Fahrenheit and contains approximately 100 million electrical volts. The rapid expansion of the heated air causes thunder.

Figure 4-34 depicts average cloud-to-ground lightning incidence in the US (or lightning flash densities) between 2009 and 2018.

Figure 4-34 Average Lightning Flash Density in the U.S.

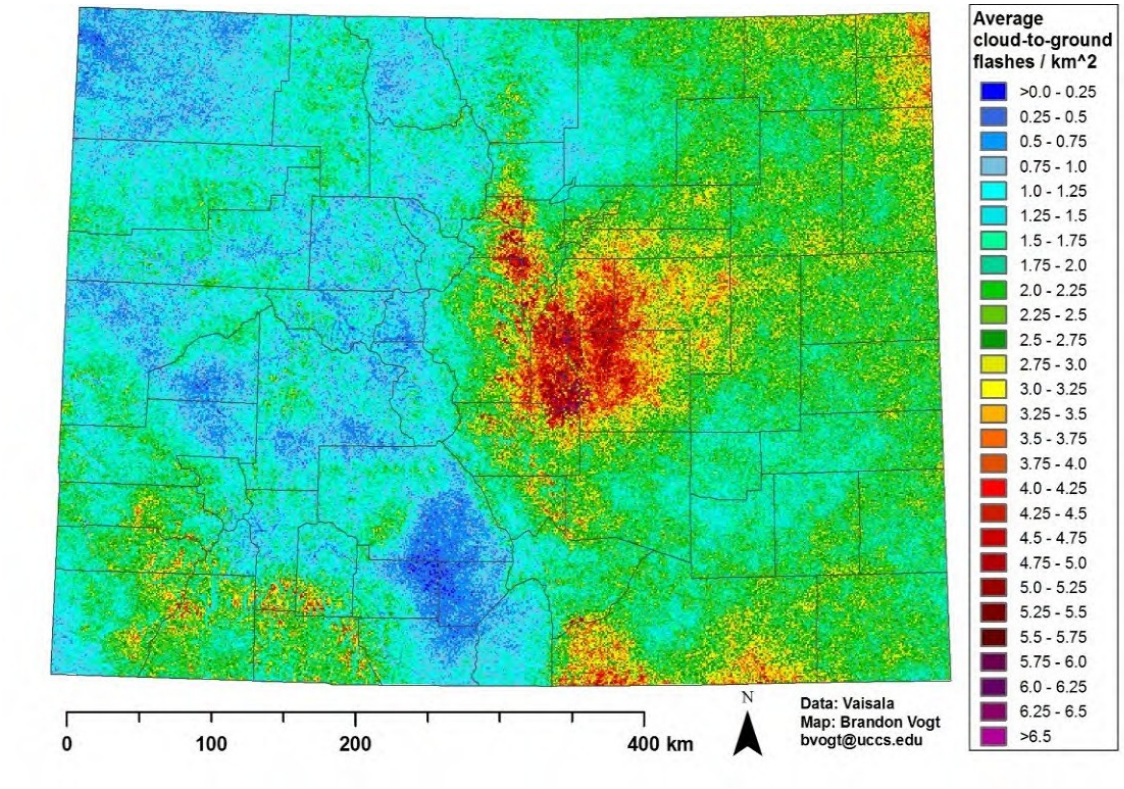


Source: https://www.weather.gov/pub/lightningFlashDensityMaps

Although the state of Colorado ranks 32nd in terms of its cloud-to-ground lightning flash densities between 1997-2012, the state 7th in the U.S. for lightning fatalities between 2008 and 2018. Between 1959 and 2019 Colorado ranks 4th in the Nation.

Figure 4-35 shows lightning flash densities for the State of Colorado for the years 1996 through 2016. Produced by Dr. Bandon Vogt from the University of Colorado Colorado Springs using data from Vaisala, the image is the result of contouring over 8 million cloud-to-ground lightning flashes for the State of Colorado and averaging annually. The result of the analysis is a picture of average lightning flashes/km2 per year from 1996 through 2016 (the year 2000 was not included in the dataset).

Figure 4-35 Colorado Lightning Flash Density Map



Source: NWS Denver/Boulder Weather Forecast Office

In general, the flash density map shows a wide range of values across the State of Colorado, ranging from less than 0.5 flashes/year/km2 over the south central portion of the state to over 6.5 flashes/year/km2 over the east central part of the state. The higher density of lightning flashes located in the central area of the state is driven by the topography of the area. Where the higher terrain of the Plains intersects with the Rocky Mountains conditions are ripe for lightning events. Here, moist air from lower altitudes initiates and sustains convection systems as they move off of the mountain slopes, generating thunderstorms.

Hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere. The super cooled raindrops grow into balls of ice, which pose a hazard to property, people, livestock, and crops when they fall back to the earth.

Severe Wind events typically develop with strong pressure gradients and gusty frontal passages. The closer and stronger two systems (one high pressure, one low pressure) are, the stronger the pressure gradient, and therefore, the stronger the winds are.

Although severe wind events often garner less attention in the local media than tornadoes do, damaging straight line winds (or downbursts) can injure and kill animals and humans. Straight-line winds, which can cause more widespread damage than a tornado, occur when air is carried into a storm's updraft, cools rapidly, and comes rushing to the ground. Cold air is denser than warm air, and therefore, wants to fall to the surface. On warm summer days, when the cold air can no longer be supported up by the storm's updraft, or when an exceptional downdraft develops, the air crashes to the ground in the form of strong winds. These winds are forced horizontally when they reach the ground and can cause significant damage. These types of strong winds can also be referred to as straight-line winds. Downbursts with a diameter of less than 2.5 miles are called microbursts and those with a diameter of 2.5 miles or greater are called macrobursts. A "derecho" is a series of downbursts associated with a line of thunderstorms.

Past Occurrences

Hail

There have been 554 hail events reported in Larimer County between 1955 and 2019. Of the 554 incidents, 5 reported property damages totaling $1,455,000 and 5 reported events of crop damages totaling $1,580,000 A review of USDA Risk Management Agency Crop Indemnity Reports shows in the past 12 years (2007-2019), the county has lost 15,857.35 acres of insured crop due to hail and $4,483,790.48 in indemnity payments.

The largest hail size recorded in the Database is 4.5 inches taking place on July 30, 1979 in the City of Fort Collins but does not include a narrative or impacts. According to the HMPC, this event did result in impacts including property damages estimated to be $30 million (1979 dollars), as well as several injuries and one causality of a 3 month baby while her mom was looking for shelter from the storm.

The events with damages to property and crops in Larimer County are only recorded for 1994 and 2009 in the Storm Events Database, these events are summarized in Table 4-56. All hail events between 1955 and 2018 are shown in Figure 4-36. Based on the historic data showing hazardous impacts on the county, there is a great potential for hail events to occur at any given time during the spring and summer seasons.

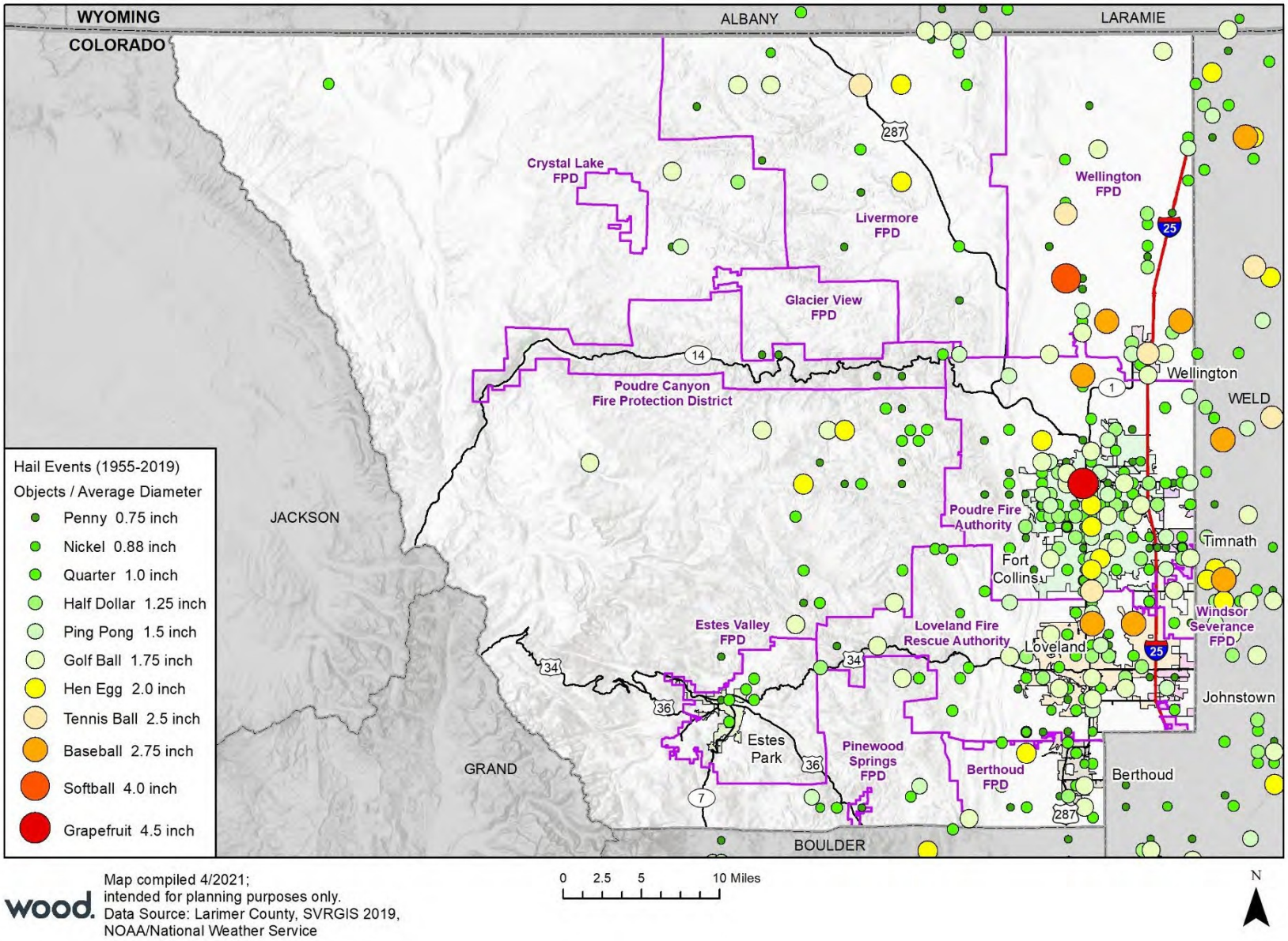
Note, the July 1994 event took place across jurisdictions. The damages listed represent the impacts specific to that location and the event overall.

Table 4-56 Damaging Hail Events Recorded in Larimer County, 1955-2019

Date	Location	Hail Size Diameter (in)	Damage to Property	Damage to Crops
7/16/1994	Virginia Dale	2	$500,000	$50,000
	Wellington	2.75	$500,000	$500,000
	Fort Collins	1.5	$50,000	$5,000
	Loveland	1.75	$5,000	$0
8/10/1994	Laporte	2	$400,000	$0
6/22/2009	Wellington	1	$0	$25,000
7/20/2009	DRAKES	2	$0	$1,000,000
Total:			**$1,455,000**	**$1,580,000**

Source: NOAA; NCEI Storm Events Database

Figure 4-36 Historical Hail Events (1955 – 2018) – Larimer County



Thunderstorm Wind

According to NOAA's Storm Events Database there have been 17 injuries and 2 deaths in Larimer County due to thunderstorm wind. There have been 117 thunderstorm wind events reported in Larimer County between 1960 and 2018. Of the 117 incidents, only ten reported any injuries or damages, totaling 2 deaths, 17 injuries, and $51,500 in property damage; no crop losses were reported. Based on the historic data showing hazardous impacts on the county, there is a great potential for wind events to occur at any given time.

Table 4-57 Damaging Historical Thunderstorm Wind Events in Larimer County

Date	Location	Deaths	Injuries	Property Damage
5/28/1993	Punkin Center	0	0	$50,000
8/15/1993	Fort Collins	0	0	0
9/7/1993	Loveland	0	0	0
5/28/1994	Not available	0	8	$500
5/28/1994	Loveland	0	1	$500
6/6/1994	Loveland	0	0	$500
7/28/1996	Ft Collins	0	2	0
8/28/2001	Loveland	0	2	0
7/2/2005	Loveland	2	4	0
6/26/2009	Ft Collins/Loveland	0	0	$25,000
Total		**2**	**17**	**$76,500**

Source: NOAA; NCEI Storm Events Database

Windstorm

Data from NOAA's NCEI Storm Events Database was used to complete the risk assessment for straight-line wind events in Larimer County. These events are defined as winds with speeds of at least fifty knots (58 mph), or winds of any speed (non-severe winds under fifty knots) that result in a fatality, injury and/or damage. The database shows 262 such events in Larimer County from 1996 through 2019. The average windspeed of these events (where known) was 73 knots; nine events had windspeeds recorded at 100-110 knots. Only 18 events during that time period resulted in any reported damage or injuries, totaling 11 injuries, over $13 million in property damage, and $50,000 in crop damage. Table 4-58 summarizes those 18 damaging severe wind events.

Table 4-58 Damaging Severe Wind Events in Larimer County (1996 – 2019)

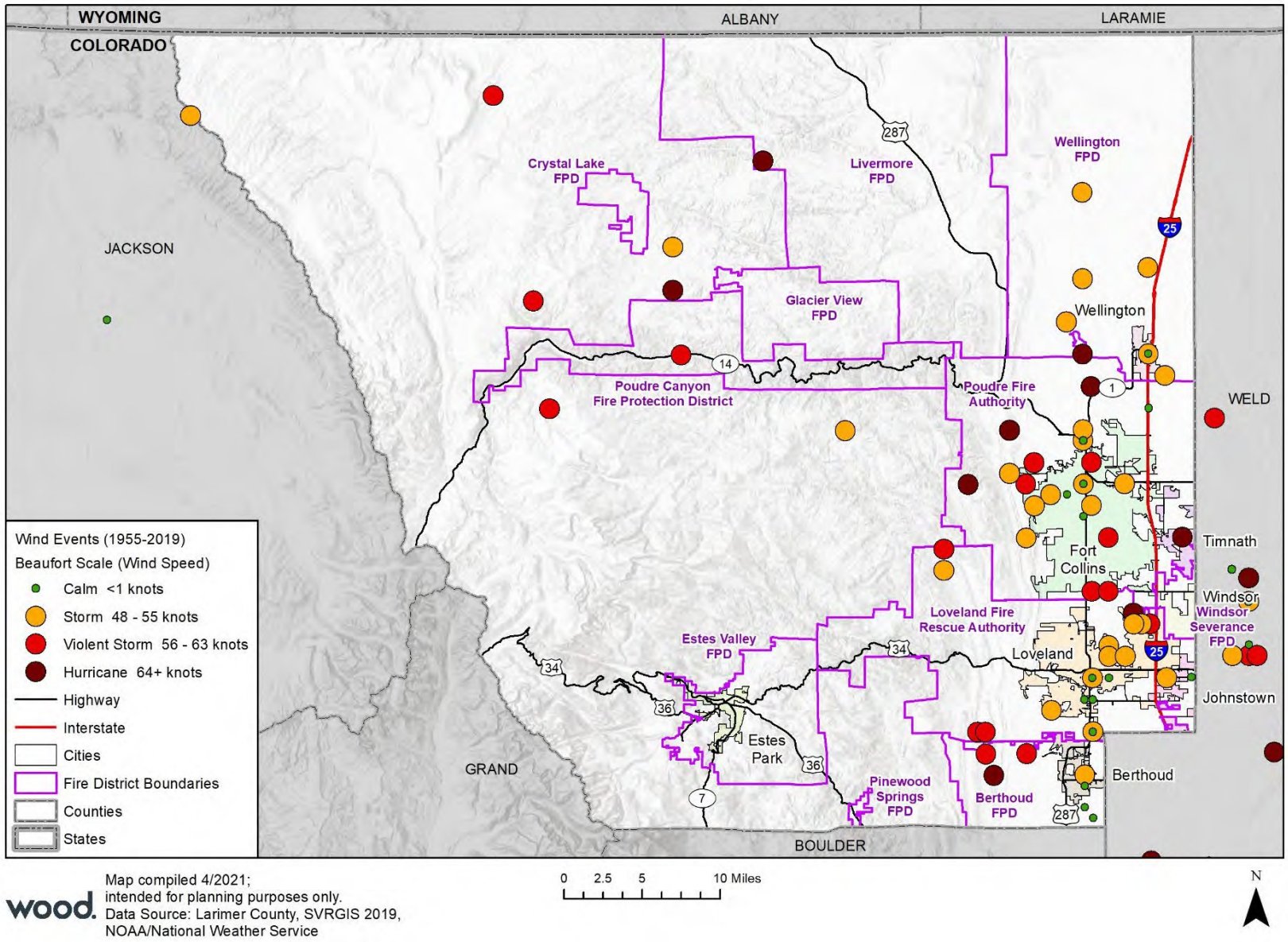
Date	Magnitude (Knots)	Deaths	Injuries	Property Damage	Crop Damage
10/29/1996	87	0	0	$5,200,000	0
4/8/1999	100	0	0	$7,200,000	0
12/17/2000	52	0	1	0	0
5/20/2001	61	0	0	$36,000	0
10/29/2003	62	0	0	$979,000	0
11/27/2007	69	0	1	0	0
8/2/2008	52	0	6	0	0
12/25/2008	70	0	0	$50,000	0
12/31/2008	77	0	0	$25,000	0
1/1/2009	77	0	0	$25,000	0
1/7/2009	65	0	0	$5,000	0
1/27/2009	87	0	0	$25,000	0
5/11/2009	65	0	1	0	0

Date	Magnitude (Knots)	Deaths	Injuries	Property Damage	Crop Damage
5/4/2010	58	0	0	$10,000	$50,000
6/16/2011	43	0	1	0	0
11/12/2011	45	0	1	0	0
11/17/2013	67	0	0	$10,000	0
2/21/2017	61	0	0	$200,000	0
	TOTAL	**0**	**11**	**$13,765,000**	**$50,000**

Source: NOAA; NCEI Storm Events Database

Based on data provided by NCEI's Storm Events Database, 262 severe wind events have occurred in Larimer County between 1996 and 2019. There have been no deaths, 11 injuries, $13,765,000 in property damage, and $50,000 in crop damage. Figure 4-37 provides a geospatial view of these historical severe wind events in Larimer County between 1950 and 2018. Severe winds affect all portions of the County.

Figure 4-37 Larimer County – Historical High Wind Events



Lightning

According to the NCEI Storm Events Database there have been 46 lightning events in Larimer County between 1996 and 2019. Note that these are only events reported to NCEI and should not be considered to be comprehensive. There have been 56 reported injuries, 9 deaths, $217,000 worth of property damage, and $15,000 worth of crop damage. On July 11th and 12th, 2014 two people were killed by separate lightning strikes in Rocky Mountain National Park along Trail Ridge Road. In addition to the two deaths, 21 people were taken to the hospital because of lightning strikes. The national park outside of the Town of Estes Park attracts about 3 million visitors per year. Due to its high elevations and frequent thunderstorms in the summer, there is a high risk of lightning strikes. The events are summarized in Table 4-59. Based on the historic data showing hazardous impacts on the county, there is a great potential for lightning events to occur at any given time, especially during the summer months when county residents are likely to be working and playing outdoors.

Table 4-59 Lightning Strikes in Larimer County

Date	Location	Deaths	Injuries	Property Damage	Crop Damage
5/9/1996	Loveland	0	0	0	0
6/4/1996	Fort Collins	0	1	0	0
6/10/1996	Fort Collins	0	0	$10,000	0
7/23/1996	Loveland	0	2	0	0
8/2/1996	Fort Collins	0	0	$50,000	0
8/15/1996	Red Feather Lakes	0	0	0	0
8/16/1996	Rustic	0	0	0	0
10/16/1996	Fort Collins	0	3	0	0
6/2/1997	Ft Collins	0	0	0	0
6/14/1997	Loveland	0	0	$4,000	0
5/22/1998	Loveland	0	0	0	0
8/9/1998	Estes Park	0	6	0	0
6/19/1999	Livermore	0	1	0	0
7/21/1999	Estes Park	1	2	0	0
8/7/1999	Estes Park	1	2	0	0
9/1/1999	Ft Collins	0	0	0	0
5/17/2000	Ft Collins	0	0	0	0
10/3/2000	Estes Park	0	2	0	0
8/15/2001	Loveland	1	0	0	0
4/17/2003	Ft Collins	0	0	0	0
5/31/2003	Loveland	1	1	0	0
7/26/2003	Poudre Park	0	1	0	0
8/3/2003	Red Feather Lakes	0	1	0	0
8/18/2003	Ft Collins/Loveland	0	0	0	0
4/19/2005	Ft Collins	0	0	0	0
7/3/2005	Loveland	0	0	0	0
7/3/2005	Loveland	0	9	0	0
5/29/2007	Ft Collins	0	0	$2,000	0
5/29/2007	Ft Collins	0	0	$35,000	0
10/13/2007	Ft Collins	0	0	$1,000	0
6/3/2008	Ft Collins	0	0	$4,000	0

Date	Location	Deaths	Injuries	Property Damage	Crop Damage
7/8/2008	Deer Ridge	0	3	0	0
7/24/2008	Ft Collins	2	0	0	0
7/20/2010	Berthoud	0	0	0	$10,000
7/22/2010	Loveland	0	0	$100,000	0
5/20/2011	Ft Collins	0	0	$1,000	0
6/16/2011	Ft Collins	0	0	$5,000	0
7/6/2011	Estes Park	0	0	$5,000	0
7/5/2013	Ft Collins	0	0	0	$5,000
7/18/2013	Deer Ridge	0	1	0	0
7/18/2013	Wellington	0	9	0	0
7/11/2014	Deer Ridge	1	7	0	0
7/12/2014	Deer Ridge	1	4	0	0
5/7/2016	Ft Collins	0	0	0	0
8/19/2016	Red Feather Lakes	1	0	0	0
8/17/2019	Estes Park	0	1	0	0
Total:		**9**	**56**	**$217,500**	**$15,000**

Source: NOAA; NCEI Storm Events Database

The National Weather Service (NWS) also records lightning events in Colorado. According to NWS records 76 total injuries and 10 deaths due to lightning events between 1982 and 2019.

Table 4-60 Larimer County Lightning Causalities

Date	Deaths	Injuries
8/17/1982	0	1
6/13/1988	0	1
6/22/1988	0	2
7/4/1988	0	1
8/11/1989	0	1
9/19/1989	0	1
6/16/1991	0	2
8/9/1991	0	1
6/24/1992	0	1
6/28/1992	1	1
5/19/1994	0	1
8/2/1994	0	1
8/2/1994	0	3
8/13/1994	0	2
6/4/1996	0	1
7/23/1996	0	2
10/16/1996	0	3
8/9/1998	0	6
6/19/1999	0	1
7/21/1999	1	2
8/7/1999	1	2
10/3/2000	0	2
8/15/2001	1	0
5/31/2003	1	1

Date	Deaths	Injuries
7/26/2003	0	1
8/3/2003	0	1
7/3/2005	0	9
7/8/2008	0	3
7/24/2008	2	0
7/18/2013	0	1
7/18/2013	0	9
7/11/2014	1	7
7/12/2014	1	4
5/7/2016	0	1
8/19/2016	1	0
8/17/2019	0	1
Total	**10**	**76**

Source: National Weather Service, Pueblo Office

Location

Extensive - Thunderstorms are generally expansive in size. The entire county is susceptible to any of the effects of a severe thunderstorms, including hail, lightning, and severe winds. Figure 4-36 and Figure 4-37 shows the reported locations of hailstorms from 1955 to 2018 and severe wind events from 1950 to 2018, including the event magnitudes.

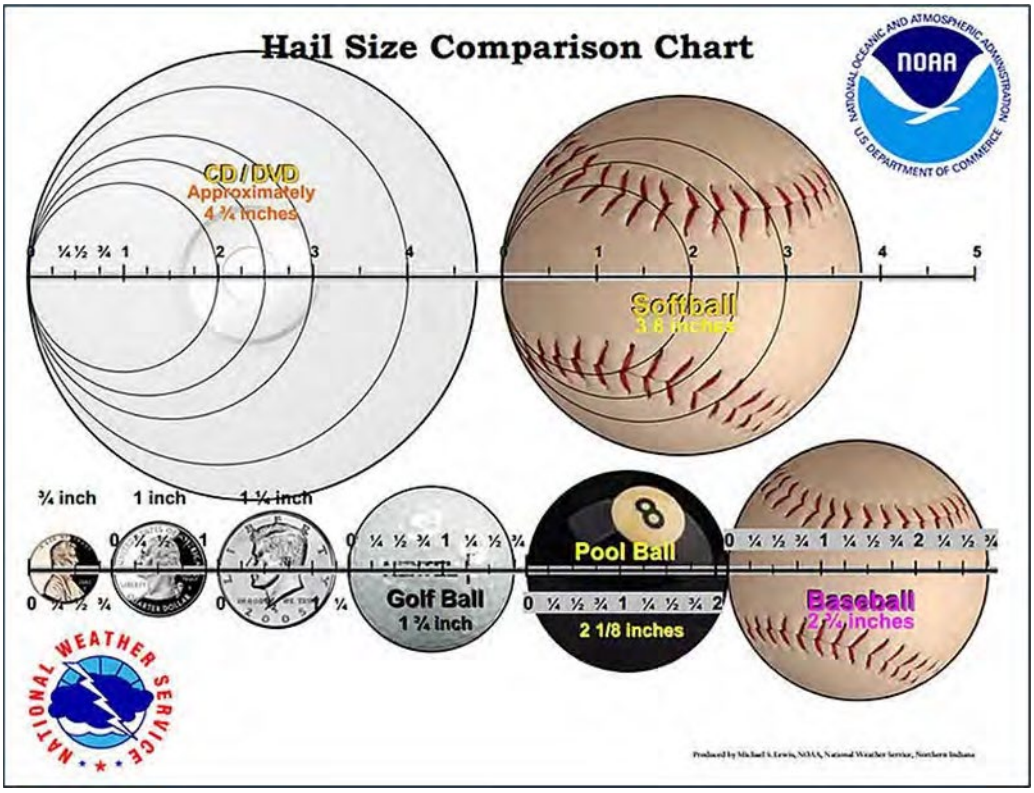
Magnitude/Severity

Critical - Common problems associated with severe storms include the loss of utilities or immobility. Loss of life is uncommon but can occur during severe storms. Immobility can occur when roads become impassable due to heavy rains causing flooding, erosion issues, or downed trees. Loss of power lines can occur due to downed trees from high winds or lighting.

The severity of severe thunderstorms that involve heavy rain, high wind, or hail can be measured according to hail by diameter sizes and wind speed. The NWS classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Figure 4-38 below shows the hailstone measurements utilized by the NWS.

There is no clear distinction between storms that do and do not produce hailstones. Nearly all severe thunderstorms probably produce hail aloft, though it may melt before reaching the ground. Multi-cell thunderstorms produce many hailstones, but not usually the largest hailstones. In the life cycle of the multi-cell thunderstorm, the mature stage is relatively short so there is not much time for growth of the hailstone. Supercell thunderstorms have sustained updrafts that support large hail formation by repeatedly lifting the hailstones into the very cold air at the top of the thunderstorm cloud. In general, golf ball sized hail or larger is associated with supercells, but non-supercell storms are also capable of producing golf ball size hail.

Figure 4-38 Hail Measurements



Source: National Weather Service

The most common hail size recorded in the Storm Event Database is 1-inch or hail the size of a quarter. Table 4-61 shows the breakdown of the various sizes of hail that have fallen in Larimer County between 1955 and 2019.

Table 4-61 Recorded Hail Stones

Hail Stone Size	Count
0.75	147
0.88	27
1	210
1.25	43
1.5	42
1.75	60
2	11
2.25	1
2.5	5
2.75	6
4	1
4.5	1

Source: NOAA; NCEI Storm Events Database

Damaging wind is measured using the Beaufort Wind Scale as shown in Table 4-62. This scale only reflects land-based effects and does not take into consideration the effects of wind over water.

Table 4-62 Beaufort Wind Scale

Beaufort Number	Description	Windspeed (MPH)	Land Conditions
0	Calm	<1	Calm. Smoke rises vertically.
1	Light air	1 – 3	Wind motion visible in smoke.
2	Light breeze	3 – 7	Wind felt on exposed skin. Leaves rustle.
3	Gentle breeze	8 – 12	Leaves and smaller twigs in constant motion.
4	Moderate breeze	13 – 17	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	18 – 24	Branches of a moderate size move. Small trees begin to sway.
6	Strong breeze	25 – 30	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.
7	High wind, Moderate gale, Near gale	31 – 38	Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors.
8	Gale, Fresh gale	39 – 46	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	47 – 54	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. Damage to circus tents and canopies.
10	Storm, Whole gale	55 – 63	Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	Violent storm	64 – 72	Widespread vegetation damage. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
12	Hurricane	≥ 73	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about.

Source: National Oceanographic and Atmospheric Association, http://www.spc.noaa.gov/faq/tornado/beaufort.html

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the NWS to define lightning activity into a specific categorical scale. The LAL is a common parameter that is part of fire weather forecasts nationwide. Larimer County is at risk to experience lightning in any of these categories. The LAL is reproduced in Table 4-63.

Table 4-63 Lightning Activity Level Scale

Lightning Activity Level	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five-minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a five-minute period.

Lightning Activity Level	
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a five-minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a five-minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag warning.

Source: National Weather Service

Isolated deaths and/or multiple injuries and illnesses; major or long-term property damage that threatens structural stability; and/or interruption of essential facilities and services for 24-72 hours.

Lightning can occur anywhere in Larimer County, and it is not possible to identify specific hazard areas. Data was not available to identify specific structures at risk. Data on average annual losses was limited but based on NCEI records $10,087 in lightning-related damages occurred between 1996 and 2018. One of the most serious risks associated with lightning is its potential to cause wildland fires, which is most significant in the western, mountainous parts of the County. For specific details on loss and vulnerability associated with wildfires, please see the wildfire vulnerability discussion. Table 4-64 shows a breakdown of reported impacts caused by past recorded lightning events. Note that these are only impacts reported to NCEI and should not be considered to be comprehensive; in particular, the Planning Team noted there have been far more than four wildfires and one power outage resulting from lightning strikes in the County.

Table 4-64 Impacts Caused by Lightning Events

Impact	Count
Casualty of Outdoor Enthusiast	12
Structural Fire	6
Wildfire	4
Casualty of Outdoor Worker	4
Tree Damage	3
Damage to Electrical Equipment	2
Power Outages	1

Source: NOAA; NCEI Storm Events Database

Speed of Onset

Spring and summer storms can be predicted with a reasonable level of certainty. Through the identification of various indicators of weather systems, and by tracking these indicators, warning time for spring snowstorms can be as much as a week in advance. However, meteorologists cannot predict the exact time of onset or severity of the storm. Some storms may come on more quickly and have only a few hours of warning time.

Using radar technology, the National Weather Service Denver/Boulder Forecast Office issues thunderstorm watches and warnings to warn communities of impending severe weather.

Severe Thunderstorm Watch - A severe thunderstorm watch indicates that conditions are favorable for the formation of severe thunderstorms in and near the watch area. Conditions may be nice and sunny for the area at the time it is issued. The watch area is typically large (National Weather Service).

Severe Thunderstorm Warning: A thunderstorm warning indicates imminent danger to life and property. Warnings typically encompass a much smaller area (around the size of a city or small county) that may be impacted by a large hail or damaging wind identified by an NWS forecaster on radar or by a trained spotter/law enforcement who is watching the storm. The area is experiencing or will be shortly experiencing severe thunderstorm conditions. Those conditions include wind speeds of 58 miles per hour or greater and/or hail that is one inch in diameter or larger. It should be noted that lightning or rainfall are not included in the warning criteria for a severe thunderstorm. If a tornado is spotted or indicated on radar, the severe thunderstorm warning will be upgraded to a tornado warning (National Weather Service).

Duration
Thunderstorms have a lifecycle of three stages: developing stage, mature stage, and the dissipating stage. The lifecycle can last between 30 minutes and 1 hour.

Probability of Future Occurrences

Highly Likely - Spring and summer storms can be predicted with a reasonable level of certainty. Through the identification of various indicators of weather systems, and by tracking these indicators, warning time for snowstorms can be as much as a week in advance. Understanding the historical frequency, duration, and spatial extent of severe winter weather assists in determining the likelihood and potential severity of future occurrences. The characteristics of past spring and summer events provide benchmarks for projecting similar conditions into the future. The probability that Larimer County will experience a spring or summer storm event can be difficult to quantify. However, based on historical records and frequencies there is nearly a 100% chance of this type of event will occur somewhere in Larimer County at least once every year.

Reported straight-line wind events over the past nineteen years provide an acceptable framework for determining the future occurrence in terms of event. The probability of Larimer County and its municipalities experiencing a severe wind event associated with damages or injuries can be difficult to quantify but based on historical record of 231 severe wind events since 1996, there is a high chance of this type of event occurring each year.

Climate Change Considerations

As average temperatures increase over time, this generally will result in higher extreme temperatures and more warming in the atmosphere can trigger climate changes, which could result in more frequent extreme weather events. Climate change models are estimating an increase in temperature by the end of the century. Lightning specifically tends to occur with warmer temperatures as heat energy fuels storm clouds. A study published in the Journal of Science in November of 2014 showed the possibility of a 12% increase of lighting events for every degree of warming. On average the United States experiences 20 million lightning strikes with the possibility of 30 million lightning strikes over the continental U.S. by 2100 (Scientific American 2014). Some studies show a potential for a decrease in wind shear in mid-latitude areas. Because of uncertainty with the influence of climate change on tornadoes, future updates to the mitigation plan should include the latest research on how the tornado hazard frequency and severity could change. The level of significance of this hazard should be revisited over time.

Vulnerability Assessment

All assets located in Larimer County can be considered at risk from spring and summer storms. This includes 100% of the County's population, and all buildings and infrastructure within the County. Damages primarily occur as a result of high winds, lightning strikes, hail, and flooding.

People

Exposure is the greatest danger to people from severe thunderstorms. People can be hit by lightning, pelted by hail, caught in rising waters due to heavy rain and become vulnerable if recreating on waterbodies such as Boyd Lake, Red Feather Lakes, or Horsetooth Reservoir.

Aspects of the population who rely on constant, uninterrupted electrical supplies may have a greater, indirect vulnerability to lightning. Elderly or disabled people, especially those with home health care services, often rely heavily on an uninterrupted source of electricity. Resident populations in nursing homes, residential facilities, or other special needs housing may also be vulnerable if electrical outages are prolonged. If they do not have a back-up power source, rural residents and agricultural operations reliant on electricity for heating, cooling, and water supplies are also especially vulnerable to power outages. According to the data obtained from emPOWER.com, a website maintained by the U.S. Department of Health and Human Services, 8% of the Medicare beneficiaries in the County, or 4,318 of the 57,432 of beneficiaries rely on medical equipment that is dependent on electricity in order to live independently.

The impacts of thunderstorms on vulnerable populations can be more severe. Low income families are more likely to live in poorly constructed homes that are more likely to be damaged, and are more likely to be uninsured or underinsured, making it more difficult for them to recover from hail or lightning events. Individuals with disabilities may need more assistance after a major storm, especially if transportation or utility services are disrupted. Severe weather warnings must use methods that reach vision or hearing-impaired people and those with limited English proficiency.

General Property

Spring and summer storms affect the entire planning area of Larimer County and its jurisdictions including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss but could reduce the casualties and associated injury.

Generally, straight-line wind events destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, countywide loss estimation exists for wind, potential losses are related to historical property damage and injuries/deaths.

Critical Facilities and Infrastructure

Most structures, including the County's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle a severe weather situation should the power go out.

Inventory assets exposed to severe wind is dependent on the age of the building, type, construction material used, and condition of the structure. Possible losses to critical infrastructure include:

- Electric power disruption
- Communication disruption
- Water and fuel shortages
- Road closures
- Damaged infrastructure components, such as sewer lift stations and treatment plants
- Damage to homes, structures, and shelters

Because of the unpredictability of severe thunderstorm events strength and path, most critical infrastructure that is above ground is equally exposed to the storm's impacts.

Economy
Economic impact of a severe thunderstorm is typically short term, although it can be significant. Lightning events can cause power outages and fires. Generally, long-term economic impacts center more around hazards that cascade from a severe thunderstorm, such as flooding, or wildfires ignited by lightning. In general, all severe thunderstorms pose a risk to the agricultural economy in the County. As noted in the Past Occurrences subsection above, spring and summer storms in Larimer County have led to $18,494,000 in total damages between 1955 and 2019.

Historic, Cultural and Natural Resources
Severe thunderstorms are a natural environmental process. Environmental impacts include the sparking of potentially destructive wildfires by lightning and localized flattening of plants by thunderstorm wind. Some cultural and historic properties are potentially at risk of damage from hail, wind and lightning.

Future Land Use and Development
All future structures built in Larimer County will likely be exposed to spring and summer extremes and damage. Since the previous statement is assumed to be uniform countywide, the location of development does not increase or reduce the risk necessarily. Larimer County and its jurisdictions must adhere to building codes, and therefore, new development can be built to current standards to account for adverse weather. Additionally, as homes go up in more remote parts of the county, accessing those rural residents may become impossible should sheltering or emergency services be needed in an extreme event.

All future structures built in Larimer County will likely be exposed to severe wind damage. As with other large extent hazards, increased development trends within Planning Reserve Areas and along the I-25 corridors will increase the vulnerability of these areas. Larimer County and its jurisdictions must continue to adhere to building codes and to facilitate new development that is built to the highest design standards to account for heavy winds.

Due to the nature of severe wind events, not all jurisdictions within Larimer County are expected to be impacted equally. For example, older homes, which are often subject to less advanced building codes, suffer increased vulnerability to wind over time. Mobile homes, which are most often occupied by low-income, socially vulnerable residents, are the most dangerous places during a windstorm. As communities across Larimer County continue to grow, it is important that local agencies monitor the inventory and locations of mobile homes, particularly in areas of high wind risk. Moreover, when discussing mitigation actions for straight-line winds, communities or geographic locations with large numbers of mobile homes deserve added attention.

Risk Summary

- The entire county is susceptible to the impacts of spring/summer storm events.
- There have been 899 spring/summer storm events (hail, damaging wind, lightning) resulting in $18,494,000 in property and crop damages between 1950 and 2019.
- Severe wind and lightning events between 1950 and 2019 resulted in 115 casualties.
- USDA Risk Management Agency records show 19,429.55 acres of crops and $5,039,813.67 of indemnity payments due to hail and excess wind events.
- Largest hailstone recorded in the county was 4.5 inches on July 30, 1979. 1-inch hailstones are most commonly recorded.
- Lightning events can lead to fires; 6 lightning events have caused structural fires and 4 lead to wildfires.
- Outdoor enthusiasts, in particular tourists, are vulnerable to spring/summer storm events. Recreational waterbodies such as Boyd Lake, Horsetooth Reservoir, and Red Feather Lakes each have had events of wind, lightning, and hail recorded.

- Vulnerable populations are at risk of losing electricity due to a severe spring or summer storm events. 8% of Medicare Beneficiaries in the County rely on equipment that is electricity-dependent to be able to live independently in their homes.
- Related Hazards: Wildfire, Flood, Landslide/Rockslide, Erosion/Deposition, Tornado, and Utility Disruption

4.3.11 Tornado

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Tornado	Likely	Limited	Critical	High

Description

Tornadoes in Colorado are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage. In the Colorado Front Range, tornadoes have been reported in nine months out of the year, with the peak season for tornados extending from mid-May through mid-August. June is by far the month with the most recorded tornadoes. Tornadoes have occurred every time of the day, with over half of them developing between 3 p.m. and 6 p.m., and 88% occurring between 1 p.m. and 9 p.m. MDT. They occur statewide, but by far the greatest number develops in eastern Colorado east of I-25.

Past Occurrences

Colorado, lying just west of "tornado alley," is fortunate to experience less frequent and intense tornadoes than its neighboring states to the east. However, tornadoes remain a significant hazard in the region. Tornado season typically is March through August; however, a tornado can occur in any month. Tornadoes are the most intense storm on earth having been recorded at velocities exceeding 315 mph. The phenomena results in a destructive rotating column of air ranging in diameter from a few yards to greater than a mile, usually associated with a downward extension of cumulonimbus clouds.

All portions of Larimer County have the potential to be affected by tornadoes, but they are more common in the eastern portions of the County. Historically, tornadoes have been relatively small on the EF Scale, but F1 tornadoes can still produce dangerous winds up to 112 mph. High winds can cause damage to buildings (tearing shingles from roofs, tearing awnings, collapsing structures, etc.).

Table 4-65 summarizes tornado history and damage data for Larimer County from 1954 – 2018 recorded in the NCEI Storm Events Database.

Table 4-65 Tornado History in Larimer County (1954-2018)

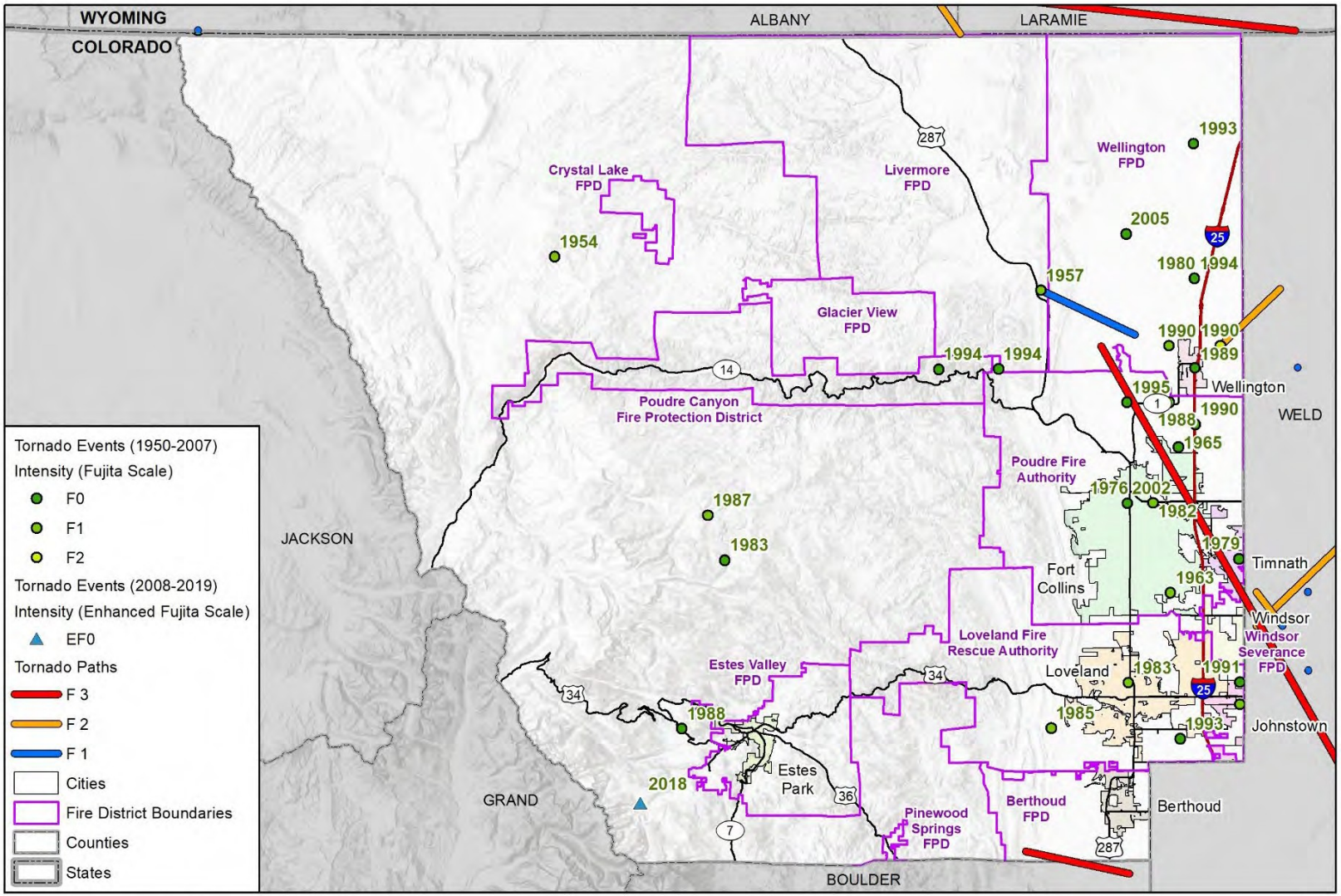
Date	Begin Location	EF Scale	Injuries	Deaths	Estimated Property Damage	Estimated Crop Damage
8/7/1954	unknown	unknown	0	0	$2,500	unknown
5/29/1957	unknown	F1	0	0	$250	unknown
5/30/1957	unknown	F2	0	0	$2,500	unknown
7/7/1963	unknown	F1	0	0	$2,500	unknown
6/23/1965	unknown	F0	0	0	unknown	unknown
6/4/1976	unknown	F2	0	0	unknown	unknown
7/22/1979	unknown	F0	0	0	unknown	unknown

Date	Begin Location	EF Scale	Injuries	Deaths	Estimated Property Damage	Estimated Crop Damage
5/24/1980	unknown	F1	0	0	$2,500	unknown
6/25/1982	unknown	F1	0	0	$30	unknown
7/7/1983	unknown	F1	0	0	$30	unknown
8/2/1985	unknown	F1	0	0	unknown	unknown
6/18/1987	unknown	F1	0	0	$25,000	unknown
8/7/1987	unknown	F1	0	0	unknown	unknown
6/15/1988	unknown	F1	0	0	$2,500	unknown
6/25/1988	unknown	F1	0	0	unknown	unknown
8/7/1988	unknown	F0	0	0	unknown	unknown
5/31/1989	unknown	F0	0	0	unknown	unknown
6/6/1990	unknown	F0	0	0	$2,500	unknown
6/9/1990	unknown	F1	0	0	unknown	unknown
6/9/1990	unknown	F2	0	0	$25,000	unknown
7/8/1990	unknown	F0	0	0	unknown	unknown
6/22/1991	unknown	F0	0	0	unknown	unknown
5/28/1993	Loveland	F0	0	0	unknown	unknown
8/5/1993	Wellington	F0	0	0	unknown	unknown
7/16/1994	Wellington	F0	0	0	unknown	unknown
7/16/1994	Wellington	F0	0	0	unknown	unknown
7/16/1994	Fort Collins	F0	0	0	unknown	unknown
5/6/1995	unknown	F0	0	0	unknown	unknown
5/9/2002	Fort Collins	F0	0	0	unknown	unknown
7/25/2005	Buckeye	F0	0	0	unknown	unknown
5/22/2008	Timnath	EF1	0	0	unknown	unknown
6/4/2015	Berthoud	EF3	0	0	unknown	unknown
5/18/2018	Estes Park	EF0	0	0	Unknown	unknown
TOTALS:			**0**	**0**	**$65,300**	**unknown**

*Source: NOAA; NCEI Storm Events Database

NCEI's Storm Events Database estimates that 33 tornadoes have touched down in or moved through Larimer County between 1954 and 2018. Figure 4-39 depicts historical tornado tracks and events in and around Larimer County between 1954 and 2018, showing where tornadoes have touched down and traveled.

Figure 4-39 Map of Tornado Events in Larimer County (1950 – 2018)



Not recorded in the NCEI Database are two EF3 tornadoes that have impacted communities in Larimer County. The most significant tornado event in the past decade in Larimer County was an EF3 on June 4, 2015 directly impacting the Town of Berthoud. According to an NWS event description, wind speeds were estimated to be up to 140 mph and a quarter mile wide. Twenty-eight homes were damaged and three destroyed. This is the strongest recorded tornado in Larimer or Boulder counties. The May 22, 2008 event was recorded as an EF3 tornado that direct damages to the Town of Windsor. Refer to Annex U Town of Windsor for a full description of the event.

Location

Limited - While the entire county is susceptible to any of the effects of severe tornadoes, the communities on the Front Range and eastern plains, to include the Town of Wellington, Town of Windsor, Town of Johnstown, Town of Berthoud, City of Loveland and the City of Fort Collins, are more likely to experience a tornado event.

Magnitude/Severity

Critical - Tornadoes can cause damage to property and loss of life. While most tornado property damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees and power lines, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

Prior to 2007, tornadoes were previously classified by their intensity using the Fujita (F) Scale, with F0 being the least intense and F6 being the most intense. The Fujita Scale (seen in the table below) is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man- made structure.

Table 4-66 Fujita Tornado Damage Scale

Fujita Scale			
F-Scale Number	**Intensity Phrase**	**Wind Speed**	**Type of Damage**
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages signboards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.

Fujita Scale			
F-Scale Number	**Intensity Phrase**	**Wind Speed**	**Type of Damage**
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: NOAA

On February 1, 2007, the Fujita scale was decommissioned in favor of the more accurate Enhanced Fujita Scale (aka the EF Scale). The EF-Scale measures tornado strength and associated damages and classifies tornadoes into six intensity categories, as shown in the following table. The scale was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale takes into account how most structures are designed and is thought to be a much more accurate representation of the surface wind speeds in the most violent tornadoes.

Table 4-67 Enhanced Fujita (EF) Scale

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF0	65-85	**Light damage**: Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage**: Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**Considerable damage**: Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	**Severe damage**: Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF4	166-200	**Devastating damage**: Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	**Incredible damage**: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA

The Storm Prediction Center has developed damage indicators to be used with the Enhanced Fujita Scale for different types of buildings. These indicators can also be used to classify any high wind event. Indicators for different building types are shown in the following tables.

Table 4-68 Institutional Buildings

Damage Description	Wind Speed Range (Expected in Parentheses)
Threshold of visible damage	59-88 MPH (72 MPH)
Loss of roof covering (<20%)	72-109 MPH (86 MPH)
Damage to penthouse roof & walls, loss of rooftop HVAC equipment	75-111 MPH (92 MPH)
Broken glass in windows or doors	78-115 MPH (95 MPH)
Uplift of lightweight roof deck & insulation, significant loss of roofing material (>20%)	95-136 MPH (114 MPH)
Façade components torn from structure	97-140 MPH (118 MPH)
Damage to curtain walls or other wall cladding	110-152 MPH (131 MPH)
Uplift of pre-cast concrete roof slabs	119-163 MPH (142 MPH)
Uplift of metal deck with concrete fill slab	118-170 MPH (146 MPH)
Collapse of some top building envelope	127-172 MPH (148 MPH)
Significant damage to building envelope	178-268 MPH (210 MPH)

Source: Storm Prediction Center, 2009

Table 4-69 Educational Institutions (Elementary Schools, High Schools)

Damage Description	Wind Speed Range (Expected in Parentheses)
Threshold of visible damage	55-83 MPH (68 MPH)
Loss of roof covering (<20%)	66-99 MPH (79 MPH)
Broken windows	71-106 MPH (87 MPH)
Exterior door failures	83-121 MPH (101 MPH)
Uplift of metal roof decking; significant loss of roofing material (>20%); loss of rooftop HVAC	85-119 MPH (101 MPH)
Damage to or loss of wall cladding	92-127 MPH (108 MPH)
Collapse of tall masonry walls at gym, cafeteria, or	94-136 MPH (114 MPH)

Damage Description	Wind Speed Range (Expected in Parentheses)
auditorium	
Uplift or collapse of light steel roof structure	108-148 MPH (125 MPH)
Collapse of exterior walls in top floor	121-153 MPH (139 MPH)
Most interior walls of top floor collapsed	133-186 MPH (158 MPH)
Total destruction of a large section of building envelope	163-224 MPH (192 MPH)

Source: Storm Prediction Center, 2009

Table 4-70 Metal Building Systems

Damage Description	Wind Speed Range (Expected in Parentheses)
Threshold of visible damage	54-83 MPH (67 MPH)
Inward or outward collapsed of overhead doors	75-108 MPH (89 MPH)
Metal roof or wall panels pulled from the building	78-120 MPH (95 MPH)
Column anchorage failed	96-135 MPH (117 MPH)
Buckling of roof purlins	95-138 MPH (118 MPH)
Failure of X-braces in the lateral load resisting system	118-158 MPH (138 MPH)
Progressive collapse of rigid frames	120-168 MPH (143 MPH)
Total destruction of building	132-178 MPH (155 MPH)

Source: Storm Prediction Center, 2009

Table 4-71 Electric Transmission Lines

Damage Description	Wind Speed Range (Expected in Parentheses)
Threshold of visible damage	70-98 MPH (83 MPH)
Broken wood cross member	80-114 MPH (99 MPH)
Wood poles leaning	85-130 MPH (108 MPH)
Broken wood poles	98-142 MPH (118 MPH)

Source: Storm Prediction Center, 2009

Table 4-72 summarizes the magnitude of past tornado events as recorded in the NCEI Storm Events Database. There have been 33 tornado events with a recorded magnitude since 1950 in Larimer County. The greatest magnitude tornado recorded in the county is an EF3. The most commonly recorded tornado events in the Storm Events Database are F0 and F1 tornadoes.

Table 4-72 Summary of Magnitudes of Past Tornado Events in Larimer County

Magnitude	# of Events	Magnitude	# of Events
Blank	1		
F0	15	EF0	1
F1	11	EF1	1
F2	3	EF2	0
F3	0	EF3	1
F4	0	EF4	0
F5	0	EF5	0
		Total	**33**

Source: NOAA; NCEI Storm Events Database

Speed of Onset

The NOAA's storm prediction center issues tornado watches and warnings for Larimer County:

- **Tornado Watch**—Tornadoes are possible. Remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio, or television for information.
- **Tornado Warning**—A tornado has been sighted or indicated by weather radar. Take shelter immediately.

Once a warning has been issued, residents may have only a matter of seconds or minutes to seek shelter.

Duration

According to NOAA's National Severe Storms Laboratory, detailed statistics on the duration of tornadoes on the ground are not available at this time. The duration can range from seconds to several hours. The average duration is about 5 minutes.

Probability of Future Occurrences

Likely - Reported tornadoes over the past 64 years provide an acceptable framework for determining the future occurrence in terms of frequency for such events. The probability of the County and its municipalities experiencing a tornado associated with damages or injuries can be difficult to quantify. Historic tornado frequencies suggest that there is roughly a 52% chance of this type of event occurring somewhere within the County boundaries each year.

Climate Change Considerations

There presently is not enough data or research to quantify the magnitude of change that climate change may have related to tornado frequency and intensity. NASA's Earth Observatory has conducted studies which aim to understand the interaction between climate change and tornadoes. Based on these studies meteorologists are unsure why some thunderstorms generate tornadoes and others don't, beyond knowing that they require a certain type of wind shear. Tornadoes spawn from approximately one percent of thunderstorms, usually supercell thunderstorms that are in a wind shear environment that promotes rotation. Some studies show a potential for a decrease in wind shear in mid-latitude areas. Because of uncertainty with the influence of climate change on tornadoes, future updates to the mitigation plan should include the latest research on how the tornado hazard frequency and severity could change. The level of significance of this hazard should be revisited over time.

Vulnerability Assessment

All assets located in Larimer County can be considered at risk from severe wind and tornadoes although based on historic tornado paths, the risk for communities in the eastern portion is higher compared to those in western portion of the county. Most structures, including the County's critical facilities, should be able to withstand and provide adequate protection from tornadoes rated up to EF4. Those facilities with back-up generators should be fully equipped to handle tornado events should the power go out.

People

Community members are the most vulnerable to damaging wind and tornado events. Over the last 64 years there have been no deaths reported in Larimer County due to a tornado event. During the same time period, there have been no reported injuries from tornadoes. The availability of sheltered locations such as basements, buildings constructed using tornado-resistant materials and methods, and public storm shelters, all reduce the exposure of the population. However, there are also segments of the population that are especially exposed to the indirect impacts of damaging winds and tornadoes,

particularly the loss of electrical power. According to the data obtained from emPOWER.com, a website maintained by the U.S. Department of Health and Human Services, 8% of the Medicare beneficiaries in the County rely, or 4,318 of the 57,432 of beneficiaries on medical equipment that is dependent on electricity in order to live independently. These populations include the elderly or disabled, especially those with medical needs and treatments dependent on electricity. Nursing homes, community-based residential facilities, and other special needs housing facilities are also vulnerable if electrical outages are prolonged, since backup power generally operates only minimal functions for a short time.

General Property

Monetary losses to property from tornado events in Larimer County are largely unknown. Because no specific, countywide loss estimation exists for tornado hazards, potential losses are related to historical property damage and injuries/deaths.

General damages can be both direct and indirect. Direct damage refers to what the wind event physically destroys. Indirect damage focuses on additional costs, damages and losses from secondary hazards spawned by the event. Depending on the magnitude of the wind events as well as the size of the tornado and its path, a tornado is capable of damaging and eventually destroying almost anything. Construction practices and building codes can help maximize the resistance of the structures to damage. The County's current building code (2018 International Building l Code) requires structures to be built to withstand a 90-mph wind event (EF1). Mobile homes, which are most often occupied by low-income, socially vulnerable residents, are the most dangerous places during a tornado. Studies indicate that 45% of all fatalities during tornadoes occur in mobile homes, compared to 26% in traditional site-built homes (Ashley 2008). Countywide mobile homes make up 3.8% of total housing; most of these homes are on the eastern plains around the Cities of Fort Collins and Loveland.

Secondary impacts of damage caused by wind events often result from damage to infrastructure. Downed power and communications transmission lines, coupled with disruptions to transportation, create difficulties in reporting and responding to emergencies. These indirect impacts of a wind event put tremendous strain on a community. In the immediate aftermath, the focus is on emergency services.

Critical Facilities and Infrastructure

Inventory assets exposed to severe wind is dependent on the age of the building, type, construction material used, and condition of the structure. Possible losses to critical infrastructure include:

- Electric power disruption
- Communication disruption
- Water and fuel shortages
- Road closures
- Damaged infrastructure components, such as sewer lift stations and treatment plants
- Damage to homes, structures, and shelters

Because of the unpredictability of wind events' strength and path, most critical infrastructure that is above ground is equally exposed to the storm's impacts.

Economy

Tornadoes can impact exposed critical infrastructure; depending on the impact and the function, this could cause a short-term economic disruption. The most common problems associated with tornadoes and damaging winds are loss of utilities. Downed power lines can cause power outages, leaving large parts of the County isolated, and without electricity, water, and communication. Damage may also limit timely emergency response and the number of evacuation routes. Downed electrical lines following a storm can also increase the potential for lethal electrical shock and can also lead to other hazard events such as wildfires.

Historic, Cultural and Natural Resources

Damaging winds and tornadoes can cause massive damage to the built and natural environment, uprooting trees and other debris. There are 107 historic properties listed on the National Register and 34 properties on the State Register in Larimer County. Many of these properties including 54 in the City of Fort Collins and 17 in the City of Loveland are located in the eastern portion of the county where a majority of the past tornado events have occurred.

Future Land Use and Development

All future structures built in Larimer County could likely be exposed to tornado damage. As with other large extent hazards, increased development trends within Planning Reserve Areas and along the I-25 corridor will increase the vulnerability of these areas. Larimer County and its jurisdictions must continue to adhere to building codes and to facilitate new development that is built to the highest design standards to account for tornadoes.

Due to the nature of tornadoes, not all jurisdictions within Larimer County are expected to be impacted equally. For example, older homes, which are often subject to less advanced building codes, suffer increased vulnerability to wind and tornadoes over time.

Risk Summary

- Tornadoes are possible in all areas of the county, although the communities along the Front Range and eastern plains of the county are more likely to experience a Tornado event.
- There have been 33 recorded tornado events in the county since 1954.
- The greatest magnitude tornado event was an EF3 on June 4, 2015 in the Town of Berthoud. F0/EF0 is the most commonly recorded magnitude.
- Mobile homes are the most vulnerable housing type. Mobile homes represent 3.8% of total housing in the county.
- Vulnerable populations are at risk of losing electricity due to a tornado events. 8% of Medicare Beneficiaries in the County rely on equipment that is electricity dependent to be able to live independently in their homes
- Related Hazards: Spring/Summer Storm, Utility Disruption

4.3.12 Utility Disruption

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Utility Disruption	Likely	Significant	Critical	Medium

Description

Utility disruption is defined as the interruption or loss of electricity, gas, communications, or water to a facility of a community for a period of time that compromises the integrity of the location, threatens human life, safety, and health, or interferes with vital services. Utility disruption can occur as the result of an accident, system overloading, or a deliberate act, or as a secondary effect of another hazard such as severe weather or wildfires. Severe summer and winter storms, and tornadoes and floods can bring trees and tree limbs down onto power lines. These events also cause serious safety hazards to the general public and emergency responders. For the purpose of the 2016 plan, attention has been given to the following utility sources:

- Electricity
- Natural Gas
- Communications
- Water

Extended electrical outages can directly impact other utility systems, particularly water and wastewater systems. In areas where telephone service is provided by above-ground lines that share poles with electrical distribution lines, telecommunications providers may not be able to make repairs to the telephone system until electrical utilities restore power lines to a safe condition. Electrical outages can also adversely affect the availability of fueling facilities that require electrical power to physically move the fuel. The impacts of electric utility disruptions are felt most significantly by the general public during the winter and the summer due to heating and cooling demands. However, any extended electric disruption can lead to local economic losses when computers, lighting, refrigeration, gas pumps, and other equipment are without power during business hours.

The majority of homes in Larimer County are heated with natural gas. However, propane is a common heating fuel in the rural parts of the county. A large diameter natural gas pipeline travels through Larimer County along the Interstate 25 corridor. The distribution of natural gas through this pipeline could potentially be disrupted by an earthquake, construction accident, transportation accident, or serious fire along the corridor. The impacts of gas utility disruption can be severe in rural areas where a single-source heating is the norm.

According to the 2018 Colorado State Hazard Mitigation Plan, the most common causes of power outages in Colorado are human error, equipment failure (to include excavation and vehicle accidents), and natural causes (to include weather events and wildlife disruptions). Disruptions of communication systems happen frequently, especially now that society is more dependent on multiple means of communication. For example, when telephone lines are out of service, credit card and many internet transactions cannot be made. The potential loss of cellular phone communication has occurred in localized events, but it has not yet been regionally experienced. Severe storms or atmospheric/solar activity have the potential to impact radio communications. Typically, local and regional communications plans address the need for redundancy within the local, regional, and state-wide communication systems.

Finally, the disruption of water utilities and systems often requires notification of the public and businesses in order to: curtail usage; boil available water; use bottled water; etc. This may also impact local firefighting activities.

Past Occurrences

The County does not track incidences of utility disruption. According to the 2018 Colorado State Hazard Mitigation Plan (based on data from the US Department of Energy), during the years 2000-2016 Colorado experienced 15 electrical transmission outages, affecting more than 677,000 customers. The duration of these outages ranged from one minute, to nearly 67 hours. Only two of those outages appear to have affected Larimer County. Note however these numbers only include outages reported to the DOE, and certainly exclude many smaller outages.

Additional recent power failures impacting Colorado include:

2008 Windsor Tornado: The Windsor tornado damaged at least three power transmission lines, including a pair of 230,000-volt lines at the Fort St. Vrain power plant near Platteville. Additionally, 200 power poles and a half-dozen transmission poles were damaged or destroyed. At least 60,000 citizens lost power as the storm passed through the region.

2013 Colorado Floods: These severe floods resulted in a loss of electric and natural gas service to several flooded or threatened areas. In many cases, gas service was deliberately turned off as a protective measure; however, the fact that gas valves must be physically turned on by technicians makes restoration a slow and meticulous process. The floods also had a severe impact on Colorado's oil & gas industry, shutting down 1000 wells and spilling thousands of gallons of fuel.

2019 Elk Fire: This fire resulted in large utility outages that also affected all landline phones due to the infrastructure in the area of the fire and a lack of redundancy in the utility systems for that area.

Location

Utility Disruptions can occur in any populated area of the County. They have the potential to be more severe or long-lasting in rural areas, where there may be fewer alternatives or alternative systems and where cold temperatures are more common.

Magnitude/Severity

A natural or human-caused disaster could disable key utility facilities, resulting in local, statewide, or possibly regional outages. A widespread electricity outage could cause shortages in generation of fuel supplies and vice versa. Utility disruption events of most concern include those large-scale disruption events that could potentially last for more than three days. Events of this magnitude could cause major disruptions to vital services, some of which would include hospitals, fuel suppliers, food suppliers, and the agricultural community.

Most critical infrastructure sectors rely heavily on communications systems to control and monitor their operations; for many businesses, losing communications is as serious an interruption as losing power. Emergency Services in particular rely heavily on communications systems, both internally-owned and commercial, to coordinate their operations, as well as to send information to and from the public. According to Ernst & Young's Global Information Security Survey 2002, the top causes of business interruption failures are hardware or software failure (56%) and telecommunications failure (49%). The information technology sector is almost entirely reliant on communications systems; indeed, as more communications systems transition to digital and Internet-based services, the line between "communications" and "data" has become increasingly blurred. Additionally, cell phones and Voice Over Internet Protocol (VOIP) services are more vulnerable to power outages than traditional "landline" phones.

A drinking water contamination incident or the denial of drinking water services could severely impact manufacturing facilities, food and agricultural operations, healthcare services, and the operation of government and emergency services. A major, prolonged loss of clean water could have far-reaching

public health, economic, environmental, and psychological impacts. Disruption of wastewater treatment facilities or services can cause loss of life, economic impacts, and severe public health and environmental impacts. If wastewater infrastructure were to be severely damaged or destroyed, the lack of redundancy in the sector might cause a loss of service potentially affecting the habitability of homes and workspaces in all sectors.

Speed of Onset

Some outages can occur with little-to-no advance warning, such as with an equipment failure or a cyber-attack. In other cases, advance indications such as a prolonged heat wave or a disruption in out-of-state fuel supply may provide some warning hours or days ahead of time.

Duration

Depending upon the cause, outages can last a few seconds, a few hours, or in extreme cases several days. The average duration of power interruption in the United States is seven minutes, and the vast majority of interruptions are less than 24 hours in duration.

Probability of Future Occurrences

In Colorado, utility outages result more often from failures in the distribution system rather than shortages of supply. Distribution systems are most susceptible to failure during extreme hot and cold temperatures as well as during violent weather conditions. The 2018 Colorado State Hazard Mitigation Plan list the following natural and human-caused hazards as most likely to lead to severe power disruptions:

- Cyber Attack
- Winter Weather
- Thunderstorm
- Tornado
- Wildfire
- Flood
- Explosive Attack
- Major Transport Disruption
- Dam Failure

As both population and climate variability increase across the State of Colorado, and put more pressure on aging distribution systems, it is likely that utility disturbance events will become more frequent in and around Larimer County.

Climate Change Considerations

Climate change projections show an increase in the frequency and severity of many of the hazards that impact the energy sector, thus potentially leading to an increase in the frequency of power failures. Higher average temperatures can be expected to put increased demand on the energy sector during summer months, while colder-than-normal temperatures can increase load during winter months. Higher average temperatures could also place increased load on Colorado's water supply. Additional large-scale wildfires can lead to overheating transmission lines which can also cause power outages in disaster areas.

Vulnerability Assessment

People

Much of our modern way of life is built around an assumption of easily-accessible and uninterrupted power supply. Utility failures can severely impact the health and safety of the public, particularly for children or elderly residents. An outage at any time poses risks to vulnerable populations who cannot be without water and electricity for medical treatments or refrigerated medications. Loss of water and electricity also poses a large risk to hospitals and health systems. During periods of extreme heat or cold, loss of electricity can pose a safety hazard. In the planning area, 36% of homes are heated by utility gas

and 55% by electricity. This can be particularly dangerous to people who rely on electricity dependent medical equipment.

General Property
Utility outages rarely cause direct property damage. Downed power lines might directly fall on houses or indirectly cause fires. Water or sewer pipe breaks or backups might cause flooding to property.

Critical Facilities and Infrastructure
Virtually every critical infrastructure sector is heavily energy-dependent. Maintaining commercial, government, and even basic intra-organizational disaster response capabilities during a long-term and large-scale energy disruption becomes increasingly difficult over time.

Power failures are particularly critical at sites where the environment and public safety are at risk. Many critical facilities such as hospitals, telecommunications sites, and water treatment plants typically have backup power sources such as standby generators; however, it is not uncommon to have such generators fail just when they're needed most. And some facilities such as shelter sites, and even some local Emergency Operations Centers (EOCs) may not have generators at all. Furthermore, resupplying generators with diesel fuel becomes an additional logistical issue.

Economy
The costs associated with energy-sector disruptions are known to be significant. According to a 2005 study, losses due to power interruption across all business sectors are estimated at between $104-164 billion annually, and costs associated with power quality problems are estimated at $15-24 billion annually. Industrial, tech, and digital business firms lose an estimated $5.7 billion annually due to power interruption, and among high-tech business firms, the costs of downtime due to power interruption can exceed $1 million per minute. In 2009, the US Department of Energy estimated that power outages cost an average of $150 billion annually, or about $500 for every US citizen per year.

Though residential consumers are heavily impacted by electrical disruptions, the commercial and industrial sectors account for most financial losses. Even short-term interruptions can incur significant costs, due to the nature of industrial and information technology processes: a momentary interruption or transient fault may produce substantial waste of industrial resources and business time, as production lines must be halted and restarted. Likewise, in the information technology and financial sectors, the costs of data loss and operational downtime can be substantial. For vulnerable public agencies and private-sector businesses, the costs of data loss may remain constant regardless of total downtime. Similarly, even short outages can have a great effect on refineries, as evidenced by an outage at Suncor's Commerce City refinery in 2007. The power disruption was brief, but it caused the refinery to take much of its machinery offline to perform damage check before restarting. This shutdown ultimately resulted in a production loss of 50,000 barrels of gasoline and 30,000 barrels of diesel and jet fuel.

Historic, Cultural and Natural Resources
Utility outages rarely have significant impacts on historic, cultural or natural resources

Future Land Use and Development
Future development can increase vulnerability to infrastructure failure by placing additional strains on existing infrastructure, as well as by increasing the size and thus the exposure of infrastructure networks. As development expands into undeveloped areas, Larimer County may face higher risks of utility disruption. Sprawling development and the subsequent extension of utilities may increase the vulnerability of the county and its communities to utility disruption due to increased demand and increased exposure of utility lines. In developed areas, increased population densities and economic activity over time has potential to put additional stress on already overtaxed utility systems.

Risk Summary

- May occur as a secondary effect of severe weather or another hazard, or as the result of an accident, system overloading, or terrorism.
- Small outages affecting a few people for a short time are commonplace; larger, longer-lasting outages occur less often but are not unknown.
- Greatest impacts are during periods of extreme heat or extreme cold.
- Impacts are more significant on people who rely on electricity for their health or independence.
- Related Hazards: Dam Inundation, Earthquake, Flood, Landslide/Rockslide, Spring/Summer Storm, Tornado, Wildfire, Winter Storm.

4.3.13 Wildfire

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Fire – Wildland	Highly Likely	Significant	Critical	High

Description

Wildfires are defined as unwanted or unplanned wildland fires. They include unauthorized human caused fires, escaped prescribed burn projects, and all other wildland fires where the objective is to put the fire out.

Wildfires are fueled by natural ground cover, including native and non-native species of trees, brush and grasses, and crops along with weather conditions and topography. While available fuel, topography, and weather provide the conditions that allow wildfires to spread, the majority of wildfires in Colorado are caused by people through criminal or accidental misuse of fire.

Wildfires pose serious threats to human safety and property in Larimer County. They can destroy crops, timber resources, recreation areas, and critical wildlife habitat. Wildfires are commonly perceived as hazards in the western part of the state; however, wildfires are a growing problem in the wildland-urban interfaces of eastern Colorado, including communities within Larimer County.

Figure 4-40 Fire in Larimer County, CO.



Source: Poudre Fire Authority

Wildfire behavior is dictated in part by the quantity and quality of available fuels. Fuel quantity is the mass of material per unit area. Fuel quality is determined by a number of factors, including fuel density, chemistry, and arrangement. Arrangement influences the availability of oxygen surrounding the fuel source. Another important aspect of fuel quality is the total surface area of the material that is exposed to heat and air. Fuels with large area-to-volume ratios, such as grasses, leaves, bark and twigs, are easily ignited when dry.

Climatic and meteorological conditions that influence wildfires include solar insolation, atmospheric humidity, and precipitation, all of which determine the moisture content of wood and leaf litter. Dry spells, heat, low humidity, and wind increase the susceptibility of vegetation to fire. Additional natural agents can be responsible for igniting wildfires, including lightning, sparks generated by rocks rolling down a slope, friction produced by branches rubbing together in the wind, and spontaneous combustion. According to the 2018 Colorado State Hazard Mitigation Plan, over the past two decades Colorado has experienced an increase in insect infestations that have left vast areas of forest vulnerable to wildfire.

Arson and accidents, including sparks from equipment and vehicles, can also cause wildfires. Arson and accidental fires usually start along roads, trails, streams, or at dwellings that are generally on lower slopes or bottoms of hills and valleys. Nurtured by updrafts, these fires can spread quickly uphill. Arson fires are often set deliberately at times when factors such as wind, temperature, and dryness contribute to the spread of flames.

Predicting the intensity of a wildfire, its rate of spread, and its duration are important for wildfire mitigation activity, response, and firefighter safety. Three key factors affect wildfire behavior in the WUI:

1. Fuels: The type, density, and continuity of surrounding vegetation and, sometimes, flammable structures, that provide fuel to keep a wildfire burning. Fuels consist of combustible materials and vegetation (including grasses, leaves, ground litter, plants, shrubs, and trees) that feed a fire.
2. Weather: Relative humidity, wind, and temperatures all affect wildfire threat and behavior.
3. Topography: The steepness and aspect (direction) of slopes, as well as building-site locations, are features that affect fire behavior.

Very often the only factor that a community can mitigate is fuel, which may include use of fire-resistant construction materials and landscaping .

Wildfires are often rated based on their ability of their fuels to ignite. Descriptions for the commonly used "Fire Danger Rating" system are listed below:

- Low: Fuels do not ignite readily from small firebrands. However, an intense heat source, such as lightning, may start fires in duff or rotted wood. Fires in open grasslands may burn freely for a few hours after rain, but wood fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
- Moderate: Fires can start from most accidental causes, with the exception of lightning. Fires in open grasslands will burn briskly and rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel may burn hot. Short-distance spotting may occur. Fires are not likely to become serious and control is relatively easy.
- High: All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
- Extreme/Very High: Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.

Past Occurrences

According to the best available data compiled by USGS and CO-WRAP, there have been 874 wildfire events in Larimer County from 1980 to 2018. While as noted above, most wildfires in Colorado result from

human action, of the 874 wildfires in Larimer County 65% were natural and 35% were human-caused. These events are detailed in Table 4-74. Figure 4-42 shows the burned areas for all events from 2000-2018 that burned 10 or more acres.

Figure 4-41 High Park Fire Northwest of Horsetooth Reservoir Near Fort Collins, June 11, 2012



Source: RJ Sangosti, The Denver Post

Per the data on past wildfire events compiled by USGS and CO-WRAP, 125,749 acres burned as a result of the 874 recorded wildfires that occurred from 1980 to 2018. This averages to 143.9 acres per wildfire event, 22 wildfires per year, and 3,224.3 acres per year. Of these events, 59 burned at least 10 acres. These larger fires accounted for 125,242.5 acres burned, which is over 99% of the total acreage burned during the period of record. Fires of 10 acres or more occurred in 26 of the 39 years on record. Table 4-73 summarizes past wildfire occurrences by year from 1980 through 2018 (the last year for which complete data is available).

Figure 4-42 Larimer County Wildfire History, 2000-2020

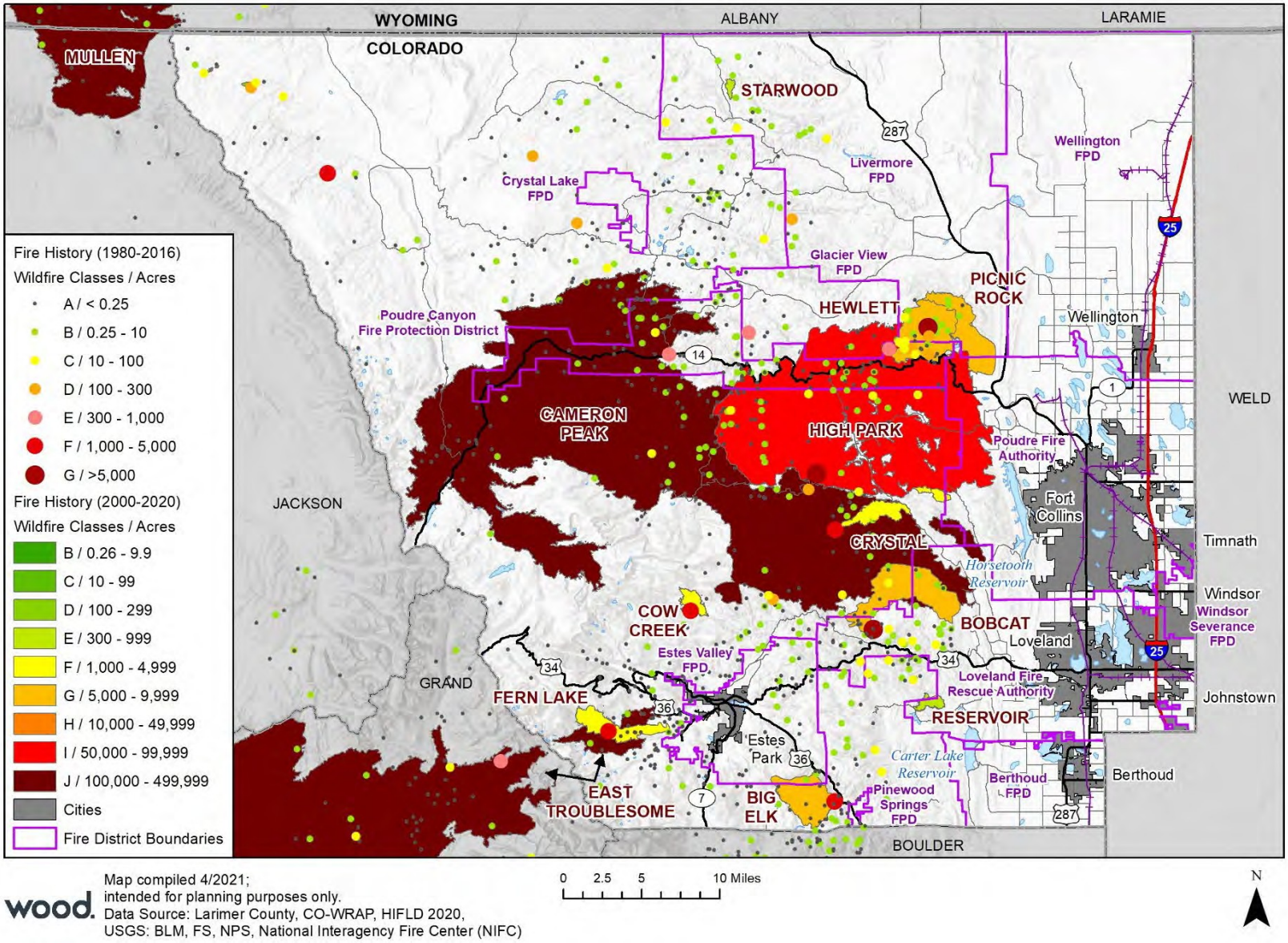


Table 4-73 Summary of Wildfires in Larimer County by Year

Year	Count of Wildfire Events	Total Acres Burned	Year	Count of Wildfire Events	Total Acres Burned
1980	3	0.3	2000	38	10,908.2
1981	2	0.2	2001	45	20.8
1982	2	1.1	2002	40	4,918.4
1983	1	0.1	2003	33	31.7
1984	1	0.1	2004	10	35.55
1985	1	0.1	2005	40	124.25
1986	27	67.4	2006	33	88
1987	28	150.6	2007	26	21.31
1988	46	3057.1	2008	34	108.63
1989	30	482.3	2009	22	90.56
1990	30	162.1	2010	17	1,218.15
1991	29	22.2	2011	28	2,984.19
1992	23	3.5	2012	29	98,605.81
1993	19	307.6	2013	18	36.98
1994	49	483.7	2014	13	7.4
1995	19	36.6	2015	28	1,033.18
1996	22	233.7	2016	17	10.39
1997	26	23.7	2017	0	0.0
1998	22	227.8	2018	1	230.3
1999	22	15			
			Total	**874**	**125,749**

Source: USFS, CO-WRAP

Table 4-74 Historical Wildfires – Larimer County, 1980-2018

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Thompson	Human	1980	6/18/1980	6/18/1980	0.1
Fall River	Human	1980	9/11/1980	9/18/1980	0.1
Wind River	Human	1980	10/6/1980	10/8/1980	0.1
Handicamp	Human	1981	6/24/1981	6/24/1981	0.1
Alberta Fl	Human	1981	10/1/1981	10/1/1981	0.1
Bone Yard	Human	1982	3/11/1982	3/12/1982	1
Upper Mora	Human	1982	11/8/1982	11/8/1982	0.1
Hubcap	Natural	1983	7/8/1983	7/10/1983	0.1
Hollowell	Human	1984	5/23/1984	5/23/1984	0.1
Iron Dike	Human	1985	9/6/1985	9/6/1985	0.1
	Natural	1986	3/8/1986	3/10/1986	1
	Natural	1986	5/23/1986	5/23/1986	0.4
	Natural	1986	6/14/1986	6/17/1986	1
	Human	1986	6/19/1986	6/21/1986	2
	Human	1986	7/13/1986	7/16/1986	1
	Human	1986	7/17/1986	7/20/1986	1
	Natural	1986	8/2/1986	8/5/1986	0.3
	Natural	1986	8/3/1986	8/5/1986	0.3

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
	Natural	1986	8/3/1986	8/3/1986	0.1
	Human	1986	8/5/1986	8/8/1986	3
	Human	1986	8/5/1986	8/10/1986	48
	Natural	1986	8/5/1986	8/8/1986	4
	Natural	1986	8/6/1986	8/7/1986	0.3
	Human	1986	8/8/1986	8/10/1986	0.1
	Natural	1986	8/8/1986	8/9/1986	0.1
	Natural	1986	8/9/1986	8/10/1986	0.1
	Natural	1986	8/9/1986	8/10/1986	0.1
	Natural	1986	8/11/1986	8/12/1986	0.1
Estes Cone	Natural	1986	8/11/1986	8/11/1986	0.1
	Natural	1986	8/16/1986	8/17/1986	0.1
	Human	1986	8/17/1986	8/18/1986	0.1
	Natural	1986	8/18/1986	8/19/1986	0.2
	Human	1986	8/18/1986	8/19/1986	0.8
	Natural	1986	8/18/1986	8/20/1986	2.5
	Natural	1986	8/18/1986	8/20/1986	0.1
	Human	1986	9/16/1986	9/16/1986	0.1
	Natural	1986	10/15/1986	10/15/1986	0.5
	Human	1987	6/6/1987	6/8/1987	1
	Human	1987	6/13/1987	6/13/1987	0.1
	Natural	1987	6/25/1987	6/28/1987	0.1
	Natural	1987	6/27/1987	6/30/1987	1.5
	Natural	1987	7/5/1987	7/6/1987	0.1
	Natural	1987	7/7/1987	7/8/1987	0.3
	Natural	1987	7/8/1987	7/10/1987	0.3
	Natural	1987	7/9/1987	7/12/1987	0.2
	Human	1987	7/21/1987	7/27/1987	20
Eagle Cliff	Natural	1987	7/21/1987	7/21/1987	0.1
	Human	1987	7/24/1987	7/31/1987	0.3
	Human	1987	7/26/1987	7/28/1987	0.1
Johnston	Natural	1987	7/27/1987	7/27/1987	0.1
	Human	1987	7/29/1987	8/2/1987	1.7
	Human	1987	8/6/1987	8/7/1987	0.3
	Natural	1987	8/14/1987	8/16/1987	0.1
	Natural	1987	8/16/1987	8/19/1987	1.5
Wind River	Human	1987	8/19/1987	8/20/1987	0.8
	Natural	1987	9/2/1987	9/5/1987	100
Knife's Edge	Natural	1987	9/12/1987	9/14/1987	0.1
	Natural	1987	9/21/1987	9/23/1987	10
	Natural	1987	9/25/1987	9/26/1987	0.1
Aspenglen	Human	1987	10/10/1987	10/10/1987	0.1
	Natural	1987	10/11/1987	10/13/1987	0.3
	Human	1987	10/11/1987	10/17/1987	6
	Natural	1987	10/20/1987	10/24/1987	0.1
	Natural	1987	10/23/1987	10/25/1987	0.3
	Natural	1987	10/26/1987	10/28/1987	5
	Human	1988	6/8/1988	6/16/1988	0.1
	Natural	1988	6/8/1988	6/11/1988	0.1
	Human	1988	6/13/1988	6/16/1988	3

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
	Natural	1988	6/13/1988	6/13/1988	0.1
	Natural	1988	6/15/1988	6/16/1988	0.1
	Natural	1988	6/17/1988	6/25/1988	20
Fallriver	Natural	1988	6/19/1988	6/19/1988	0.1
	Natural	1988	6/21/1988	6/22/1988	0.1
Cublake	Natural	1988	6/21/1988	6/22/1988	0.2
	Human	1988	6/22/1988	6/23/1988	0.2
	Natural	1988	6/29/1988	6/30/1988	0.1
	Natural	1988	7/2/1988	7/3/1988	0.2
	Human	1988	7/3/1988	7/3/1988	0.1
	Natural	1988	7/5/1988	7/8/1988	0.2
	Human	1988	7/6/1988	7/7/1988	0.1
	Natural	1988	7/10/1988	7/13/1988	0.1
	Natural	1988	7/11/1988	7/11/1988	0.1
	Natural	1988	7/13/1988	7/15/1988	0.2
	Human	1988	7/14/1988	7/27/1988	200
	Human	1988	7/17/1988	7/18/1988	0.2
	Natural	1988	7/17/1988	7/19/1988	0.1
	Natural	1988	7/25/1988	7/28/1988	3
	Natural	1988	7/25/1988	7/27/1988	1
	Human	1988	7/31/1988	8/1/1988	0.2
	Natural	1988	7/31/1988	8/4/1988	0.2
	Natural	1988	8/1/1988	8/7/1988	0.1
	Human	1988	8/7/1988	8/9/1988	0.1
	Human	1988	8/18/1988	8/20/1988	0.3
	Natural	1988	8/23/1988	8/28/1988	20
	Natural	1988	8/23/1988	8/25/1988	0.1
	Natural	1988	8/25/1988	8/25/1988	0.1
	Natural	1988	8/27/1988	8/29/1988	0.1
Switchback	Natural	1988	8/27/1988	8/28/1988	0.1
	Natural	1988	8/30/1988	9/1/1988	0.3
	Natural	1988	8/31/1988	9/5/1988	0.2
	Natural	1988	8/31/1988	9/1/1988	0.5
	Natural	1988	9/4/1988	9/5/1988	0.1
Grace Creek	Natural	1988	9/6/1988	10/26/1988	2800
Willowpark	Human	1988	9/7/1988	9/7/1988	0.1
	Natural	1988	9/8/1988	9/11/1988	2
	Natural	1988	9/10/1988	9/13/1988	2
	Natural	1988	9/17/1988	9/19/1988	0.1
	Natural	1988	9/19/1988	9/21/1988	0.8
Bierstadt	Natural	1988	10/9/1988	10/9/1988	0.1
	Natural	1988	10/22/1988	10/22/1988	0.1
	Natural	1988	11/1/1988	11/1/1988	0.1
	Natural	1989	4/22/1989	4/25/1989	1.5
	Natural	1989	5/23/1989	5/24/1989	0.3
	Natural	1989	5/31/1989	5/31/1989	0.1
	Natural	1989	6/1/1989	6/2/1989	0.1
	Natural	1989	6/11/1989	6/13/1989	0.1
	Natural	1989	6/29/1989	6/30/1989	0.1
	Natural	1989	6/29/1989	7/30/1989	364

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
	Human	1989	7/6/1989	7/7/1989	0.1
	Human	1989	7/7/1989	7/8/1989	0.1
	Human	1989	7/8/1989	7/9/1989	0.1
	Natural	1989	7/10/1989	7/10/1989	0.1
	Human	1989	7/14/1989	7/15/1989	0.1
	Natural	1989	7/29/1989	7/30/1989	0.1
McCullough	Human	1989	8/1/1989	8/1/1989	0.1
	Human	1989	8/6/1989	8/6/1989	0.1
	Natural	1989	8/7/1989	8/7/1989	0.1
	Human	1989	8/8/1989	8/9/1989	0.1
Vts Lot	Natural	1989	8/9/1989	8/9/1989	0.1
Cub Lake	Human	1989	8/11/1989	8/11/1989	0.1
	Natural	1989	8/12/1989	8/13/1989	0.1
	Natural	1989	8/14/1989	8/15/1989	0.1
	Human	1989	8/14/1989	8/14/1989	0.1
	Natural	1989	8/29/1989	8/31/1989	0.1
	Human	1989	9/3/1989	9/3/1989	0.1
	Human	1989	9/4/1989	9/10/1989	100.1
	Natural	1989	9/21/1989	9/27/1989	10
	Human	1989	10/1/1989	10/3/1989	3
	Natural	1989	10/7/1989	10/9/1989	0.2
Over Hill	Human	1989	10/14/1989	10/16/1989	1
	Natural	1989	10/20/1989	10/21/1989	0.1
	Natural	1990	1/11/1990	1/14/1990	1
	Human	1990	6/19/1990	6/22/1990	6
	Natural	1990	6/24/1990	6/26/1990	0.5
	Natural	1990	6/25/1990	6/27/1990	5
	Natural	1990	6/25/1990	7/5/1990	141
	Human	1990	6/25/1990	6/26/1990	0.1
	Natural	1990	6/25/1990	6/28/1990	2.5
	Natural	1990	6/25/1990	6/28/1990	1
	Natural	1990	6/26/1990	6/26/1990	0.2
	Natural	1990	6/26/1990	6/27/1990	0.1
	Natural	1990	6/26/1990	6/26/1990	0.1
	Natural	1990	6/26/1990	6/27/1990	0.1
	Natural	1990	6/26/1990	6/27/1990	0.1
	Human	1990	6/27/1990	6/30/1990	1
	Natural	1990	6/30/1990	6/30/1990	0.1
	Natural	1990	7/3/1990	7/3/1990	0.2
Moraine Pk	Natural	1990	7/3/1990	7/4/1990	0.1
	Natural	1990	7/6/1990	7/6/1990	0.1
	Natural	1990	7/16/1990	7/18/1990	0.3
	Natural	1990	7/17/1990	7/18/1990	0.1
	Natural	1990	7/28/1990	7/30/1990	0.1
Steep	Natural	1990	7/29/1990	7/30/1990	0.1
	Human	1990	8/11/1990	8/12/1990	0.1
	Natural	1990	8/27/1990	8/29/1990	1
	Human	1990	8/30/1990	9/1/1990	0.2
	Natural	1990	8/30/1990	8/31/1990	0.1
	Natural	1990	9/2/1990	9/3/1990	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
	Natural	1990	9/2/1990	9/3/1990	0.1
Chaos	Natural	1990	9/11/1990	9/12/1990	0.4
Many Parks	Natural	1990	9/26/1990	9/27/1990	0.3
	Natural	1991	3/30/1991	3/31/1991	0.1
	Human	1991	4/29/1991	5/1/1991	0.1
	Natural	1991	5/14/1991	5/16/1991	1
	Natural	1991	6/24/1991	6/25/1991	0.1
	Natural	1991	6/28/1991	6/29/1991	0.1
	Human	1991	6/28/1991	6/30/1991	5
Pumphouse	Natural	1991	6/29/1991	6/29/1991	0.1
Flat Top	Human	1991	7/4/1991	7/4/1991	0.1
	Natural	1991	7/5/1991	7/8/1991	0.8
	Natural	1991	7/5/1991	7/6/1991	0.1
	Natural	1991	7/5/1991	7/6/1991	0.1
	Natural	1991	7/6/1991	7/6/1991	0.1
	Natural	1991	7/12/1991	7/13/1991	0.3
	Natural	1991	7/15/1991	7/16/1991	0.8
	Natural	1991	7/15/1991	7/18/1991	0.1
	Natural	1991	7/16/1991	7/21/1991	11
	Natural	1991	7/18/1991	7/20/1991	0.1
	Natural	1991	7/19/1991	7/20/1991	0.3
	Natural	1991	7/19/1991	7/19/1991	0.1
	Natural	1991	7/19/1991	7/21/1991	0.1
	Natural	1991	8/23/1991	8/24/1991	0.1
	Natural	1991	8/23/1991	8/28/1991	0.1
	Natural	1991	9/3/1991	9/5/1991	0.1
	Human	1991	9/8/1991	9/9/1991	0.1
Moraine Pk	Natural	1991	9/21/1991	9/22/1991	0.1
	Natural	1991	9/28/1991	9/29/1991	0.1
Bear Lake	Human	1991	9/29/1991	9/30/1991	0.1
	Natural	1991	10/11/1991	10/13/1991	0.5
Ute Trail	Human	1991	10/17/1991	10/19/1991	0.5
	Human	1992	2/6/1992	2/6/1992	0.1
	Natural	1992	5/8/1992	5/11/1992	0.1
	Natural	1992	5/19/1992	5/20/1992	0.5
	Natural	1992	5/20/1992	5/20/1992	0.1
	Natural	1992	5/25/1992	5/26/1992	0.1
	Natural	1992	6/12/1992	6/13/1992	0.1
	Natural	1992	6/12/1992	6/13/1992	0.1
	Human	1992	6/17/1992	6/17/1992	0.1
	Natural	1992	8/4/1992	8/4/1992	0.1
	Natural	1992	8/9/1992	8/10/1992	0.1
	Natural	1992	8/10/1992	8/10/1992	0.1
	Natural	1992	8/11/1992	8/11/1992	0.1
	Natural	1992	8/14/1992	8/15/1992	0.1
	Natural	1992	8/20/1992	8/22/1992	0.2
	Natural	1992	8/21/1992	8/21/1992	0.1
Steep Mt	Natural	1992	8/23/1992	8/24/1992	0.1
	Human	1992	9/8/1992	9/8/1992	0.1
	Natural	1992	9/15/1992	9/16/1992	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
	Natural	1992	9/20/1992	9/20/1992	0.1
	Natural	1992	10/7/1992	10/9/1992	0.1
	Natural	1992	10/11/1992	10/19/1992	0.8
	Human	1992	10/18/1992	10/18/1992	0.1
	Natural	1992	10/26/1992	10/26/1992	0.1
	Human	1993	5/6/1993	5/7/1993	1
	Natural	1993	5/14/1993	5/15/1993	0.1
	Natural	1993	6/10/1993	6/11/1993	0.1
	Natural	1993	6/22/1993	6/24/1993	0.1
	Natural	1993	6/27/1993	6/30/1993	30
Snowtop	Natural	1993	7/9/1993	7/19/1993	275
	Human	1993	7/11/1993	7/14/1993	0.1
	Human	1993	7/16/1993	7/18/1993	0.1
	Natural	1993	7/20/1993	7/24/1993	0.1
	Natural	1993	7/29/1993	7/29/1993	0.1
	Natural	1993	7/30/1993	8/1/1993	0.1
	Human	1993	7/31/1993	8/5/1993	0.1
	Human	1993	8/5/1993	8/5/1993	0.1
Twin Sister	Human	1993	8/14/1993	8/15/1993	0.1
	Natural	1993	8/17/1993	8/25/1993	0.1
	Natural	1993	8/24/1993	8/25/1993	0.1
	Natural	1993	9/2/1993	9/5/1993	0.1
	Natural	1993	9/3/1993	9/5/1993	0.1
	Natural	1993	9/11/1993	9/15/1993	0.1
Hood Incident	Natural	1994	1/19/1994	1/19/1994	3
Twin Cabin Gulch	Natural	1994	4/3/1994	4/10/1994	3
Swamp Creek	Human	1994	5/12/1994	5/12/1994	0.1
Lily Lake	Human	1994	6/14/1994	6/14/1994	0.5
Tuxedo	Natural	1994	6/18/1994	6/18/1994	0.1
Bierstadt	Natural	1994	6/19/1994	6/19/1994	0.1
Lonetree	Natural	1994	6/23/1994	6/24/1994	0.1
Derby	Natural	1994	6/25/1994	6/25/1994	0.1
Lady Moon	Natural	1994	6/29/1994	6/30/1994	1
Alexander 3	Natural	1994	7/1/1994	7/2/1994	0.1
Devil's Creek	Natural	1994	7/4/1994	7/6/1994	0.7
Eggers	Natural	1994	7/10/1994	7/30/1994	370
Hells Canyon	Natural	1994	7/11/1994	7/15/1994	50
Pole Hill	Natural	1994	7/11/1994	7/15/1994	3.5
Palisade	Natural	1994	7/11/1994	7/16/1994	1
Lone Pine	Natural	1994	7/11/1994	7/12/1994	0.3
Creedmore	Natural	1994	7/11/1994	7/12/1994	0.1
McGraw	Natural	1994	7/11/1994	7/13/1994	0.1
Jug Gulch	Natural	1994	7/12/1994	7/18/1994	30
White Pine	Natural	1994	7/12/1994	7/13/1994	0.1
Countyline	Natural	1994	7/13/1994	7/14/1994	0.1
Fish Creek	Natural	1994	7/15/1994	7/15/1994	0.2
Long Draw	Natural	1994	7/15/1994	7/17/1994	1
Eaton	Natural	1994	7/15/1994	7/16/1994	0.5
Indian Meadows I	Natural	1994	7/16/1994	7/16/1994	0.1
Nunn Creek	Natural	1994	7/16/1994	7/16/1994	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Mount Olympus	Natural	1994	7/18/1994	7/19/1994	1
Cameron	Natural	1994	7/19/1994	9/4/1994	3
Power Plant	Natural	1994	7/22/1994	7/24/1994	0.1
Grey Rock	Natural	1994	7/22/1994	7/24/1994	0.5
Ansel	Natural	1994	7/23/1994	7/24/1994	0.1
Nicomas	Natural	1994	7/23/1994	7/24/1994	0.1
Rockpile	Natural	1994	7/27/1994	7/28/1994	0.7
Gem Lake	Natural	1994	7/29/1994	7/30/1994	0.1
Indian Meadows 2	Natural	1994	7/30/1994	8/3/1994	0.1
Seam Rock	Natural	1994	8/1/1994	8/2/1994	1
South Cow	Natural	1994	8/2/1994	8/4/1994	0.1
South Cow	Natural	1994	8/2/1994	8/4/1994	0.1
Salt Cabin	Natural	1994	8/5/1994	8/8/1994	0.1
Elkhoof	Natural	1994	8/5/1994	8/8/1994	0.1
Hewlett Gulch	Natural	1994	8/5/1994	8/8/1994	7
Grey Rock	Natural	1994	8/5/1994	8/7/1994	0.1
Ski Slope	Natural	1994	8/7/1994	8/8/1994	0.1
Fall River	Natural	1994	8/10/1994	8/11/1994	0.1
Link Creek	Natural	1994	8/15/1994	8/18/1994	0.1
	Natural	1994	8/16/1994	8/18/1994	3
Little	Natural	1994	8/27/1994	8/28/1994	0.1
Roach	Natural	1994	9/8/1994	9/10/1994	0.1
Roaring Creek	Natural	1994	9/9/1994	9/10/1994	0.1
Grey Rock	Human	1995	4/5/1995	4/8/1995	0.1
Bennett	Natural	1995	6/21/1995	6/23/1995	14
California Gulch	Natural	1995	7/14/1995	7/15/1995	0.1
Eagle Cliff	Natural	1995	7/23/1995	7/30/1995	0.1
Stratton	Natural	1995	7/29/1995	8/2/1995	12
Grey Rock North	Natural	1995	8/1/1995	8/3/1995	1
Poverty Flats	Natural	1995	8/2/1995	8/3/1995	5
Hyatt Hill	Natural	1995	8/3/1995	8/5/1995	0.1
Hodge	Natural	1995	8/4/1995	8/6/1995	0.1
Palisade Mtn	Natural	1995	8/5/1995	8/5/1995	0.5
Big South Trail	Human	1995	8/9/1995	8/13/1995	0.3
North Bald	Natural	1995	8/13/1995	8/14/1995	0.1
Bald	Natural	1995	8/17/1995	8/18/1995	0.1
Shakedown	Natural	1995	8/18/1995	8/19/1995	1.5
Almost	Natural	1995	8/18/1995	8/19/1995	0.1
Pierson Park	Natural	1995	8/20/1995	8/22/1995	0.1
Ballard	Natural	1995	8/31/1995	9/3/1995	1
Cedar Gulch	Natural	1995	9/3/1995	9/3/1995	0.1
Devils Gulch	Natural	1995	9/14/1995	9/15/1995	0.3
Eggers	Natural	1996	5/9/1996	5/10/1996	0.1
Stove Prairie	Human	1996	5/12/1996	5/13/1996	1
Crystal	Human	1996	5/17/1996	5/29/1996	178.1
McGregor	Natural	1996	5/23/1996	5/23/1996	0.1
Storm	Natural	1996	6/10/1996	6/15/1996	8
Indianhead	Natural	1996	6/10/1996	6/10/1996	0.1
Bennett Creek	Natural	1996	6/11/1996	6/15/1996	1.3
North Fork	Natural	1996	7/7/1996	7/8/1996	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Drake	Natural	1996	7/23/1996	7/26/1996	0.3
Lone Pine I	Natural	1996	7/23/1996	7/25/1996	0.1
Cottontail	Natural	1996	7/24/1996	7/25/1996	0.1
Diversion	Natural	1996	8/2/1996	8/4/1996	0.1
Mosquito	Natural	1996	8/8/1996	8/9/1996	0.1
Rustic	Human	1996	8/11/1996	8/13/1996	33
Prospect	Natural	1996	8/15/1996	8/21/1996	2.5
Waltonia	Natural	1996	8/18/1996	8/26/1996	8
Cirque Meadow	Human	1996	8/20/1996	8/24/1996	0.1
Mineral Springs	Natural	1996	8/24/1996	8/25/1996	0.2
Duck Lake	Natural	1996	8/28/1996	8/29/1996	0.1
Roaring Creek	Human	1996	9/10/1996	9/12/1996	0.1
Sheep Creek	Human	1996	9/10/1996	9/12/1996	0.1
Stone Mountain	Natural	1996	10/3/1996	10/6/1996	0.1
Fish Creek	Natural	1997	5/20/1997	5/21/1997	0.3
Palisade	Natural	1997	6/21/1997	6/24/1997	0.1
Bierstadt	Natural	1997	6/25/1997	6/26/1997	0.1
Falls Gulch	Natural	1997	7/5/1997	7/17/1997	0.3
Many Thunders	Natural	1997	7/5/1997	7/10/1997	0.1
Kiowa Road	Human	1997	7/11/1997	7/12/1997	0.1
Lost Lake	Human	1997	7/12/1997	7/21/1997	0.3
Hondius	Human	1997	7/13/1997	7/13/1997	0.1
Sylvan Dale	Natural	1997	7/16/1997	7/18/1997	0.1
Bear Gulch	Natural	1997	7/16/1997	7/21/1997	0.1
Prairie Gulch	Natural	1997	7/16/1997	7/20/1997	0.1
Livermore	Natural	1997	7/16/1997	7/31/1997	3.5
Bighorn	Natural	1997	7/16/1997	7/22/1997	0.5
Deadman	Natural	1997	7/17/1997	7/31/1997	0.1
Crosier 2	Natural	1997	7/18/1997	7/24/1997	0.1
Crosier 1	Natural	1997	7/18/1997	7/18/1997	0.1
Big South	Human	1997	7/18/1997	7/20/1997	0.1
Deer Ridge	Natural	1997	7/18/1997	7/21/1997	0.1
North Fork	Natural	1997	7/21/1997	7/23/1997	0.8
Buck Gulch	Natural	1997	7/23/1997	7/28/1997	15
Beaver	Natural	1997	7/23/1997	7/24/1997	0.1
Mirror Lake	Human	1997	8/14/1997	8/16/1997	0.1
North Cow Creek	Natural	1997	8/23/1997	8/28/1997	0.1
Zimmerman	Human	1997	9/3/1997	9/3/1997	0.1
Buckhorn	Human	1997	9/14/1997	9/17/1997	1.2
Roaring Bone	Human	1997	9/26/1997	9/29/1997	0.1
Grey Rock	Human	1998	2/28/1998	3/18/1998	142
Snowy Owls	Human	1998	3/30/1998	4/10/1998	0.1
Mineral Springs	Natural	1998	6/30/1998	8/14/1998	0.8
Tom Bennett	Human	1998	7/2/1998	7/2/1998	0.1
Maxwell	Natural	1998	7/3/1998	7/5/1998	0.1
Sheep Mtn	Natural	1998	7/3/1998	7/8/1998	0.1
Pierson Park	Human	1998	7/13/1998	7/14/1998	0.1
Lost Lake	Human	1998	7/15/1998	7/19/1998	0.1
Pinewood	Natural	1998	7/20/1998	7/25/1998	0.1
Greenwood	Natural	1998	7/27/1998	7/29/1998	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Sheep	Natural	1998	8/10/1998	8/13/1998	0.3
Home Moraine	Natural	1998	8/10/1998	8/15/1998	0.1
Highdrive	Natural	1998	8/14/1998	8/18/1998	0.1
Crosier Lightning	Natural	1998	8/16/1998	8/20/1998	0.2
Stone Mountain #2	Natural	1998	9/8/1998	9/21/1998	80
Spruce Mountain	Human	1998	9/8/1998	9/11/1998	1
Jug Gulch	Natural	1998	9/8/1998	9/14/1998	2
Comanche	Natural	1998	9/8/1998	9/25/1998	0.1
Pingree Hill	Natural	1998	9/8/1998	9/14/1998	0.1
Parrott	Natural	1998	9/8/1998	9/9/1998	0.1
Sundance	Natural	1998	9/8/1998	9/10/1998	0.1
Surprise	Human	1998	10/14/1998	10/15/1998	0.1
Narrows	Human	1999	3/29/1999	3/29/1999	0.1
Castle Mtn	Natural	1999	5/24/1999	5/25/1999	0.1
Hummingbird	Natural	1999	6/19/1999	6/20/1999	0.1
Arrow	Natural	1999	6/21/1999	6/23/1999	0.2
Palisade	Human	1999	6/26/1999	6/29/1999	0.2
Beaver Fire	Human	1999	7/2/1999	7/8/1999	0.1
Bighorn Mt	Natural	1999	7/2/1999	7/26/1999	1.5
Deer Fire	Natural	1999	7/2/1999	7/26/1999	1.5
Button Rock	Natural	1999	7/8/1999	7/14/1999	2
Fish Creek	Natural	1999	7/13/1999	7/14/1999	4.2
Leprechaun	Natural	1999	8/3/1999	8/5/1999	0
Green Ridge	Natural	1999	8/18/1999	8/21/1999	1
Pingree Hill	Natural	1999	8/22/1999	8/22/1999	0.1
Honey Do	Natural	1999	8/26/1999	8/28/1999	0.5
Seaman	Natural	1999	8/26/1999	8/29/1999	2.4
Mitchell Ditch	Natural	1999	9/2/1999	9/3/1999	0.1
Lone Palm	Natural	1999	9/13/1999	9/15/1999	0.1
Killpecker	Human	1999	10/9/1999	10/10/1999	0.2
Lost Lake	Human	1999	10/9/1999	10/9/1999	0.1
Nunn Creek	Human	1999	10/25/1999	11/3/1999	0.2
Salt Cabin Fire	Human	1999	11/5/1999	11/6/1999	0.1
Piper Meadows Fire	Human	1999	12/4/1999	12/13/1999	0.2
Cr 47	Human	2000	9/12/2000	9/12/2000	0.1
Pinewood	Natural	2000	9/1/2000	9/3/2000	0.1
Drummer Flats	Natural	2000	8/2/2000	8/4/2000	0.1
Waltonia	Natural	2000	9/6/2000	9/8/2000	0.1
Piper Meadows	Natural	2000	9/9/2000	9/11/2000	0.1
Palisade 2k	Natural	2000	5/28/2000	5/30/2000	0.5
Crosier Mtn	Natural	2000	8/15/2000	8/16/2000	0.1
Bobcat	Human	2000	6/12/2000	7/19/2000	10599
Palisade	Human	2000	1/22/2000	1/28/2000	15
Signal	Human	2000	7/22/2000	7/23/2000	0.1
Greer	Human	2000	4/8/2000	4/10/2000	1
Twin Cabin	Natural	2000	7/25/2000	7/25/2000	0.1
Stratton Park	Human	2000	7/26/2000	7/31/2000	0.2
Prairie Gulch	Natural	2000	5/29/2000	6/1/2000	2.5
Grey Rock	Natural	2000	8/4/2000	8/6/2000	15
Arrowhead	Natural	2000	8/13/2000	8/16/2000	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Cache La Poudre	Natural	2000	4/29/2000	5/1/2000	0.1
Frozen River	Human	2000	2/8/2000	2/9/2000	0.1
Seaman	Natural	2000	8/26/2000	8/29/2000	3
Long Draw	Natural	2000	7/11/2000	7/19/2000	61
Englebert	Natural	2000	6/7/2000	6/7/2000	0.1
Swamp Creek	Natural	2000	8/3/2000	8/4/2000	0.1
Elkhorn	Natural	2000	9/5/2000	9/6/2000	0.1
Lady Moon	Natural	2000	7/26/2000	7/28/2000	0.1
Maxwell Ranch	Natural	2000	7/17/2000	7/27/2000	18
Sheep Mtn	Natural	2000	8/11/2000	8/13/2000	0.5
North Fork	Human	2000	8/7/2000	8/22/2000	180
Killpecker	Natural	2000	6/8/2000	6/8/2000	0.1
Home To Roost	Natural	2000	8/13/2000	8/15/2000	2
Lower Latitude	Natural	2000	7/26/2000	7/28/2000	0.1
Chicken Park	Natural	2000	9/5/2000	9/8/2000	0.2
Chicken Leg	Natural	2000	9/5/2000	9/5/2000	0.1
Grace Creek	Natural	2000	9/6/2000	9/8/2000	0.1
Beaver Creek	Natural	2000	6/5/2000	6/10/2000	4
Turkey Roost	Natural	2000	7/26/2000	7/28/2000	4
Boswell	Natural	2000	6/25/2000	6/27/2000	0.2
McGregor	Natural	2000	7/8/2000	7/9/2000	0.1
Marmot	Natural	2000	7/9/2000	7/10/2000	0.1
Pierson Park	Human	2001	2/2/2001	2/2/2001	0.1
Hermit Park	Natural	2001	7/7/2001	7/9/2001	0.1
Dunraven	Natural	2001	7/5/2001	7/6/2001	0.1
Bell Rock	Natural	2001	7/12/2001	7/12/2001	0.1
Glen Comfort	Natural	2001	7/27/2001	7/29/2001	0.1
Glen Haven	Natural	2001	7/5/2001	7/8/2001	0.2
Big Thompson	Natural	2001	7/5/2001	7/7/2001	0.1
Bear	Natural	2001	8/28/2001	8/29/2001	0.2
Devil's Gulch	Human	2001	6/2/2001	6/3/2001	0.3
Killer Bee	Natural	2001	8/11/2001	8/11/2001	0.1
Sylvan Dale	Natural	2001	7/7/2001	7/15/2001	1.7
Bulwark	Human	2001	1/6/2001	1/6/2001	0.1
Green Ridge	Natural	2001	7/6/2001	7/11/2001	2.3
South Stringtown	Natural	2001	7/2/2001	7/4/2001	0.1
Fish Creek	Natural	2001	7/2/2001	7/5/2001	0.1
Pole Hill	Human	2001	8/25/2001	8/26/2001	0.1
Bronco	Human	2001	8/26/2001	8/26/2001	0.1
Wishful Thinking	Human	2001	6/18/2001	6/19/2001	0.1
Black Mountain	Natural	2001	7/4/2001	7/16/2001	1
Lost Lake Fire	Human	2001	8/2/2001	8/3/2001	0.1
Pendergrass	Natural	2001	6/22/2001	6/24/2001	1
Kim	Natural	2001	9/1/2001	9/6/2001	0.1
Bennett Creek 2	Human	2001	6/23/2001	6/24/2001	0.1
South Fork	Natural	2001	6/24/2001	6/28/2001	0.2
Bennett Creek	Natural	2001	6/23/2001	6/28/2001	2.5
Spencer Heights	Human	2001	10/1/2001	10/3/2001	0.1
Poudre	Natural	2001	6/25/2001	6/28/2001	0.1
Kelly Flats	Natural	2001	6/24/2001	6/25/2001	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Young Gulch	Human	2001	6/23/2001	6/24/2001	0.1
Belay	Natural	2001	7/13/2001	7/21/2001	0.1
Brinker Creek	Natural	2001	6/25/2001	6/26/2001	0.5
Fish Stick	Natural	2001	8/6/2001	8/8/2001	4
Seaman	Natural	2001	7/7/2001	7/8/2001	2.7
Pingree Hill Fire	Human	2001	9/21/2001	9/22/2001	0.1
Bonner Peak	Natural	2001	8/6/2001	8/9/2001	0.2
Swamp Creek	Human	2001	8/4/2001	8/4/2001	0.1
South Lone Pine	Natural	2001	6/22/2001	6/22/2001	0.1
Roaring Creek	Natural	2001	6/22/2001	6/24/2001	0.1
Evelyn	Natural	2001	7/6/2001	7/7/2001	0.1
Independence	Natural	2001	7/3/2001	7/5/2001	0.5
Mill Creek	Natural	2001	7/14/2001	7/17/2001	0.1
Dark	Natural	2001	6/30/2001	8/6/2001	0.5
Wuh	Natural	2001	7/8/2001	8/6/2001	0.1
Powerline2	Human	2001	10/1/2001	10/1/2001	0.1
Lily Lake	Human	2001	6/14/2001	6/18/2001	0.1
Powell Hill	Human	2002	7/9/2002	7/10/2002	0.1
Big Elk Meadows	Natural	2002	6/19/2002	6/22/2002	0.1
Big Elk	Human	2002	7/17/2002	8/20/2002	4348
Thompson	Natural	2002	5/31/2002	6/1/2002	0.1
Rocky	Natural	2002	7/24/2002	8/30/2002	1
Kiowa	Natural	2002	7/28/2002	7/28/2002	0.1
Tanker 123 Crash	Human	2002	7/18/2002	7/25/2002	1
Pierson Park	Human	2002	5/2/2002	5/3/2002	0.1
Darkside	Natural	2002	8/24/2002	8/26/2002	0.2
East McGraw	Natural	2002	8/29/2002	9/2/2002	0.6
Cedar Creek	Natural	2002	6/22/2002	6/24/2002	0.3
Triangle Mountain 2	Natural	2002	9/28/2002	9/29/2002	0.1
Triangle	Natural	2002	6/1/2002	6/6/2002	0.2
Matterhorn	Natural	2002	8/23/2002	8/26/2002	0.1
Pennock Creek	Natural	2002	6/19/2002	6/23/2002	1
Fish Creek	Natural	2002	6/28/2002	7/26/2002	48
Youngs Gulch	Natural	2002	8/29/2002	9/2/2002	0.1
Pre-Turkey	Human	2002	11/23/2002	11/24/2002	2
Hewlett Gulch	Human	2002	4/17/2002	5/21/2002	500
Double Spot	Natural	2002	6/19/2002	6/20/2002	0.1
Sevenmile	Natural	2002	8/30/2002	9/9/2002	7
Wintersteen	Natural	2002	6/15/2002	6/18/2002	0.1
Pingree Hill	Natural	2002	7/26/2002	7/27/2002	0.1
Power Line	Human	2002	7/12/2002	7/14/2002	0.3
Bald Mountain	Human	2002	6/1/2002	6/1/2002	0.1
Mary Beth	Natural	2002	8/29/2002	9/2/2002	0.1
South Lone Pine	Natural	2002	8/29/2002	9/2/2002	0.1
North Bald Mountain	Natural	2002	6/30/2002	7/14/2002	5
Killpecker	Natural	2002	6/27/2002	6/28/2002	0.1
Gap	Natural	2002	6/7/2002	6/8/2002	0.1
Gps	Natural	2002	7/20/2002	7/22/2002	0.1
Bull Creek	Natural	2002	7/23/2002	7/25/2002	0.2
Chicken Park	Natural	2002	8/29/2002	9/2/2002	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Acme Creek	Natural	2002	8/29/2002	8/30/2002	0.1
Green Mountain	Natural	2002	6/5/2002	6/9/2002	1
Boswell	Natural	2002	9/20/2002	9/22/2002	0.3
Chiq'ta Ck	Natural	2002	6/20/2002	9/5/2002	0.1
Ute Trail	Natural	2002	6/23/2002	9/5/2002	0.1
Glacier	Natural	2002	6/27/2002	9/5/2002	0.1
Tuxedo Park	Human	2002	7/25/2002	7/27/2002	0.1
Big Elk Park	Human	2003	12/16/2003	12/18/2003	0.1
Spring Gulch	Natural	2003	7/22/2003	7/25/2003	2.5
Elk Ridge	Natural	2003	7/16/2003	7/19/2003	5
Hells Canyon	Natural	2003	8/25/2003	8/29/2003	2
Chelsea	Natural	2003	6/13/2003	6/18/2003	1
Round Mountain	Human	2003	12/2/2003	12/4/2003	1
Pallisade	Natural	2003	5/30/2003	6/1/2003	10.8
Drake	Natural	2003	7/19/2003	7/21/2003	0.1
Alexander	Natural	2003	7/25/2003	8/2/2003	1
Moody Hill	Human	2003	8/15/2003	8/17/2003	0.1
Comanche	Natural	2003	7/18/2003	7/22/2003	0.1
Pingree	Natural	2003	6/13/2003	6/16/2003	0.2
Lazy D	Natural	2003	8/8/2003	8/10/2003	0.1
Monument	Natural	2003	7/30/2003	8/2/2003	0.5
Chambers Lake	Human	2003	8/16/2003	8/18/2003	0.1
Buck Ridge #1	Natural	2003	7/29/2003	7/30/2003	0.1
Bennett	Natural	2003	7/26/2003	8/1/2003	0.2
Buck Ridge #2	Natural	2003	7/29/2003	7/30/2003	0.1
Cascade	Natural	2003	8/16/2003	8/19/2003	0.1
Narrows	Human	2003	5/14/2003	5/22/2003	0.2
Keg Meadow	Human	2003	7/13/2003	7/13/2003	0.1
Pingree Hill	Natural	2003	8/3/2003	8/6/2003	0.3
Long	Natural	2003	8/6/2003	8/9/2003	1
North Fork	Natural	2003	8/18/2003	8/23/2003	2
Mount Margaret	Human	2003	7/5/2003	7/9/2003	1
Nunn	Human	2003	7/17/2003	7/19/2003	1
Green Ridge	Natural	2003	9/6/2003	9/7/2003	0.1
Creedmore Ridge	Natural	2003	7/6/2003	7/9/2003	0.1
Allotment	Natural	2003	8/2/2003	8/6/2003	0.3
Willow Creek	Natural	2003	8/7/2003	8/8/2003	0.2
Trail Creek	Natural	2003	7/5/2003	7/8/2003	0.1
Bull Rock	Natural	2003	7/17/2003	7/18/2003	0.1
Lost Falls	Natural	2003	7/29/2003	8/7/2003	0.1
Saint Vrain	Natural	2004	6/24/2004	6/25/2004	0.1
Big Elk	Natural	2004	3/29/2004	4/6/2004	0.1
West Creek	Human	2004	1/11/2004	1/13/2004	0.2
Moody	Natural	2004	3/24/2004	3/29/2004	1.2
Arrowhead	Natural	2004	6/9/2004	6/11/2004	0.1
Grey Rock	Natural	2004	6/4/2004	6/11/2004	0.25
Grey Rock 2	Human	2004	7/12/2004	8/5/2004	28.4
Yonder	Natural	2004	6/4/2004	6/13/2004	1
Lake Field	Human	2004	3/18/2004	3/22/2004	4
Lefthand Spur Road	Human	2004	3/21/2004	3/30/2004	0.2

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Pierson	Human	2005	7/10/2005	7/11/2005	0.1
Hell's Canyon	Natural	2005	7/16/2005	7/24/2005	5.9
Drake	Natural	2005	7/16/2005	7/25/2005	14
Alexander 2	Natural	2005	7/20/2005	7/25/2005	4.4
Crosier	Human	2005	12/12/2005	12/19/2005	0.25
Alexander	Natural	2005	6/28/2005	6/30/2005	0.3
Bobcat Gulch	Natural	2005	7/7/2005	7/8/2005	0.1
Bright	Natural	2005	6/28/2005	7/3/2005	0.1
Greer 19	Human	2005	5/21/2005	5/21/2005	0.1
Moody Hill	Human	2005	6/20/2005	6/25/2005	0.4
Old Flowers	Human	2005	7/31/2005	8/1/2005	0.2
Rist Canyon	Human	2005	6/16/2005	6/16/2005	0.1
Trell	Natural	2005	7/31/2005	8/2/2005	0.1
Kelly Flats	Human	2005	8/12/2005	8/12/2005	0.1
Eggers	Human	2005	8/29/2005	8/29/2005	0.1
Deer Meadow	Human	2005	10/1/2005	10/3/2005	0.1
North Rim	Natural	2005	8/16/2005	8/20/2005	0.1
Wet Saddle	Natural	2005	8/9/2005	8/13/2005	0.1
Swamp Lady	Human	2005	9/25/2005	9/28/2005	1.9
South Lone Pine	Natural	2005	7/23/2005	7/24/2005	0.1
Blue Sock	Human	2005	7/6/2005	7/7/2005	0.1
North Bald	Natural	2005	7/20/2005	8/5/2005	45
Scott	Natural	2005	7/28/2005	7/30/2005	0.25
Rabbit Creek	Natural	2005	7/2/2005	7/4/2005	0.1
S.Panhandle Ck	Human	2005	9/5/2005	9/9/2005	0.1
Lost Lake	Natural	2005	7/18/2005	7/21/2005	2
No Bull	Human	2005	9/15/2005	9/17/2005	0.1
Bull Creek	Natural	2005	8/1/2005	8/3/2005	0.25
Black Mountain	Natural	2005	7/2/2005	7/9/2005	1.4
Turkey Roost	Natural	2005	7/4/2005	7/9/2005	4.1
Devils Creek	Natural	2005	9/4/2005	9/15/2005	11
Sheep Creek Complex	Natural	2005	9/27/2005	10/15/2005	30.5
Cow Ridge	Natural	2005	7/22/2005	7/22/2005	0.1
Willow Creek	Natural	2005	6/22/2005	8/28/2005	0.1
Moraine130	Natural	2005	6/30/2005	7/1/2005	0.1
Chasm Fall	Human	2005	7/21/2005	7/21/2005	0.1
Black Canyon	Human	2005	9/23/2005	9/26/2005	0.1
Dark Vale	Natural	2005	10/8/2005	10/9/2005	0.1
Dream	Human	2005	10/15/2005	10/15/2005	0.1
Sock	Human	2005	10/23/2005	10/23/2005	0.1
Pinewood Springs	Natural	2006	5/26/2006	5/30/2006	3
Thompson	Natural	2006	7/20/2006	7/24/2006	0.2
Lily Mtn.	Human	2006	8/11/2006	8/21/2006	0.1
Pole Hill	Natural	2006	5/24/2006	5/27/2006	0.5
Bell Rock	Natural	2006	8/23/2006	9/24/2006	1.2
Rabbit Gulch	Natural	2006	9/12/2006	9/22/2006	0.3
Terry	Natural	2006	5/22/2006	5/23/2006	0.2
Cedar Creek	Natural	2006	8/15/2006	8/31/2006	4.6
Jug Gulch	Natural	2006	8/15/2006	9/1/2006	15.4
Switchback	Human	2006	3/3/2006	3/13/2006	9

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Green Ridge	Natural	2006	8/30/2006	8/31/2006	0.1
Spruce Gulch	Natural	2006	8/17/2006	8/19/2006	0.1
Mummy	Human	2006	8/8/2006	8/10/2006	0.1
Pingree Park	Human	2006	8/6/2006	8/8/2007	0.1
Quigley Mountain	Natural	2006	5/21/2006	5/28/2006	5
Cammon Fire	Natural	2006	5/21/2006	5/30/2006	0.1
Salt	Natural	2006	8/18/2006	8/18/2006	0.1
Crown Point	Natural	2006	5/17/2006	5/30/2006	3
Grey Rock	Natural	2006	5/22/2006	5/25/2006	0.1
Fox Acres	Natural	2006	5/21/2006	5/24/2006	0.1
Prickly Pear	Natural	2006	6/18/2006	6/24/2006	0.8
Podunk	Natural	2006	7/24/2006	7/27/2006	0.2
Mill Creek	Natural	2006	6/29/2006	7/5/2006	8
Trail Creek	Natural	2006	7/17/2006	7/21/2006	0.4
Mill Creek 2	Natural	2006	7/6/2006	7/9/2006	1.1
Fish Creek Ii	Human	2006	8/7/2006	8/12/2006	1.3
Bull Rock	Natural	2006	8/17/2006	8/20/2006	2.2
Halligan	Natural	2006	6/20/2006	6/25/2006	30
Hoffmeister	Human	2006	4/20/2006	4/24/2006	0.3
Abandoned Campfire	Human	2006	5/29/2006	5/29/2006	0.1
Beaver Mountain	Natural	2006	6/8/2006	6/22/2006	0.1
Eagle North	Natural	2006	7/3/2006	7/6/2006	0.1
Bighorn	Natural	2006	8/14/2006	8/21/2006	0.1
Jellystone Fire	Natural	2007	8/3/2007	8/4/2007	0.01
Crosier Mtn.	Natural	2007	7/22/2007	7/29/2007	8
West Creek	Natural	2007	7/17/2007	7/20/2007	0.2
Hyatt Mine	Human	2007	6/22/2007	6/25/2007	0.1
Black Creek	Natural	2007	7/17/2007	7/19/2007	0.1
Comanche Fish	Natural	2007	6/16/2007	6/20/2007	0.7
Pendergrass	Natural	2007	7/21/2007	7/30/2007	0
Pingree Hill	Human	2007	6/21/2007	6/24/2007	0.9
Rustic	Natural	2007	7/17/2007	7/18/2007	0.1
Grey Rock Meadow	Natural	2007	6/21/2007	7/2/2007	3.5
Grey Rock	Human	2007	11/3/2007	11/7/2007	1.1
North Rim	Natural	2007	7/17/2007	7/19/2007	0.1
Josephine	Natural	2007	8/15/2007	8/17/2007	0.1
Manhead Mountain	Natural	2007	6/28/2007	6/29/2007	0.1
Todd	Human	2007	6/15/2007	6/17/2007	0.1
Lost Lake	Human	2007	7/1/2007	7/5/2007	1
Diamond Tail	Human	2007	9/20/2007	9/23/2007	0.8
Pearl Beaver	Natural	2007	6/22/2007	6/25/2007	0.1
Stuck	Natural	2007	7/19/2007	7/22/2007	0.1
Deadhorse Mountain	Natural	2007	5/17/2007	5/21/2007	3.6
Dump Fire	Human	2007	5/18/2007	5/19/2007	0.1
Glacier Basin Dump	Human	2007	6/13/2007	6/15/2007	0.1
Deer Ridge Fire	Natural	2007	6/26/2007	6/27/2007	0.1
Moraine 115	Natural	2007	7/4/2007	7/5/2007	0.1
Twin Owls	Natural	2007	9/3/2007	9/4/2007	0.1
Endovalley Fire	Human	2007	11/15/2007	11/19/2007	0.1
Big Elk	Human	2008	10/25/2008	10/31/2008	7

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Hells Canyon	Natural	2008	7/7/2008	7/15/2008	0.4
Quillan Gulch	Natural	2008	9/28/2008	11/17/2008	10
Soul Shine	Human	2008	7/21/2008	7/24/2008	0.61
River Crossing	Natural	2008	10/2/2008	10/6/2008	0.1
Sheep	Human	2008	9/22/2008	9/23/2008	0.01
Summit Trail	Human	2008	11/20/2008	11/28/2008	0.01
Riverbend	Natural	2008	7/1/2008	7/19/2008	0.1
Sulzer	Natural	2008	9/20/2008	9/22/2008	0.1
Sulzer 2	Natural	2008	10/2/2008	10/5/2008	0.3
Crosier Mountain	Human	2008	1/24/2008	1/29/2008	0.34
Grouse Creek	Natural	2008	11/1/2008	11/18/2008	0.1
Paradise	Human	2008	11/24/2008	12/7/2008	83
Pennock Creek	Natural	2008	7/31/2008	9/9/2008	1.2
Dumpster	Human	2008	6/22/2008	6/23/2008	0.1
Burnt Car	Human	2008	5/10/2008	5/14/2008	0.34
63e	Human	2008	10/30/2008	10/31/2008	0.05
Diane	Natural	2008	8/2/2008	8/9/2008	0.1
Young	Natural	2008	7/5/2008	7/19/2008	0.25
Ansel Watrous	Human	2008	6/8/2008	6/8/2008	0.01
Forrest	Natural	2008	8/14/2008	9/7/2008	0.1
Hesselbarth	Natural	2008	8/14/2008	9/7/2008	0.1
Greyrock	Natural	2008	8/2/2008	8/3/2008	0.1
Starview	Natural	2008	6/22/2008	6/24/2008	0.3
Greyrock Camp	Human	2008	5/8/2008	5/12/2008	0.01
Wintersteen	Natural	2008	7/26/2008	7/28/2008	0.1
Hewlett Gulch	Natural	2008	9/26/2008		0.1
Swamp Lady	Human	2008	6/14/2008	6/15/2008	0.1
Creek	Natural	2008	9/17/2008	9/26/2008	0.1
Margaret	Natural	2008	10/2/2008	10/5/2008	0.2
Mill Creek	Human	2008	9/29/2008	10/4/2008	3
Endo	Human	2008	7/1/2008	7/1/2008	0.1
Bier Fire	Natural	2008	7/8/2008	9/12/2008	0.1
Longs Fire	Human	2008	7/13/2008	7/27/2008	0.1
Sullivan	Human	2009	1/13/2009	1/22/2009	0.15
Combat	Human	2009	1/20/2009	1/21/2009	0.01
Fox Creek	Natural	2009	8/31/2009	9/3/2009	0.25
West Creek	Natural	2009	8/31/2009	9/6/2009	1
Dunraven	Human	2009	9/8/2009		44.4
Lost Lake	Human	2009	11/9/2009	11/9/2009	0.1
Laramie	Natural	2009	9/5/2009	9/10/2009	0.1
Elk	Human	2009		7/19/2009	0.1
Cayman	Human	2009	9/6/2009	9/6/2009	0.1
Bennet	Human	2009	8/9/2009	8/9/2009	0.1
Pingree Park Rd	Human	2009	7/5/2009	7/5/2009	0.1
Zimmerman	Human	2009	9/3/2009	9/6/2009	0.35
Gateway Fire	Natural	2009	7/19/2009	7/21/2009	0.1
Wintersteen	Natural	2009	7/23/2009	7/28/2009	8.8
Greyrock Meadow	Human	2009		2/13/2009	28
Lone Tree Iii	Human	2009	4/5/2009	4/15/2009	6.1
Badge	Natural	2009		6/30/2009	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Tent Pole	Human	2009	8/7/2009	8/7/2009	0.1
Coon	Natural	2009	9/16/2009	9/19/2009	0.1
Rabbit Ears	Natural	2009	7/22/2009	9/5/2009	0.3
Fall River Fire	Natural	2009	9/9/2009	9/12/2009	0.1
Cub Lake	Human	2009	11/7/2009	11/8/2009	0.1
North St Vrain Fire	Natural	2010	7/29/2010	7/31/2010	0.1
Lyon's Gulch	Human	2010	6/29/2010	6/29/2010	0.1
Sullivan Park	Human	2010	4/11/2010	4/20/2010	6.3
Galuchie 2	Natural	2010	7/10/2010	7/12/2010	0.1
Galuchie	Natural	2010	7/10/2010	7/12/2010	0.1
West White Pine	Human	2010	9/26/2010	10/13/2010	0.35
Dutch George	Human	2010	4/28/2010	4/29/2010	0.3
Fort	Human	2010		9/1/2010	0.1
Lakefield 2	Human	2010	9/8/2010	9/13/2010	0.1
Swamp Pol	Human	2010	7/10/2010	7/12/2010	0
Site 9	Human	2010	6/19/2010	6/20/2010	0
Boswell	Natural	2010	8/7/2010		10.2
Dump Fire	Human	2010	8/27/2010	8/27/2010	0.1
Eagle Cliff	Human	2010	1/31/2010	2/1/2010	0.1
Forest Canyon	Human	2010	7/9/2010	7/16/2010	0.1
Cow Creek	Natural	2010	6/24/2010	12/8/2010	1200
Castle Mountain Fire	Natural	2010	7/29/2010	9/3/2010	0.1
Spring Gulch	Natural	2011	8/22/2011		0.01
Overlook	Natural	2011		8/1/2011	6.5
Crystal	Human	2011	4/1/2011	5/10/2011	2939
Monument Gulch	Human	2011	9/5/2011	9/5/2011	0.1
Pingree	Human	2011		11/18/2011	3.5
White Rock	Natural	2011	8/19/2011	8/21/2011	0.1
Camman Springs	Human	2011	8/27/2011	8/28/2011	0.01
Jack's Gulch	Human	2011		5/28/2011	2.6
Cayman Springs	Human	2011	7/29/2011	7/31/2011	0.01
Stratton	Natural	2011	8/16/2011	8/21/2011	1.82
Mm 114	Human	2011	3/23/2011	3/23/2011	0.01
Mm 111	Human	2011	3/23/2011	3/23/2011	0.1
Comanche	Natural	2011	7/18/2011	7/27/2011	0.1
Grey Rock	Human	2011	3/14/2011	3/29/2011	17
Lightning Bust	Natural	2011	7/2/2011	7/3/2011	0.1
Elkhorn	Human	2011		8/23/2011	0.25
Eagles Nest	Natural	2011	7/11/2011	7/13/2011	8.3
Manhattan 16	Human	2011	7/31/2011	7/31/2011	0.01
Lady Moon	Natural	2011		6/29/2011	0.3
Middle Bald	Human	2011	8/9/2011	8/13/2011	1
Old School	Natural	2011		6/29/2011	2.1
Green Ridge	Human	2011	9/5/2011	9/5/2011	0.01
Lost	Natural	2011	8/1/2011	8/4/2011	0.1
Creedmore Lakes	Human	2011	9/3/2011	9/5/2011	0.01
North Fork	Natural	2011	6/24/2011	6/26/2011	0.75
Forrester Creek	Natural	2011	8/16/2011	8/21/2011	0.1
Black Lily	Human	2011	6/25/2011	6/26/2011	0.1
West Creek	Natural	2011	10/1/2011	11/2/2011	0.2

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Husted	Human	2012	11/6/2012	11/11/2012	1.9
Narrows	Human	2012	9/5/2012	9/14/2012	2.7
Galuchie	Human	2012	3/26/2012	3/31/2012	14
High Park	Natural	2012	6/9/2012	8/14/2012	87275
Comanche	Natural	2012	7/2/2012	7/12/2012	0.1
Flower	Human	2012	4/29/2012	5/15/2012	0.1
Bennett Creek	Natural	2012	8/10/2012	8/19/2012	0.75
Salt Cabin Park	Human	2012	6/3/2012	6/5/2012	0.8
Seven Mile	Natural	2012	8/10/2012	8/11/2012	0.1
Dadd Gulch	Natural	2012		8/11/2012	0.1
Hewlett	Human	2012	5/14/2012	8/13/2012	7685
Swamp Creek	Human	2012	5/27/2012	5/27/2012	0.1
Middle Bald	Natural	2012	9/5/2012	9/10/2012	0.2
Molly	Human	2012	9/22/2012	9/23/2012	0.1
Columbine Canyon	Human	2012	6/10/2012	6/19/2012	0.01
Chetco	Natural	2012	6/15/2012	6/16/2012	0.1
Lost Lake	Human	2012	5/26/2012	5/26/2012	0.1
Lost Lake	Human	2012	9/16/2012	9/20/2012	0.1
Goat Mountain	Natural	2012	4/24/2012	5/2/2012	8.5
Haystack Rock	Natural	2012	7/24/2012	7/27/2012	0.35
Iron Mountain Fire	Human	2012	9/21/2012	9/22/2012	0.1
Roach	Human	2012	8/27/2012	9/20/2012	117
Book	Natural	2012	6/17/2012	6/18/2012	0.1
Glacier Basin	Natural	2012	6/28/2012	8/21/2012	0.1
Sundance	Natural	2012	7/30/2012	7/31/2012	0.1
Bighorn Mountain	Natural	2012	8/10/2012	8/21/2012	0.1
Lily	Human	2012	8/28/2012	8/29/2012	0.1
West Alluvial	Human	2012	6/8/2012	6/8/2012	0.1
Fern Lake	Human	2012	10/9/2012	6/13/2013	3498
Little Deer	Natural	2013	5/18/2013	5/22/2013	0.1
Hell Canyon	Natural	2013	7/10/2013	7/19/2013	5.7
Alexander	Human	2013	2/5/2013	2/28/2013	1.1
Cedar Creek	Natural	2013	9/3/2013	9/4/2013	0.01
Sulzer Gulch	Natural	2013	9/3/2013	9/4/2013	0.01
Moody	Natural	2013	8/28/2013	9/3/2013	0.2
Chambers	Human	2013	8/5/2013	8/10/2013	0.01
Crown Point	Natural	2013	9/1/2013	9/2/2013	0.01
Zimmerman	Natural	2013	8/12/2013	8/14/2013	0.1
Manhattan	Human	2013	5/26/2013	5/26/2013	0.01
Manhattan 2	Human	2013	5/26/2013	5/26/2013	0.01
Sheep Mountain	Natural	2013	9/5/2013	9/7/2013	0.1
Bear Trap	Natural	2013	8/7/2013	8/8/2013	0.01
Lost	Natural	2013	9/6/2013	9/7/2013	0.01
Hohnholz	Human	2013	6/2/2013	6/14/2013	29.3
Beaver Ponds	Human	2013	5/16/2013	5/20/2013	0.1
Moraine	Human	2013	5/17/2013	5/17/2013	0.1
Many Parks	Human	2013	6/2/2013	6/2/2013	0.1
Pole 14	Human	2014	6/26/2014	6/27/2014	0.1
Emhaw Gulch	Human	2014	8/6/2014	8/7/2014	0.1
Granite Gulch	Natural	2014	6/18/2014	6/30/2014	3.2

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Jacks Gulch	Human	2014	5/30/2014	5/30/2014	0.1
Laramie Lake	Human	2014	10/2/2014	10/3/2014	0.1
Dispersed 17	Human	2014	7/31/2014	8/1/2014	0.1
Lady Moon	Natural	2014	8/30/2014	9/3/2014	0.1
Turkey Knob	Natural	2014	9/21/2014	9/29/2014	2.8
Echo	Human	2014	8/16/2014	8/16/2014	0.1
Endo Valley	Human	2014	5/2/2014	5/2/2014	0.1
Sundance	Human	2014	5/29/2014	5/29/2014	0.1
Spruce	Human	2014	6/30/2014	9/8/2014	0.4
Bear Lake Road	Human	2014	10/24/2014	10/24/2014	0.1
Lyons Gulch Fire	Human	2015	9/15/2015	9/16/2015	6.12
Christy Meadows	Human	2015	9/14/2015	9/14/2015	0.1
Soulshine	Human	2015	9/9/2015	9/9/2015	0.1
Palisade	Natural	2015	8/9/2015	8/16/2015	0.1
Storm Mountain	Human	2015	9/19/2015	9/19/2015	0.1
Bobcat Ridge	Natural	2015	8/13/2015	8/15/2015	0.71
Stormy Peaks	Human	2015	9/8/2015	9/12/2015	0.1
Mummy	Natural	2015	10/10/2015	10/21/2015	558
Buckhorn	Human	2015	8/9/2015	8/11/2015	0.55
513	Human	2015	8/29/2015	9/1/2015	0.1
Fish	Human	2015	8/12/2015	8/16/2015	0.1
Skin Gulch	Human	2015	7/5/2015	7/5/2015	0.1
Three Way	Human	2015	9/22/2015	9/22/2015	0.1
Kelly Flats Fire	Human	2015	9/13/2015	9/13/2015	0.1
Mineral Springs	Natural	2015	6/29/2015	7/2/2015	462
Grassy Pass	Human	2015	9/24/2015	9/25/2015	0.1
Ouzel	Human	2015	7/26/2015	7/26/2015	3.6
Mt. Margaret	Human	2015	10/12/2015	10/12/2015	0.1
Stock Fire	Human	2015	6/20/2015	6/20/2015	0.1
North Fork	Natural	2015	6/29/2015	8/14/2015	0.1
Lumpy	Human	2015	7/4/2015	7/5/2015	0.1
Ute Meadow Fire	Human	2015	7/26/2015	7/26/2015	0.1
Alpine Circle	Human	2015	10/10/2015	10/10/2015	0.1
Sprague Lake	Human	2015	2/1/2015	2/2/2015	0.1
Fall River	Human	2015	8/30/2015	8/31/2015	0.1
Bandit	Human	2015	10/12/2015	10/15/2015	0.1
Beaver Ponds Camp Fire	Human	2015	11/2/2015	11/2/2015	0.1
953	Human	2015	10/17/2015	10/17/2015	0.1
North Rim	Human	2016	12/25/2016	12/30/2016	7
Red Deer	Human	2016	10/30/2016	11/29/2016	0.1
517	Human	2016	9/11/2016	9/12/2016	0.1
Elkhorn	Human	2016	7/11/2016	7/13/2016	0.25
Mill Creek	Natural	2016	7/23/2016	7/25/2016	0.33
Soul Shine	Human	2016	7/24/2016	7/25/2016	0.1
Stub	Human	2016	7/26/2016	8/21/2016	1.2
South Fork	Natural	2016	8/10/2016	8/17/2016	0.01
Muggins	Human	2016	6/21/2016	6/22/2016	0.1
Pratt Creek	Natural	2016	7/5/2016	7/7/2016	0.3
#522	Human	2016	7/13/2016	7/14/2016	0.1
515	Human	2016	7/23/2016	7/28/2016	0.1

Fire Name	Cause	Year	Start Date	Out Date	Total Acres
Chambers	Human	2016	8/1/2016	8/1/2016	0.1
Crosier	Natural	2016	5/30/2016	6/23/2016	0.1
Bellaire	Natural	2016	6/16/2016	6/28/2016	0.3
Lost Lake	Human	2016	3/1/2016	3/2/2016	0.1
County Road 47	Human	2016	4/9/2016	4/9/2016	0.1
Seaman	Unknown	2018	9/14/2018	9/17/2018	230.3

Source: Historical wildland fire occurrence data compiled by USFS from 1980 - 2016, from BIA, BLM, BOR, USFS, FWS, and NPS; CO-WRAP 2018

The following event narratives detail past impacts of wildfires in Larimer County and illustrate the potential magnitude of future events:

- **October 14, 2020 (East Troublesome Fire)** – This fire began in Grand County and spread rapidly fueled by wide-spread drought, numerous dead and down beetle-killed trees, red flag weather conditions created by high winds and dry conditions, and poor humidity recovery overnight. The combination of these factors led to unprecedented, wind-driven, active fire behavior with rapid spread during the overnight hours. The fire crossed into Larimer County, reaching Rocky Mountain National Park on October 2nd, and the western edge of Estes Park on October 23rd. A winter storm from October 24-26 brought precipitation and colder temperatures, although the fire was not completely contained until November 30th.
- **August 13, 2020 (Cameron Peak Fire)** – This wildfire began August 13, 2020 on U.S. Forest Service Property near Chambers Lake and burned nearly 209,000 acres before it was finally 100% contained on December 2, 2020. Due to the steep and rugged terrain, heavy timber, and beetle kill trees causing snags, an indirect approach was necessary to contain the fire. According to the Larimer County Assessor's Office, the fire destroyed 243 structures for an estimated market value loss of $6,385,058. CR 14 and CR 103 were closed for an extended period and over 130 residents were evacuated for several weeks, leading to the need for shelter operations. Due to COVID-19, however, non-congregate sheltering was used for this fire. A cold front with freezing temperatures and snow in early September stalled fire growth temporarily but did not extinguish the fire. Due to the size of this fire, long-term impacts are expected in the area, including impacts to the Cache la Poudre watershed. The Cameron Peak Fire has received both FMAG and Major Disaster declarations.
- **October 16, 2019 (Elk Wildfire)** – This wildfire was a result of a prescribed burn that jumped the boundary line. The fire ended up burning approximately 622 acres near Ben Delatour Scout Ranch. The fire destroyed one storage shed and damaged some utility line poles that were quickly restored. CR 68 C and CR 74 E were closed for the duration of the incident, resulting in the need to open a shelter in Livermore as residents were unable to return home. The initial estimate of losses totaled over $87,400. (Source: Larimer County HMPC, 2016).
- **September 17, 2019 (McNay Wildfire)** – This fire burned 560 acres near MM 10 on W CR 74E. PCREA had damage to a couple utility poles and shut down the power which caused issues regarding access to 911 in the impacted area. Damages from this event totaled $28,602.75. (Source: Larimer County HMPC).
- **September 11, 2018 (Seaman Wildfire)** – This fire burned 240 acres 5 miles west of 287 on Highway 14. One firefighter sustained an injury. The fire resulted in trail closures and a voluntary evacuation for Smith Ridge Road. Losses totaled $84,974.81. (Source: Larimer County HMPC).
- **February 10, 2017 (Spring Glade Wildfire)** – A wildfire in the Fossil Creek Wetlands Natural Area burned 150 acres, threatening a water treatment plant and several homes. Several fences and utility poles were damaged, and Timberline and Carpenter Roads were closed for two hours. (Source: Poudre Fire Authority HMPC).
- **September 4, 2016 (Starwood Wildfire)** – This fire burned 304 acres resulting in voluntary evacuations and $16,913.59 in losses. (Source: Larimer County HMPC).

- **June 23, 2012 (Woodland Heights Wildfire)** – This fire was started by a power line rubbing against a pine tree in Estes Park. The fire spread to 27.3 acres, burning 22 houses and two outbuildings on the west side of Estes Park near the boundary of Rocky Mountain National Park. The fire was contained quickly, and residents were allowed to return to the area on June 25, 2012. Estes Valley Fire Protection District's proactive response, along with the extra resources afforded by a cost-sharing agreement with Larimer County, were credited with preventing the fire spreading into a major disaster on the scale of some of the year's other wildfires in the state,
- **June 9, 2012 (High Park Fire)** – This was the largest and most destructive fire in Larimer County's history. The High Park fire was started by a lightning strike and occurred in the mountains west of Fort Collins. This fire burned over 87,200 acres, destroyed at least 259 homes, and resulted in the death of one person. (Source: High Park Fire Burned Area Emergency Response (BAER) Report).
- **May 14, 2012 (Hewlett Gulch Wildfire)** – This fire burned a total of 7,685 acres just west of Fort Collins and was caused by a camp stove that accidentally burned the grasses nearby. Most of area of high burn severity was within the immediate drainage area of Milton Seaman Reservoir, which is owned and operated by the City of Greeley. This fire area later combined with the High Park Fire area a month later.
- **September 12, 2010** – Dry conditions allowed for another wildfire to spread near Flatiron Reservoir in the foothills west of Loveland as crews were wrapping up the Fourmile Canyon Wildfire near Boulder. The fire started the day after a resident burned some debris on his property. The dry conditions coupled with gusty winds allowed the debris to reignite and the ensuing wildfire to spread. Two homes, 5 other structures, several vehicles and a total of 750 square acres were consumed by the blaze. Property damage estimates totaled $1.5 million (Source: NCEI).
- **September 6, 2010 (Fourmile Canyon Wildfire) –** The Fourmile Canyon Wildfire, northwest of Boulder, originated from an unattended fire pit at a local residence. The wildfire quickly consumed 5 1/2 square miles (3,500 acres) the first day and forced the evacuation of over 3,000 residents. Erratic 45-mph gusts sent the fire in two directions at times. Very dry weather conditions preceded the fire. The combination of strong winds, low relative humidity and dry fuels allowed the wildfire spread rapidly through the steep, heavily forested terrain. The flames were reportedly 20 to 50 feet in length. Towns within the burn area included Salina, Wallstreet and Gold Hill. The dry conditions coupled with gusty winds ranging from 45 to 64 mph persisted for several more days. Fire managers used as many as 700 firefighters and support personnel from 35 agencies and seven air tankers to battle the wildfire. A total of 6,181 square acres or approximately 10 square miles were burned. The Fourmile Canyon Wildfire was the most destructive fire in Colorado history in terms of the damage to personal property. It destroyed 171 homes with an estimated cost of $217 million. (Source: NCEI).
- **June 12, 2000 (Bobcat Gulch Fire and Hi Meadows Wildfire)** – Two large wildfires developed in the Front Range Foothills of Colorado as careless campers and very dry conditions proved to be a dangerous combination. Strong winds gusting in excess of 60 mph on the 13th, fanned the flames, spreading both wildfires out of control. The Hi Meadows wildfire, about 35 miles southwest of Denver, consumed 10,800 acres and 80 structures, mostly high priced homes. The Bobcat wildfire, located about 12 miles southwest of Fort Collins, consumed 10,600 acres and 22 structures. Mother Nature, initially a nemesis to firefighters, also played the key role in dousing the flames. Late on the 16th, a strong cold front moved into northeastern Colorado. Upslope conditions developed in the wake of the front, allowing 2 to 4 inches of snowfall overnight at elevations above 8,500 feet. Firefighters were able to contain both wildfires shortly thereafter.

  Damage from the two wildfires is estimated at over $18.5 million. A Colorado State Forest Service report estimated the cost of just the Bobcat Gulch Fire at $933.94 per acre, or nearly $9.9 million (Source: Mackes, 2015). These estimate makes the Hi Meadows and Bobcat wildfires the costliest to strike the Front Range Foothills. (Source: NCEI)

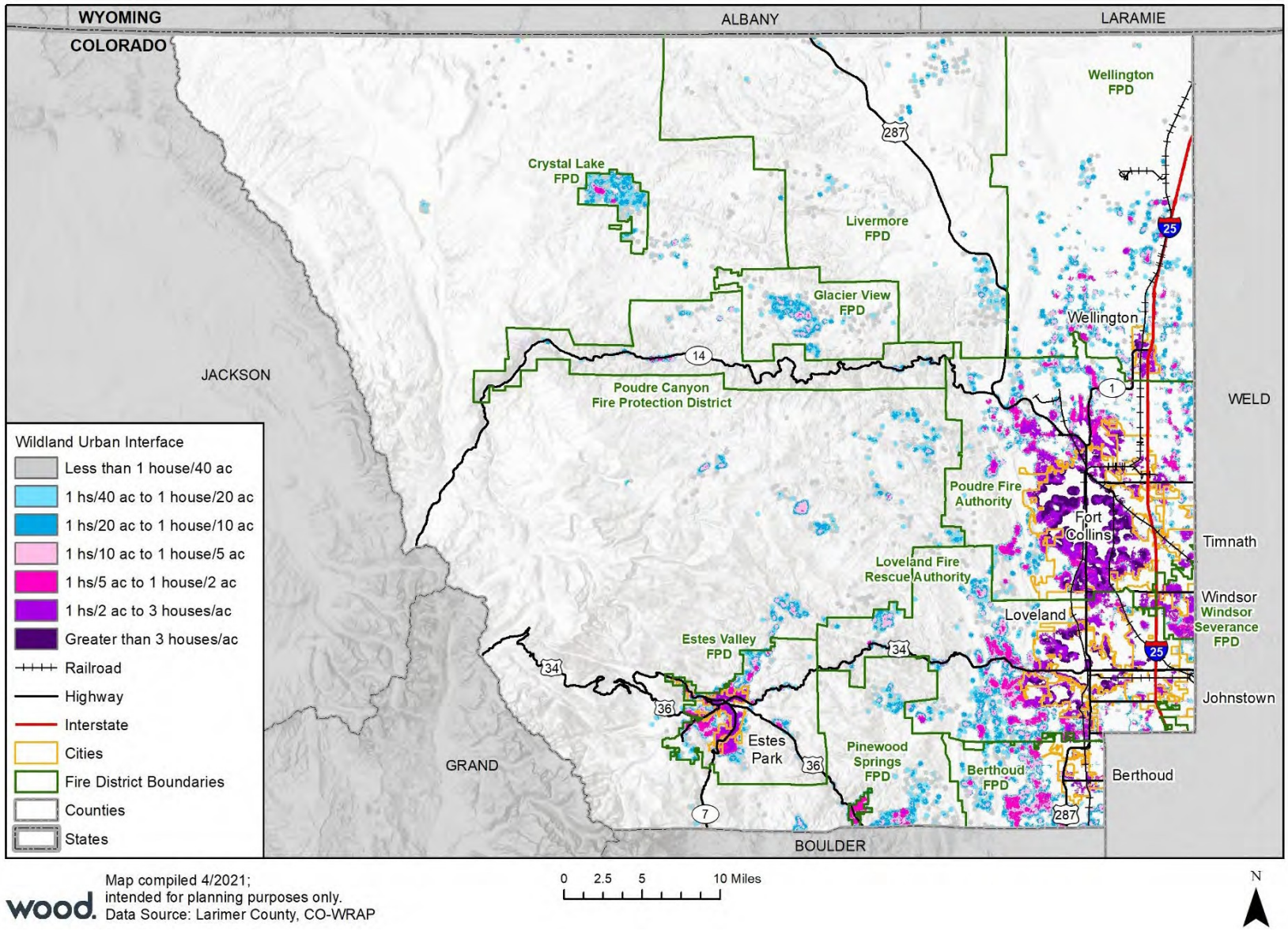
Location

The area of greatest concern for wildfire risk is the ''wildland-urban interface", or WUI, which is the area where development is close to or within a boundary of natural terrain and fuel, where high potential for wildland fires exist. This area is where the potential for wildfire to directly impact people and property exists. Communities are able to establish the definition and boundary of their local WUI, and the boundaries often help in meeting local management needs. WUI areas can include both public and private land and can help improve local access to funding sources.

Wildfires can occur anywhere that natural vegetation exists as a fuel source. For the purpose of wildfire mitigation strategy development, this plan divides vegetation by four categories of land use types within Larimer County: cultivated agricultural land, forested land, grazing land, and miscellaneous. Cultivated agricultural lands include both irrigated and non-irrigated crop land. Typically, this category of land has very dynamic burning characteristics and seasons. Crops and dormant stands located on Larimer County's cultivated agricultural land can both serve as fuel for wildfires. What makes agricultural land unique is the dynamic nature of the fuel locations and seasons of availability. These factors add to the challenge of wildfire suppression and mitigation.

Figure 4-43 shows WUI areas within Larimer County as determined by the Colorado Wildfire Risk Assessment project (CO-WRAP). CO-WRAP defines the WUI using housing density data to delineate where people and structures meet and intermix with wildland fuels.

Figure 4-43 Larimer County Wildfire Housing Density within WUI



In the context of the Larimer County landscape, forested land includes the riparian forest, windbreaks, shelterbelts, living snow fences, and urban forests. The majority of forested land in Larimer County is upland forest. Rocky Mountain National Park makes up a large percentage of the forested land within Larimer County and includes over 350 miles of trails. It is the #1 visited National Park in the United States, leading to a greater threat of human-caused fires within forested areas. Outside of the mountains, much of the forested land in Larimer County occurs along rivers, seasonal water courses, lakes, and ponds. Other forested lands include farmsteads and urban areas. Here, trees are often planted near homes and outbuildings, which contribute to elevated wildfire risk. In addition to the trees, forested lands include a surface cover of dry brush and grasses, which are primary fuel sources for rapidly moving fires.

Grazing lands are primarily made up of sandhill steppe and prairie landscapes. Sandhill steppe is a combination of mixed grasses and sage and is widely used for livestock grazing. Fuel loads on grazing lands are moderate to heavy and large fires have occurred with this fuel type during springtime wind events. In some areas within Larimer County livestock grazing maintains a rather sparse fuel load.

Miscellaneous areas include transportation right of ways, fence lines, disturbed areas, and other locations that contain grasses, tumbleweeds, wild sunflowers, and other vegetation.

Magnitude/Severity

"Wildfire Risk" represents the possibility of loss or harm occurring from a wildfire. For the purpose of this Plan, risk has been derived using the CO-WRAP wildfire risk rating, which combines the probability of a fire occurring with the values at risk, considering all values and assets combined. Figure 4-44 identifies areas with the greatest potential impacts from a wildfire, in other words, those areas most at risk. The CO-WRAP data set was produced statewide and ranks areas on a scale from lowest risk to highest risk. All risk rankings are present in Larimer County. The highest wildfire risk areas in the county are located in the central region, in areas where there are lower population densities.

As was discussed previously, understanding the location of people living in the wildland-urban interface is essential for defining potential wildfire impacts to people and homes. The WUI Risk analysis provides a rating of the potential impact of a wildfire on people and their homes. The key input, the wildland-urban interface, reflects housing density (houses per acre). To calculate WUI risk, WUI housing density data was combined with response function data. Response functions are a method of assigning a net change in the value of a resource or asset based on its susceptibility to fire at various intensity levels (such as flame length). The response functions were defined by a team of experts led by Colorado State Forest Service mitigation planning staff. By combining these data sets it is possible to determine where the greatest potential impact to homes and people are likely to occur in Larimer County.

Figure 4-45 shows the various levels of WUI Risk within Larimer County. The range of values is from -1 to -9, with -1 representing the least negative impacts and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9, while areas with low housing density and low flame lengths are rated -1. Understandably so, the Map of WUI Risk shows a number of high risk areas concentrated around densely populated parts of the county. Wildland-Urban Interface Risk was also calculated in the 2018 Colorado State Hazard Mitigation Plan using this CO-WRAP data and methodology. This allows for comparison and ordination to be made across the state.

Figure 4-44 Larimer County Wildfire Risk

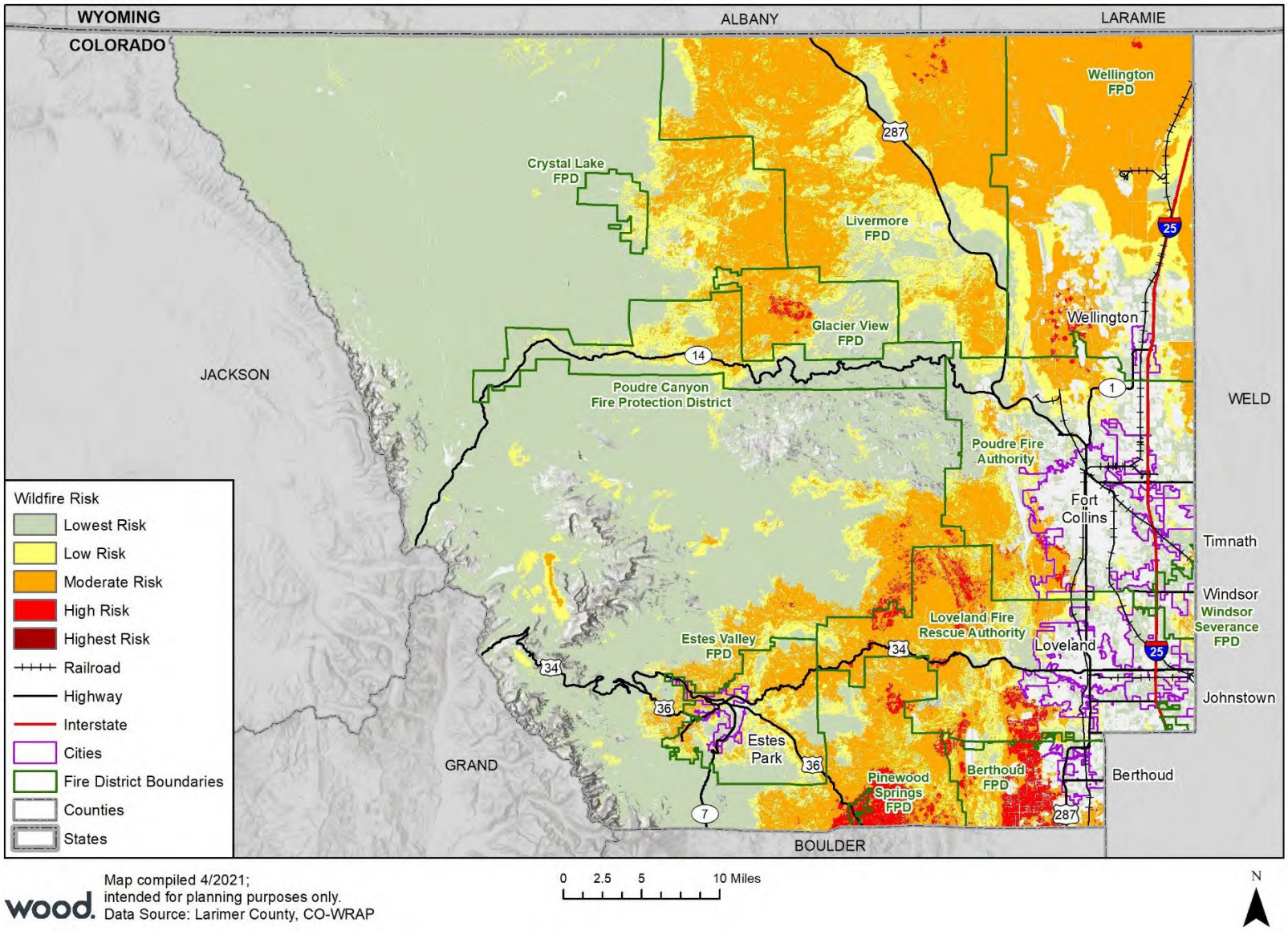
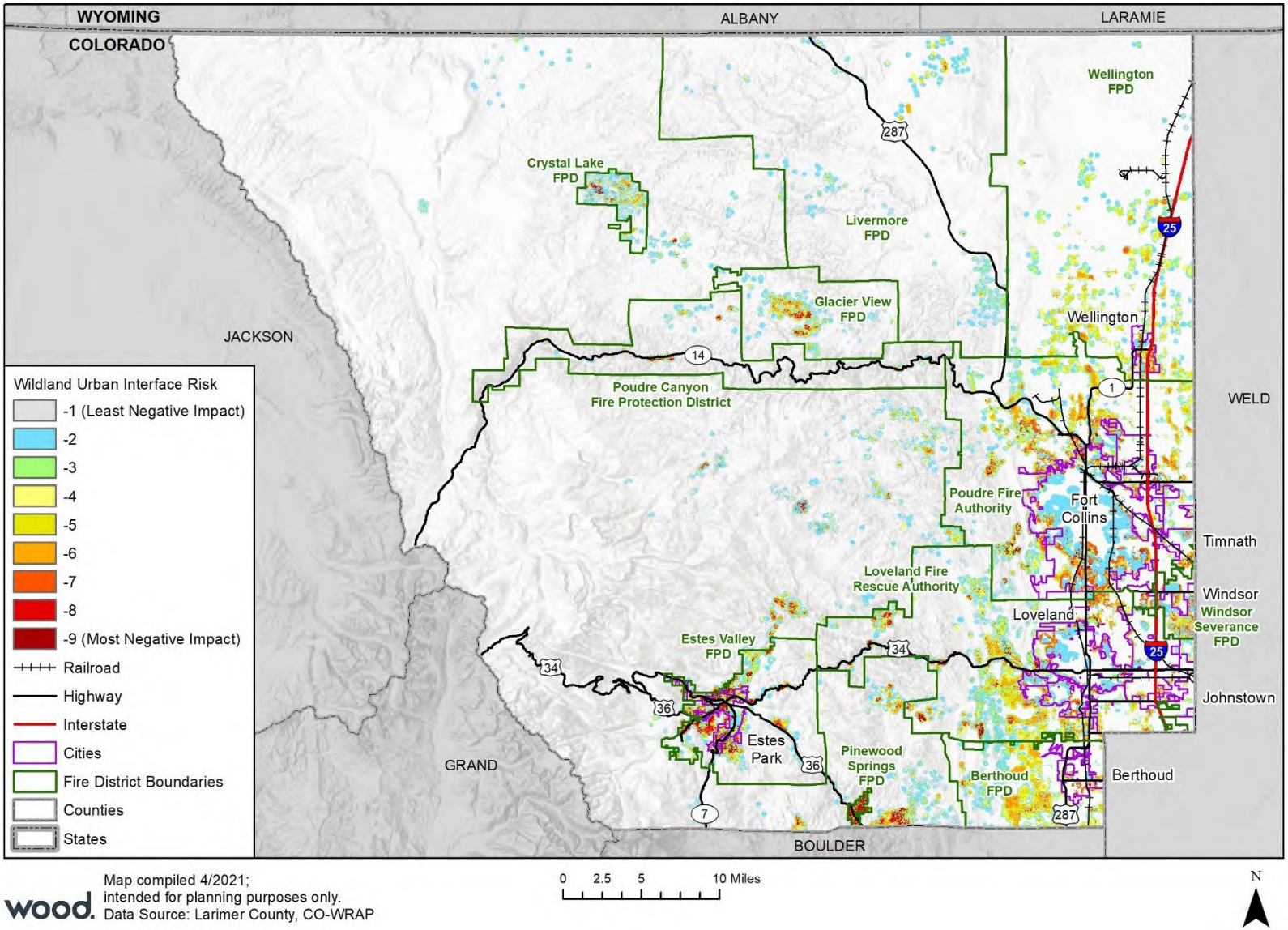


Figure 4-45 Larimer County Wildfire WUI Risk



As evidenced by the wildfire risk assessment, areas within Larimer County that are characterized by dense development and single-family homes along the wildland-urban interface are most vulnerable to wildfire. The map of Wildland-Urban Interface Risk illustrates the difference in wildfire risk between jurisdictions within the County. The jurisdictions with the highest WUI Risk Index rating include areas of the Town of Estes Park and portions of unincorporated Larimer County located along the foothills.

Speed of Onset

A wildfire can start and spread within hours depending on fuel source, topography, and weather patterns and can burn hundreds or even thousands of acres a day. Several past fires in Larimer County have burned over a hundred acres a day, such as the Mineral Springs Fire in 2015, which burned 462 acres in 3 days, the Bobcat Fire in 2000, which burned 10,599 acres in 37 days (286.5 acres per day), and the High Park Fire in 2015, which burned 87,275 acres in 66 days (1,322.3 acres per day).

Duration

Wildfires can last anywhere from days to months. Per wildfire history data compiled by USGS and CO-WRAP from 1980-2018, the average wildfire in Larimer County lasts five days. The longest lasting wildfire on record in Larimer County during this period, the Fern Lake fire in 2012, lasted 247 days.

Probability of Future Occurrences

As noted above under Past Occurrences, Larimer County has experienced 874 recorded wildfires from 1980 to 2018, 59 of which burned at least 10 acres. Fires of 10 acres or more occurred in 26 of the 39 years on record. Based on this historical record, wildfire is highly likely to occur in any given year.

Recent wildfires and brush fires across Colorado have forced school closures, disrupted telephone services by burning fiber optic cables, damaged railroads and other infrastructure, and adversely affected tourism, outdoor recreation, and hunting. The likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions, particularly drought events, increase the likelihood of wildfires occurring. That said, it is important to note that 35% of recent past wildfires in Larimer County have been human-caused. Ultimately, the occurrence of future wildfire events will strongly depend on patterns of human activity and events are more likely to occur in wildfire-prone areas experiencing new or additional development.

Wildfires can occur at any time of day and during any month of the year. Moreover, the length of a wildfire season and/or peak months may vary appreciably from year to year. Long-term weather patterns in Larimer County have followed a cyclical pattern of wet years (characterized by average to high precipitation levels for the region), followed by a series of drought years (characterized by below average precipitation levels). During wet years, the typical fire season is from March through November. During drought years, the fire season in Colorado has been as long as a full year.

Climate Change Considerations

Climate is a major determinant of wildfire through its control of weather, as well as through its interaction with fuel availability, fuel distribution and flammability at the global, regional and local levels. With hotter temperatures, drier soil and worsening drought conditions in the County, wildfires have the potential to become more extreme. Currently humans are the main cause of fire ignition globally, although lightning has been predominantly responsible for large fires in Larimer County. Colorado and the Western United States have seen significant increases in forest area burned in recent years, and the risk of wildfires in the future are expected to increase due to a lengthening fire season and drier conditions. According to a report from the International Panel on Climate Change:

> *Fire season has already lengthened by 18.7% globally between 1979 and 2013, with statistically significant increases across 25.3% but decreases only across 10.7% of Earth's land surface covered with vegetation; with even sharper changes being observed during the second half of this period. Correspondingly, the global area experiencing long fire weather season has increased by 3.1% per annum or 108.1% during 1979–2013. Fire frequencies under 2050 conditions are projected to increase by approximately 27% globally, relative to the 2000 levels, with changes in future fire meteorology playing the most important role in enhancing global wildfires, followed by land cover changes, lightning activities and land use, while changes in population density exhibit the opposite effects.*

Land use, vegetation, available fuels, and weather conditions (including wind, low humidity, and lack of precipitation) are chief factors in determining the number of fires and acreage burned in Colorado each year. Generally, fires are more likely when vegetation is dry from a winter with little snow and/or a spring and summer with sparse rainfall. For these reasons, climate change in Colorado (specifically, a pattern of extended drought conditions) had contributed to increased concern about wildfire in Larimer County.

The frequency, intensity, and duration of wildfires have increased across the Western United States since the 1980s. The US Department of Agriculture's "Effects of Climate Variability and Change on Forest Ecosystems" General Technical Report, published in December 2012, found that the Colorado region, among others, will face an even greater fire risk over time. The report expects Colorado to experience up to a five-fold increase in acres burned by 2050. The report's findings are consistent with previous studies on the relationship between climate change and fire risk. Colorado landscapes, including those that characterize Larimer County, are expected to become hotter and drier as the planet warms, which will in turn increase regional wildfire risk.

Vulnerability Assessment

Local impacts from wildfire events include the following:

- Loss of life (human, livestock, wildlife)
- Damage to municipal watersheds
- Loss of property
- Evacuations
- Transportation interruption (closing highways)
- Reductions in air quality and human health
- Injuries – burns, smoke inhalation, etc.
- Coal seam or other energy facility ignitions
- Loss of vegetation (erosion, loss of forage and habitat for livestock and wildlife)
- Expense of responding (equipment, personnel, supplies, etc.)
- Loss of revenue from destroyed recreation and tourism areas

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The following exposure data, categorized by risk level from highest to moderate, provides the clearest picture of potential losses to wildfire in Larimer County.

Table 4-75 Improved Properties at Risk to Highest Wildfire Hazard by Parcel Type within Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Unincorporated	Residential	17	17	$5,082,127	$2,541,064	$7,623,191	42
	Total	**17**	**17**	**$5,082,127**	**$2,541,064**	**$7,623,191**	**42**

Source: Larimer County Parcel Data, CO-WRAP

Table 4-76 Improved Properties at Risk to High Wildfire Hazard by Parcel Type within Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Berthoud	Exempt	1	1	$578,476	$578,476	$1,156,952	
	Total	**1**	**1**	**$578,476**	**$578,476**	**$1,156,952**	**0**
Estes Park	Residential	23	27	$12,036,144	$6,018,073	$18,054,217	53
	Total	**23**	**27**	**$12,036,144**	**$6,018,073**	**$18,054,217**	**53**
Fort Collins	Residential	69	69	$33,712,399	$16,856,196	$50,568,595	170
	Total	**69**	**69**	**$33,712,399**	**$16,856,196**	**$50,568,595**	**170**
Loveland	Residential	23	23	$10,411,409	$5,205,704	$15,617,113	55
	Total	**23**	**23**	**$10,411,409**	**$5,205,704**	**$15,617,113**	**55**
Unincorporated	Agricultural	107	115	$54,838,016	$54,838,016	$109,676,032	
	Commercial	6	9	$1,597,878	$1,597,878	$3,195,756	
	Exempt	8	11	$6,768,307	$6,768,307	$13,536,614	
	Mobile Home	18	25	$3,566,866	$1,783,431	$5,350,297	62
	Residential	2,495	2,621	$989,294,646	$494,647,326	$1,483,941,972	6,448
	Total	**2,634**	**2,781**	**$1,056,065,713**	**$559,634,958**	**$1,615,700,671**	**6,509**
Grand Total		**2,750**	**2,901**	**$1,112,804,141**	**$588,293,407**	**$1,701,097,548**	**6,787**

Source: Larimer County Parcel Data, CO-WRAP

Table 4-77 Improved Properties at Risk to Moderate Wildfire Hazard by Parcel Type within Larimer County

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Berthoud	Commercial	1	1	$284,094	$284,094	$568,188	
	Exempt	1	1	$688,700	$688,700	$1,377,400	
	Mobile Home	1	1	$1,231,700	$615,850	$1,847,550	3
	Multiple Unit	1	13	$14,973,304	$14,973,304	$29,946,608	
	Residential	173	173	$45,991,386	$22,995,694	$68,987,080	433
	Total	**177**	**189**	**$63,169,184**	**$39,557,642**	**$102,726,826**	**435**
Estes Park	Commercial	27	57	$40,497,438	$40,497,438	$80,994,876	
	Exempt	8	51	$24,324,599	$24,324,599	$48,649,198	
	Residential	635	650	$257,822,648	$128,911,309	$386,733,957	1,268
	Total	**670**	**758**	**$322,644,685**	**$193,733,346**	**$516,378,031**	**1,268**
Fort Collins	Agricultural	2	2	$523,047	$523,047	$1,046,094	
	Exempt	3	4	$706,451	$706,451	$1,412,902	
	Residential	224	230	$105,761,544	$52,880,768	$158,642,312	566
	Total	**229**	**236**	**$106,991,042**	**$54,110,266**	**$161,101,308**	**566**
Loveland	Residential	81	81	$24,531,839	$12,265,915	$36,797,754	194
	Total	**81**	**81**	**$24,531,839**	**$12,265,915**	**$36,797,754**	**194**
Timnath	Residential	281	281	$95,057,049	$47,528,526	$142,585,575	933

Jurisdiction	Parcel Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
	Total	**281**	**281**	**$95,057,049**	**$47,528,526**	**$142,585,575**	**933**
Windsor	Residential	366	368	$184,147,017	$92,073,508	$276,220,525	1,034
	Total	**366**	**368**	**$184,147,017**	**$92,073,508**	**$276,220,525**	**1,034**
Unincorporated	Agricultural	734	815	$291,199,832	$291,199,832	$582,399,664	
	Commercial	50	93	$40,052,419	$40,052,419	$80,104,838	
	Exempt	75	199	$108,126,581	$108,126,581	$216,253,162	
	Mobile Home	50	83	$12,051,457	$6,025,726	$18,077,183	204
	Multiple Unit	3	6	$849,089	$849,089	$1,698,178	
	Residential	4,825	5,248	$1,718,399,617	$859,199,785	$2,577,599,402	12,910
	Total	**5,737**	**6,444**	**$2,170,678,995**	**$1,305,453,432**	**$3,476,132,427**	**13,114**
Grand Total		**7,541**	**8,357**	**$2,967,219,811**	**$1,744,722,635**	**$4,711,942,446**	**17,543**

Source: Larimer County Parcel Data, CO-WRAP

People

Based on the above assessment of exposure of residential property and the average household size in Larimer County, there are an estimated 24,371 people exposed to the highest to moderate wildfire risk. Areas of highest WUI Risk in the county near Estes Park correspond to areas of above average social vulnerability, including household composition and disability vulnerability as well as housing and transportation vulnerability.

General Property

Overall, 10,308 improved parcels with a total estimated value of $6,420,663,185 are located in the highest to moderate wildfire hazard areas. The majority of exposure to wildfire risk is in unincorporated Larimer County.

Critical Facilities & Infrastructure

Table 4-78 summarizes the exposure data of critical facilities to potential wildfire risk by showing the number of critical facilities located within each wildfire risk category, categorized by FEMA Lifeline. Note that there are no identified critical facilities within the highest wildfire risk area.

Table 4-78 Critical Facilities with Potential Wildfire Risk

Wildfire Risk	Jurisdiction	FEMA Lifeline	Count
High	Loveland	Food, Water, Shelter	1
	Unincorporated	Food, Water, Shelter	2
	Total		**3**
Moderate	Berthoud	Miscellaneous	1
	Estes Park	Miscellaneous	1
	Fort Collins	Safety and Security	1
		Transportation	1
	Unincorporated	Energy	1
		Food, Water, Shelter	24
		Safety and Security	4
	Total		**33**

Wildfire Risk	Jurisdiction	FEMA Lifeline	Count
Low	Estes Park	Safety and Security	1
	Fort Collins	Food, Water, Shelter	1
		Hazardous Material	1
	Unincorporated	Communications	2
		Energy	1
		Food, Water, Shelter	24
		Hazardous Material	3
		Safety and Security	4
	Total		**37**
Lowest	Berthoud	Safety and Security	2
	Estes Park	Food, Water, Shelter	2
	Fort Collins	Energy	4
		Food, Water, Shelter	4
		Miscellaneous	1
		Safety and Security	3
	Johnstown	Energy	1
	Loveland	Energy	5
		Food, Water, Shelter	6
		Safety and Security	1
	Wellington	Safety and Security	1
	Unincorporated	Communications	3
		Energy	1
		Food, Water, Shelter	48
		Hazardous Material	1
		Health and Medical	1
		Miscellaneous	1
		Safety and Security	7
	Total		**92**
Grand Total			**165**

Source: Cascarta, CO-WRAP

There are 36 identified county assets located in areas with high to moderate wildfire risk. The majority of these facilities are within the food, water, and shelter lifeline. Most of the facilities exposed to risk are located in unincorporated Larimer County.

Economy

Fires can extensively impact the economy of an affected area, including agricultural, recreation and tourism industries, and water resources. Businesses in affected areas can be impacted due to evacuation, lack of utility service, or through destruction of property.

Historic, Cultural, and Natural Resources

Wildfire is a consistent threat to natural resources in Larimer County, particularly the county's parks and forests. Wildfires regularly occur in Arapaho and Roosevelt National Forests and Rocky Mountain National

Park. Fire is a natural part of forest growth cycles but can also cause cascading threats to natural resources. After wildfires, the risk of floods and debris flows increases due to the exposure of bare ground and the loss of vegetation. Secondary effects of wildfires also include erosion, landslides, introduction of invasive species, and changes in water quality.

Figure 4-46 Larimer County Fire



Source: Poudre Fire Authority

Land Use and Development Trends

Future development is an important factor to consider in the context of wildfire mitigation because development and population growth can contribute to increased exposure of people and property to wildfire. During the past few decades, population growth in the Larimer County WUI has increased greatly. Subdivisions and other high-density developments have created a situation where wildland fires can involve more buildings than any amount of fire equipment can possibly protect. By identifying areas with significant potential for population growth and/or future development in high-risk areas, communities can identify areas of mitigation interest and reduce hazard risks associated with increased exposure.

As development expands into wildland areas, people and property are increasingly at risk from wildfire. Wildfire mitigation in the wildland-urban interface has primarily been the responsibility of property owners who choose to build and live in vulnerable zones. In practice, successful wildfire mitigation strategies can be quite involved. The most important aspect of successful suppression is disruption of the continuity of fuels, achieved by creating breaks or defensible areas. For interface fires, where homes and other structures fill the space, fuel reduction is best accomplished before the fires begin. Larimer County does have land use codes in place that specifically deal with construction in the WUI. Some of these codes include and/or focus on mandatory mitigation measures.

Figure 4-47 Wildfire Mitigation Activity in Larimer County



Safety zones can be created around structures by reducing or eliminating brush, trees, and vegetation around a home or facility. FEMA recommends using a 30-foot safety zone; including keeping grass below 2 feet tall and clearing all fallen leaves and branches promptly. Additionally, only fire-resistant or non-combustible materials should be used on roofs and exterior surfaces. Firebreaks -- areas of inflammable materials that create a fuel break and reduce the ability for fires to spread and roads and pathways -- can be planned and designed to serve as wildfire mitigation. The Colorado State Forest Service's defensible space guidelines describe three zones:

- Zone 1 is within 30' of the home or other structures. Most flammable vegetation should be removed in this zone, with the possible exception of a few low-growing shrubs or fire-resistant plants.
- Zone 2 extends to 100' and is a is an area of fuels reduction, including thinning and pruning trees and shrubs, designed to diminish the intensity of an approaching fire.
- Zone 3 extends beyond 100' to the property boundary and provides a gradual transition to the forest management objectives of surrounding areas.

Source: Colorado State University

Risk Summary

- Larimer County averages 22 wildfires per year and 3,224.3 acres burned per year. Approximately 6.8 percent of wildfires burn 10 acres or more.
- There are an estimated 24,371 people and 10,308 improved parcels with a total estimated value of $6,420,663,185 located in the highest to moderate wildfire hazard areas in Larimer County. The greatest exposure is in unincorporated Larimer County.

4.3.14 Winter Storm

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Winter Storm	Highly Likely	Extensive	Critical	High

Description

Winter storms can cause hazardous driving conditions, communications and electrical power failure, community isolation, and can adversely affect business continuity. This type of snow-related weather may include one or more of the following winter factors:

Winter storms can include blizzards, heavy snow, ice storms, and extreme cold.

Blizzards as defined by the National Weather Service, are a combination of sustained winds or frequent gusts of 35 mph or greater and visibilities of less than a quarter mile from falling or blowing snow for 3 hours or more. A blizzard, by definition, does not indicate heavy amounts of snow, although they can happen together. The falling or blowing snow usually creates large drifts from the strong winds. The reduced visibilities make travel, even on foot, particularly treacherous. The strong winds may also support dangerous wind chills. Ground blizzards can develop when strong winds lift snow off the ground and severely reduce visibilities.

Heavy snow, in large quantities, may fall during winter storms. Six inches or more in 12 hours or eight inches or more in 24 hours constitutes conditions that may significantly hamper travel or create hazardous conditions. The National Weather Service issues warnings for such events. Smaller amounts can also make travel hazardous, but in most cases, only results in minor inconveniences. Heavy wet snow before the leaves fall from the trees in the fall or after the trees have leafed out in the spring may cause problems with broken tree branches and power outages.

Ice storms develop when a layer of warm (above freezing), moist air aloft coincides with a shallow cold (below freezing) pool of air at the surface. As snow falls into the warm layer of air, it melts to rain, and then freezes on contact when hitting the frozen ground or cold objects at the surface, creating a smooth layer of ice. This phenomenon is called freezing rain. Similarly, sleet occurs when the rain in the warm layer subsequently freezes into pellets while falling through a cold layer of air at or near the Earth's surface. Extended periods of freezing rain can lead to accumulations of ice on roadways, walkways, power lines, trees, and buildings. Almost any accumulation can make driving and walking hazardous. Thick accumulations can bring down trees and power lines.

Extreme Cold in extended periods, although infrequent, could occur throughout the winter months in Larimer County. Heating systems compensate for the cold outside. Most people limit their time outside during extreme cold conditions, but common complaints usually include pipes freezing and cars refusing to start. When cold temperatures and wind combine, dangerous wind chills can develop.

Note that in Larimer County "winter storms" can also occur in fall and spring months.

Past Occurrences

The National Center for Environmental Information (NCEI) archives past "Significant" winter storm, winter weather, and blizzard events in the NCEI Storm Events Database if the event has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet, and ice) and meets or exceeds locally/regionally defined twelve or twenty-four hour warning criteria for at least one of the precipitation elements on a widespread or localized basis. According to the best available data there have been 504 winter storms reported in Larimer County between 1996 and 2019. There are no

reported injuries or crop damage in Larimer County due to winter storm events between 1996 and 2019. One death was reported in 2004 after a hiker was caught in a snowstorm on the summit of Longs Peak.

The only recorded event causing property damages took place on March 17, 2003. A slow moving storm system moved into Colorado from the Pacific Ocean. In addition to this storm, moist air moved north from the Gulf of Mexico as well as strong winds from the east resulted in an upslope flow across the Front Range. As a result of this storm 3 feet of saturated snow fell in Denver and up to 7 feet of snow fell in the foothills from March 17th through the 20th. In Larimer County approximately 30 inches of heavy snow fell causing damages to homes and businesses, and the closure of local schools including Colorado State University. Property damage as a result of this storm is estimated to be around $31 million dollars. According to data there have been at least six significant winter storm events recorded in Larimer County each year.

The March 13, 2019 "Bomb Cyclone", a blizzard event that had significant impacts on across the state. The following is a description of the event from the NWS Denver/Boulder Weather Forecast Office:

> *On March 13th, 2019 an extremely powerful low pressure system developed over southern Colorado, setting a record for the lowest pressure ever recorded over Colorado, at Lamar, of 970.4 mb. The system officially met the criteria of a "Bomb Cyclone", in which barometric pressure readings dropped in excess of 24 mb (0.71 in Hg) over a 24-hour period. This storm created widespread blizzard conditions across northeast Colorado, Palmer Divide and over El Paso County. Wind gusts from 60 to 80 mph, with locally up to 100 mph. In addition, 1 to 3 feet of snow fell across the mountains with up to 52" at Wolf Creek Pass.*

Impacts included 1,400 flights cancelled at the Denver International Airport (DIA); all major Highways and Interstates including I-25, which was closed from Wellington to the Wyoming state line; several multi-car accidents took stranding travelers in their cars and at rest stops across northeast Colorado; trees and power poles were damaged causing power outages in some cases for several days; schools, businesses and government facilities were closed for 1 to 2 days in some cases; 1 fatality of a Colorado State Trooper on I-76 northeast of Denver; and livestock economies were impacted due to calving season.

The HMPC also reported a winter storm event that lasted from November 22nd through 23rd 2019 and resulted in 36 inches of snow. U.S. 36 was closed as a result, stranding travelers overnight. HMPC representatives from the Pinewood Springs Fire Protection District noted that the entire District was impacted and that a similar winter storm event has the potential for the Fire Department not being able to reach structures due to impassible roads.

Table 4-79 Historic Winter Storms- Larimer County

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
1/1/1996	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
1/3/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
1/4/1996	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
1/18/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
1/24/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
1/25/1996	Larimer County below 6,000 feet, Between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
1/27/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
1/30/1996	Larimer County above 9,000 feet and between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/17/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
2/19/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
2/20/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
2/22/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
3/13/1996	Larimer County below 6,000 feet, Between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
3/16/1996	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
3/23/1996	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
4/3/1996	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
4/18/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
5/25/1996	Larimer County between 6,000 & 9,000 feet, Above 9,000 feet	Heavy Snow	0	0	0	0
9/18/1996	Larimer County between 6,000 & 9,000 feet, Above 9,000 feet	Heavy Snow	0	0	0	0
9/24/1996	Larimer County between 6,000 & 9,000 feet and above 9,000 feet	Heavy Snow	0	0	0	0
10/16/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
10/19/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
10/25/1996	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
11/14/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
11/15/1996	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
12/1/1996	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
12/5/1996	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/6/1996	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
12/16/1996	Larimer County below 6,000 feet, between 6,000 & 9,000 and above 9,000 feet	Winter Storm	0	0	0	0
1/10/1997	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
1/11/1997	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
2/6/1997	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/12/1997	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/20/1997	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
2/23/1997	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/26/1997	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/28/1997	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
3/3/1997	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
3/24/1997	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
4/1/1997	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
4/4/1997	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
4/9/1997	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
4/10/1997	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
4/21/1997	Larimer County above 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
4/23/1997	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
4/25/1997	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
4/29/1997	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/24/1997	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Rocky Mountain National Park, Medicine Bow Range, Eastern Larimer County	Blizzard	0	0	0	0
11/11/1997	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
11/28/1997	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Winter Storm	0	0	0	0
12/24/1997	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Heavy Snow	0	0	0	0
1/5/1998	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Western Larimer County	Winter Storm	0	0	0	0
1/17/1998	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County	Blizzard	0	0	0	0
2/24/1998	Rocky Mountain National Park, Medicine Bow Range	Winter Storm	0	0	0	0
3/4/1998	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County	Heavy Snow	0	0	0	0
3/6/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Heavy Snow	0	0	0	0
3/18/1998	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
4/2/1998	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Winter Storm	0	0	0	0
4/7/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
4/15/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Winter Storm	0	0	0	0
4/18/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Winter Storm	0	0	0	0
4/20/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Winter Storm	0	0	0	0
4/26/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Winter Storm	0	0	0	0
6/4/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
10/28/1998	Rocky Mountain National Park, Medicine Bow Range	Winter Storm	0	0	0	0
11/7/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Heavy Snow	0	0	0	0
11/8/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
12/9/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Heavy Snow	0	0	0	0
12/18/1998	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
12/19/1998	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Western Larimer County	Winter Storm	0	0	0	0
12/20/1998	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County	Winter Storm	0	0	0	0
1/4/1999	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County	Winter Storm	0	0	0	0
1/17/1999	Rocky Mountain National Park, Medicine Bow Range	Winter Storm	0	0	0	0
1/21/1999	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Western Larimer County	Heavy Snow	0	0	0	0
1/24/1999	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County, Eastern Larimer County	Heavy Snow	0	0	0	0
2/10/1999	Eastern Larimer County	Winter Storm	0	0	0	0
2/17/1999	Rocky Mountain National Park, Medicine Bow Range	Winter Storm	0	0	0	0
2/21/1999	Rocky Mountain National Park, Medicine Bow Range	Winter Storm	0	0	0	0
3/12/1999	Eastern Larimer County	Heavy Snow	0	0	0	0
4/1/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/14/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/21/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/28/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/29/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
5/1/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
9/28/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Heavy Snow	0	0	0	0
10/16/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Heavy Snow	0	0	0	0
10/18/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
11/21/1999	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Eastern Larimer County	Winter Storm	0	0	0	0
12/18/1999	Rocky Mountain National Park, Medicine Bow Range, Western Larimer County	Heavy Snow	0	0	0	0
1/9/2000	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Western Larimer County	Winter Storm	0	0	0	0
2/10/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Heavy Snow	0	0	0	0
2/15/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
2/17/2000	Rocky Mountain National Park, Medicine Bow Range, Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
3/15/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Heavy Snow	0	0	0	0
3/30/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/2/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
5/17/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County, Western Larimer County	Winter Storm	0	0	0	0
9/23/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Heavy Snow	0	0	0	0
11/1/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Western Larimer County, Central Larimer County	Heavy Snow	0	0	0	0
11/28/2000	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Western Larimer County	Heavy Snow	0	0	0	0
12/30/2000	Rocky Mountain National Park, Medicine Bow Range	Heavy Snow	0	0	0	0
1/15/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
1/15/2001	Eastern Larimer County	Heavy Snow	0	0	0	0
2/8/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
3/10/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
3/16/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
3/25/2001	Eastern Larimer County	Heavy Snow	0	0	0	0
3/25/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins	Heavy Snow	0	0	0	0
4/10/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Eastern Larimer County	Winter Storm	0	0	0	0
4/11/2001	Eastern Larimer County	Blizzard	0	0	0	0
4/21/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Winter Storm	0	0	0	0
4/22/2001	Eastern Larimer County	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
5/2/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Western Larimer County, Central Larimer County	Heavy Snow	0	0	0	0
5/20/2001	Northern Front Range Foothills, Upper Larimer and Cache La Poudre River Basins, Central Larimer County	Heavy Snow	0	0	0	0
1/9/2002	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
1/23/2002	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
1/29/2002	Larimer County below 6,000 feet and between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
3/1/2002	Larimer County below 6,000 feet and between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
3/14/2002	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
5/23/2002	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
11/1/2002	Larimer County Below 6,000 feet	Winter Storm	0	0	0	0
11/8/2002	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/5/2003	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
3/17/2003	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	15500000	0
3/17/2003	Larimer County Below 6,000 feet	Blizzard	0	0	15500000	0
4/23/2003	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
5/9/2003	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
11/21/2003	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
11/21/2003	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
12/8/2003	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
1/3/2004	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
2/28/2004	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
4/9/2004	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/21/2004	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
5/12/2004	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
9/4/2004	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	1	0	0
11/28/2004	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
1/30/2005	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
2/15/2005	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
3/13/2005	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/10/2005	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/24/2005	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
4/28/2005	Larimer County Below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
10/9/2005	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
11/14/2005	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
10/16/2006	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
10/17/2006	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
10/20/2006	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/25/2006	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
11/13/2006	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
11/28/2006	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
12/20/2006	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Blizzard	0	0	0	0
12/25/2006	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/28/2006	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
1/4/2007	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
1/5/2007	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
1/21/2007	Larimer County between 6,000 & 9,000 feet	Heavy Snow	0	0	0	0
2/16/2007	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
3/24/2007	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
5/4/2007	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
10/20/2007	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
11/20/2007	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
12/1/2007	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/6/2007	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/7/2007	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/25/2007	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
12/27/2007	Larimer County below 6,000 feet	Winter Storm	0	0	0	0
1/5/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
1/10/2008	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/7/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/8/2008	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/8/2008	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/9/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
4/9/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
5/1/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
11/29/2008	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/4/2008	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
12/4/2008	Larimer County below 6,000 feet	Winter Weather	0	0	0	0
1/24/2009	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
3/26/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/3/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/16/2009	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
10/9/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
10/27/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
11/14/2009	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
12/5/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
12/13/2009	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/22/2009	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
3/18/2010	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
3/19/2010	Larimer County below 6,000 feet	Winter Weather	0	0	0	0
3/23/2010	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
4/1/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/6/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/22/2010	Larimer County above 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
4/23/2010	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
5/11/2010	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
10/22/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
10/25/2010	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
11/9/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/15/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/16/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/21/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/24/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/28/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/10/2010	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/14/2010	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/18/2010	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/30/2010	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
1/9/2011	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
1/16/2011	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/1/2011	Larimer County below 6,000 feet	Extreme Cold/ Wind Chill	0	0	0	0
2/5/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/7/2011	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/24/2011	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
3/17/2011	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
3/28/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/3/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
4/11/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/13/2011	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/23/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/29/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
5/10/2011	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
5/18/2011	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
5/20/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
10/25/2011	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/25/2011	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
10/25/2011	Larimer County below 6,000 feet	Winter Storm	0	0	0	0
11/1/2011	Larimer County below 6,000 feet	Winter Storm	0	0	0	0
11/1/2011	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
11/1/2011	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/2/2011	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/3/2011	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
12/21/2011	Larimer County below 6,000 feet	Winter Weather	0	0	0	0
1/11/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/15/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/18/2012	Larimer County above 9,000 feet	Blizzard	0	0	0	0
1/20/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/2/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/2/2012	Larimer County below 6,000 feet	Winter Storm	0	0	0	0
2/2/2012	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
2/21/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/28/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/10/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/19/2012	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
12/24/2012	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/29/2013	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/24/2013	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/26/2013	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
3/3/2013	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/8/2013	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
4/8/2013	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
4/13/2013	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
4/15/2013	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
4/22/2013	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
10/13/2013	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/16/2013	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/3/2013	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
1/3/2014	Larimer County between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
1/27/2014	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
1/29/2014	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
1/30/2014	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
2/7/2014	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
4/2/2014	Larimer County between 6,000 & 9,000 feet	Winter Storm	0	0	0	0
4/12/2014	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
5/11/2014	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
10/13/2014	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/11/2014	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
11/22/2014	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/13/2014	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/21/2014	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/25/2014	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
2/1/2015	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
2/15/2015	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Weather	0	0	0	0
2/25/2015	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Heavy Snow	0	0	0	0
3/2/2015	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/3/2015	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
4/2/2015	Larimer County between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
4/16/2015	Larimer County between 6,000 & 9,000 feet, above 9,000 feet	Winter Storm	0	0	0	0
11/16/2015	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/14/2015	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/15/2015	Larimer County below 6,000 and between 6,000 and 9,000 feet	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
12/22/2015	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
1/16/2016	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
1/24/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/30/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/1/2016	Larimer County below 6,000 feet and between 6,000 and 9,000 feet	Winter Storm	0	0	0	0
3/17/2016	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm and Winter Weather	0	0	0	0
3/22/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/23/2016	Larimer County between 6,000 and 9,000 feet	Winter Storm	0	0	0	0
3/23/2016	Larimer County below 6,000 feet	Blizzard	0	0	0	0
3/29/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/15/2016	Larimer County between 6,000 and 9,000 feet	Heavy Snow	0	0	0	0
11/17/2016	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Weather	0	0	0	0
11/27/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/10/2016	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/27/2016	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/2/2017	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
1/3/2017	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Storm	0	0	0	0
1/4/2017	Larimer County below 6,000 feet	Winter Storm	0	0	0	0
1/8/2017	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/1/2017	Larimer County below 6,000 feet	Winter Weather	0	0	0	0
4/3/2017	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
4/9/2017	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/28/2017	Larimer County between 6,000 and 9,000 feet	Winter Storm	0	0	0	0
5/17/2017	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Heavy Snow	0	0	0	0
10/1/2017	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/1/2017	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
10/8/2017	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Storm	0	0	0	0
11/4/2017	Larimer County above 9,000 feet	Heavy Snow	0	0	0	0
11/6/2017	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
12/23/2017	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
12/24/2017	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/5/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
2/10/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/14/2018	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/19/2018	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
3/15/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/18/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/27/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/5/2018	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/10/2018	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Weather	0	0	0	0
10/13/2018	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
10/30/2018	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Weather	0	0	0	0
11/2/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/4/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
11/11/2018	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
11/22/2018	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
11/22/2018	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
12/18/2018	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
1/11/2019	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
1/17/2019	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
2/5/2019	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
2/6/2019	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
2/13/2019	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
3/1/2019	Larimer County between 6,000 and 9,000 feet and above 9,000 feet	Winter Storm	0	0	0	0
3/2/2019	Larimer County below 6,000 feet	Winter Weather	0	0	0	0
3/6/2019	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
4/10/2019	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
4/10/2019	Larimer County below 6,000 feet and above 9,000 feet	Winter Storm	0	0	0	0
4/29/2019	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
4/29/2019	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
5/28/2019	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/9/2019	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Weather	0	0	0	0
10/19/2019	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
10/23/2019	Larimer County between 6,000 and 9,000 feet	Winter Weather	0	0	0	0
10/27/2019	Larimer County below 6,000 feet and above 9,000 feet	Winter Weather	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
10/29/2019	Larimer County below 6,000 feet, between 6,000 & 9,000 feet	Winter Weather	0	0	0	0
11/25/2019	Larimer County below 6,000 feet, between 6,000 & 9,000 feet, and above 9,000 feet	Winter Storm	0	0	0	0
11/29/2019	Larimer County above 9,000 feet	Winter Weather	0	0	0	0
12/12/2019	Larimer County above 9,000 feet	Winter Storm	0	0	0	0
Total:			**0**	**1**	**$31 million**	**0**

Source: NCEI

Location

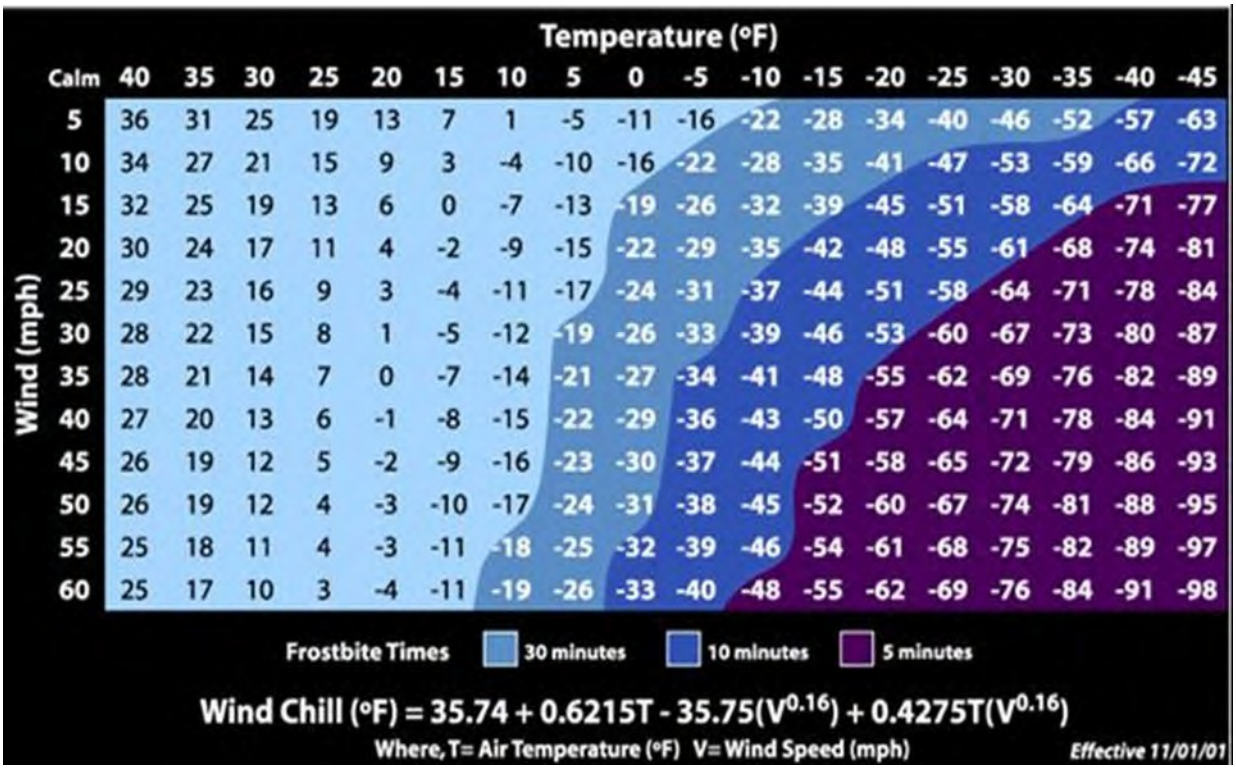
Extensive - Larimer County weather can be severe during the spring and winter months. There can be long periods of sub-degree temperatures in the winter. Blizzards can occur in late spring. Wind and snow blizzards cause whiteouts and drifting snow of 2 to 3 feet and more. Winds can be extremely strong, up to 100 mph in the spring.

Winter storms often occur in multiple locations and elevations at the same time. Of the storms recorded in the NCEI Storm Events Database, approximately 17% occurred in the eastern portion of the county typically below 6,000 feet in elevation. Approximately 38% occurred in the central portion of the county typically between 6,000 feet and 9,000 feet. The majority of winter storms, 45% recorded events, occur in the western portion of the county typically above 9,000 feet. Refer to the Past Occurrences section and Table 4-79 for more information on past winter storm events.

Magnitude/Severity

Critical - Winter storms occur in many forms and can vary significantly in size, strength, intensity, duration, and impact. High winds create snowdrifts, which can block roads and create dangerous wind chill factors. In 2001, the NWS implemented an updated Wind Chill Temperature index, which is reproduced in Figure 4-48. This index was developed to describe the relative discomfort/danger resulting from the combination of wind and temperature. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 4-48 Wind Chill Temperature Chart



Source: National Weather Service

The NWS has defined winter season watches, warnings, and advisories based on specific criteria. The following is a breakdown on the various warnings that could be issued:

- **Ice Storm Warning** is issued when a period of freezing rain is expected to produce ice accumulations of 1/4" or greater or cause significant disruptions to travel or utilities.
- **Heavy Sleet Warning** is issued when a period of sleet is expected to produce ice accumulations of 1" or greater or cause significant disruptions to travel or utilities.
- **Heavy Snow Warning** is issued when snow is expected to accumulate 4 inches or more in 12 hours, or 6 inches or more in 24 hours.
- **Winter Storm Warning** is issued for a winter weather event in which there is more than one hazard present, and one of the warning criteria listed above is expected to be met.
- **Blizzard Warning** is issued for sustained wind or frequent gusts greater than or equal to 35 mph accompanied by falling and/or blowing snow, frequently reducing visibility to less than 1/4 mile for three hours or more. Watches are issued when conditions may be met 12 to 48 hours in the future.
- **Wind Chill Warning** is issued when wind and temperature combine to produce wind chill values of -35°F.
- **Winter Weather Advisory** is issued when wintry weather is expected, and caution should be exercised. Light amounts of wintery precipitation of patchy blowing snow will cause slick conditions and could affect travel if precautions are not taken

Speed of Onset

Through the identification of various indicators of weather systems, and by tracking these indicators, warning time for snowstorms can be days to as much as a week in advance. Forecasts can change as new data become available.

Duration
The duration and extent of winter hazards varies by storm. Winter storms and the impacts from winter events can last anywhere between a few hours to several days.

Probability of Future Occurrences

Highly Likely - Severe winter storms can be predicted with a reasonable level of certainty. Understanding the historical frequency, duration, and spatial extent of severe winter weather assists in determining the likelihood and potential severity of future occurrences. The characteristics of past severe winter events provide benchmarks for projecting similar conditions into the future. Based on historical records and frequencies there is nearly a 100% chance of this type of event will occur somewhere in Larimer County at least once every year.

Climate Change Considerations

Climate change has the potential to exacerbate the severity and intensity of winter storms, including potential heavy amounts of snow. A warming climate may also result in warmer winters, the benefits of which may include lower winter heating demand, less cold stress on humans and animals, and a longer growing season. However, these benefits are expected to be offset by the negative consequences of warmer summer temperatures which could have statewide economic impacts.

The effects of climate change in Colorado have already been observed. The following climate change observations related to snowfall are noted in the 2018 Colorado State Hazard Mitigation Plan:

- Snowpack, as measured by April 1, 2018 snow-water equivalent (SWE), has been mainly below average since 2000 in all of Colorado's river basins, but long-term (30-year, 50-year) declining trends have been detected.
- The timing of snowmelt and peak runoff has shifted earlier in the spring by 1 to 4 weeks across the state's river basins over the past 30 years, due to the combination of lower SWE since 2000, the warming trend in spring temperatures, and enhanced solar absorption from dust-on-snow.

As Larimer County prepares for regional changes in climate, it will be important to consider scenarios in which larger amounts of snow will fall over shorter periods of time. The impacts have the potential to affect infrastructure, public safety, and the local economy in a diversity of potentially negative ways.

Vulnerability Assessment

All assets located in Larimer County can be considered at risk from winter storms, although based on historic records it's a higher risk for areas that are between 6,000 and 9,000 feet and areas higher in the mountain above 9,000 feet. This includes 338,161 people, or 100% of the County's population, and all buildings and infrastructure within the County. Winter storms affect the entire planning area of Larimer County and its jurisdictions including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss but could reduce the casualties and associated injury.

People
The threat to public safety is typically the greatest concern when it comes to impacts of winter storms. The highest risk will be to travelers that attempt to drive during adverse conditions. People can also become isolated from essential services in their homes and vehicles. While virtually all aspects of the population are vulnerable to the potential indirect impacts of a winter storm, others may be more vulnerable, such as individuals with access and functional needs, who may become isolated to essential services. Individuals

over the age of 65 represent 15% of the total population in the County; 10% of the County population are individuals with a disability.

The weight of heavy snowfall and/or ice accumulating on power lines often brings them to the ground, causing service disruptions for thousands of customers. According to data from the U.S. Department of Health and Human Services' emPOWER mapping site, 4,318 of the 57,432 Medicare Beneficiaries in the Larimer County rely on electric-dependent medical equipment such as ventilators to live independent in their homes. In addition, prolonged power outages can also have economic impacts if there is a loss of food in grocery stores and other businesses.

Cold and extreme cold temperatures have been the main cause of winter weather related causalities in the County. Infants, elderly and the homeless population are most vulnerable to the impacts of extreme cold. Exposure to extreme cold can cause frostbite or hypothermia and, in some cases, even death.

The region can experience high winds and drifting snow during winter storms that can occasionally isolate individuals and entire communities and lead to serious damage to infrastructure. Travelers on I-25 in the eastern portions of the planning area, can become isolated and visitors can become stranded, requiring search and rescue assistance and shelter provisions.

General Property
Snow removal costs can impact budgets significantly. High snow loads also cause damage to buildings and roofs. Most property damages with winter storms are related to the heavy snow loads and vehicle accidents. Older buildings are more at risk, as are buildings with large flat rooftops (often found in public buildings such as schools). Vulnerability is influenced both by architecture and type of construction material and should be assessed on a building-by-building basis.

Critical Facilities and Infrastructure
Roads are especially susceptible to the effects of a winter storm, which can temporarily hinder transportation and require resources for snow removal. As noted under the people section, heavy snow accumulation may also lead to downed power lines not only causing disruption to customers but also have potentially negative impacts on critical facilities in the county which may have cascading impacts on the County governments ability to operate.

Economy
Closure of Interstate 25 or U.S. 36 during winter storms could temporarily isolate communities in Larimer County and further isolate remote areas of the County. Depending on the length of the closure it could also hinder the local economy which is dependent on tourism and out of county visitors. Power outages may lead to business closures as was seen in the 2019 Bomb Cyclone event which impacts last for 2 days in some areas.

Historic, Cultural, and Natural Resources
Natural resources may be damaged by the severe winter weather, including broken trees and death of wildlife. Unseasonable storms may damage or kill plants and wildlife, which may impact natural food chains until the next growing seasons. Most of these impacts would be short-term. As noted previously, older, historic buildings could potentially be more vulnerable to roof and structural damage from heavy snow.

Future Land Use and Development
The location of development in County does not increase or reduce the risk necessarily. All future structures built in Larimer County will likely be exposed to severe weather extremes and damage. Larimer County and its jurisdictions must adhere to building codes, and therefore, new development can be built to current standards to account for adverse weather. Additionally, as homes go up in more remote parts

of the county, accessing those rural residents may become impossible should sheltering or emergency services be needed in an extreme event.

Risk Summary

- Winter storms often bring heavy snow and sometimes blizzard conditions to the County.
- In the past 23 years the County has experienced 504 winter storm events. There is effectively a 100% probability that a winter storm event will occur in a given year somewhere in the county.
- Winter storms have caused limited injuries and fatalities in the past 23 years.
- Heavy snow can lead to limited structural damage and damages to trees.
- Power outages are possible in severe winter storms. 8% of Medicare Beneficiaries in the County rely on equipment that is electricity dependent to be able to live independently in their homes.
- Related Hazards: Severe Wind, Utility Disruption

5 CAPABILITY ASSESSMENT

This section summarizes Larimer County's existing mitigation capabilities, which are the policies and programs in place that are used to reduce hazard impacts or that can be used to implement hazard mitigation activities. Operational or training capabilities were not assessed. The purpose of conducting a capability assessment is to understand the County's capacity for implementing mitigation activities. With a complete understanding of current capabilities, the County can better develop feasible mitigation activities and can identify opportunities to enhance capability in support of future mitigation. This assessment evaluates planning and regulatory capabilities, administrative and technical capabilities, financial capabilities, and other mitigation partnerships.

The 2021 update process afforded the County and its participating jurisdictions the opportunity to review their capabilities and how those capabilities have changed since the previous plan. Additionally, in summarizing their current capabilities and identifying gaps, plan participants also considered their ability to expand or improve upon existing policies and programs as potential new mitigation strategies. Section 6 Mitigation Strategy includes mitigation actions aimed at improving community capability to reduce hazard risk and vulnerability.

This section focuses primarily on countywide capabilities. Capability assessment information for the participating jurisdictions can be found in their annexes.

5.1 Planning and Regulatory Capabilities

Table 5-1 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in Larimer County. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities. For each of the profiled hazards, several ordinances, regulations, plans and programs were identified in various communities within the County. These are listed here to serve as a reference for related planning efforts.

Table 5-1 Planning and Regulatory Resources

Regulatory Tool (ordinances, codes, plans)	Yes/ No	Comments
Comprehensive Plan	Yes	County Community Development
Zoning ordinance	Yes	County Land Use Code (Zoning and Subdivision Standards)
Growth management ordinance	Yes	County Community Development
Floodplain ordinance	Yes	County Engineering
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	County Engineering, Community Development
Building codes	Yes	2018 I-codes, County Community Development
BCEGS Rating	Yes	3/3
Fire department ISO rating	Yes	Per each individual fire district
Erosion or sediment control program	Yes	Class 3 Residential/Class 3 Commercial County Community Development
Stormwater management program	Yes	County Engineering

Regulatory Tool (ordinances, codes, plans)	Yes/ No	Comments
Site plan review requirements	Yes	County Engineering
Capital improvements plan	Yes	County Community Development
Economic development plan	Yes	Annually, County Manager, Budget Director
Local emergency operations plan	Yes	County Office of Emergency Management
Community Wildfire Protection Plan	Yes	Last adopted 2009. 2020 update currently pending CSFS review.
Other special plans	Yes	Watershed master plans for Big Thompson, Fish Creek and Fall River. Subarea plans for LaPorte Area, Red Feather Lakes.
National Flood Insurance Program	Yes	Joined 1979
Community Rating System	No	
Flood insurance study or other engineering study for streams	Yes	County Engineering
Elevation certificates (for floodplain development)	Yes	County Engineering
Setback Requirements	Yes	A minimum required setback of 100 feet applies to any stream, creek or river identified on a U.S.G.S. (United States Geological Survey) 7.5' quadrangle map. The setback is measured from the centerline of the water course to the closest point of the building. http://www.larimer.org/planning/planning/Setback/setback_types.htm

Other planning and regulatory mechanisms in place in Larimer County are described below.

Larimer County Comprehensive Plan – The Countywide Comprehensive Plan (2019) serves as the County's long-range framework for decision making and policies related to "future land development, public services, environmental protection, and to support future economic health to sustain the community". The plan is organized according to the Colorado Resiliency Framework and used the County's Community Resiliency Framework and 2016 Hazard Mitigation Plan as foundations in developing the plan. The Comprehensive Plan was used in the updating the 2021 Hazard Mitigation Plan including providing background information and informing the Community Profile section and as a reference in the development of 2021 mitigation goals.

Disaster Recovery Plan – The County Recovery Plan addresses Recovery Support Function 8: Hazard Mitigation. This section includes roles and responsibilities, activation criteria, resources, and procedural checklists for post-disaster mitigation.

Resilience Framework – This Framework was developed to identify the current state of resilience in Larimer County as well as action areas, per community sector, in which resilience could be increased. The update to this framework is on-going with a larger emphasis on interconnectivity of sectors and collaboration opportunities.

CASCARTA – This tool was developed to better identify upstream and downstream impacts of potential hazards and their relationship to critical infrastructure and key resources. All hazards have the potential for cascading effects, and this tool allows us to better assess these so we can act more quickly. This tool allows provides data to better identify Capital Improvement Projects

Supply-Chain Plan – This plan is currently in process and the objective is to better identify gaps in the supply chain to critical and essential services in Larimer County.

Threat and Hazard Identification and Risk Assessment (THIRA) – Larimer County recently facilitated the development of a county-wide THIRA. The purpose of this document is to identify the current state of ESF/RSF capabilities in Larimer County based on catastrophic scenarios, and to conduct a gap analysis with subsequent action items to fill these gaps.

Big Thompson Gauges – These were implemented following the 2013 Floods. Due to the high probability of flash flooding in Larimer County river canyons, these gauges better allow us at the local level to monitor current CFS levels.

Climate Smart Larimer Plan – This plan is currently in process and seeks to identify priority actions to adapt to and mitigate the impacts of Climate Change in Larimer County. This is a cross-sector, collaborative plan seeking to be completed in Spring 2020.

Colorado Resilience and Recovery Collaborative Participation – Larimer County participates in the CRRC, which seeks to share information, collect data and best practices, and identify projects to help increase the resilience of Larimer County communities through collaboration.

Mitigation Projects in General – There are programs for forest thinning on private lands, road and bridge improvements since 2013 Flood, Stream Gauges to monitor flows.

State Regulatory Capabilities:

The State of Colorado mitigates natural hazards through a number of statutes and programs. Funded by the state and federal government, several agencies and programs within the state implement mitigation actions through assistance to local governments. State statues that are applicable to hazard mitigation are listed below:

- County Fire Planning Authority, Colorado Statute, Title 30, Article 11, Part 1:30-11-124
- Colorado Land Use Commission Authority, Colorado Revised Statute, 24-65-101 & 102
- Colorado Land Use Commission Directives & Duties, Colorado Revised Statutes, 25-65-105 & 24- 65-104
- County Building Codes – Master Plan, Colorado Statute, Title 30, Article 28, Part 1:30-28-106
- Local Government Land Use Control Enabling Act, Colorado Revised Statute, 29-20-101, et seq
- Local Land Use Control and Regulation, Colorado Revised Statute, 29-20-104
- Colorado Wildfire Preparedness Plan and Fund, Colorado Revised Statute 24-30-310(2)(3)
- Fire Suppression Program Rules, Colorado Revised Statute, 24-33.5-1205(1) (a)
- State Fire Ban Authority, Colorado Revised Statute, 24-30-308
- Colorado Geological Survey (CGS), Colorado Statute, 34-1-1-1 & 103
- CGS Land Use Review Program (Subdivision Law), Colorado Revised Statute, 30-28-101, et seq
- Soils & Hazard Analyses of Residential Construction Act, Colorado Revised Statute, 6-6.5-101
- Drought Mitigation Planning, Colorado Revised Statute, 37-60-126.5
- Building Codes – Zoning – Planning, Colorado Revised Statute, 22-32-124(1)
- Colorado Floodplain Management Authority, Colorado Revised Statute, 24-65.1-403(1)
- Emergency Dam Repair Cash Fund, Colorado Revised Statute, 37-60-122.5
- Flood Response Fund, Colorado Revised Statute, 37-60-123.2
- Office of Smart Growth, Colorado Revised Statute, 24-32-3201 et seq
- State Engineer – High Hazard Dams Reports, Colorado Revised Statute, 37-87-123
- State Planning and Interest (HB 74-1041), Colorado Revised Statute, 24-65.1-101

Colorado Statute includes a number of measures that dictate the state's ability to influence land use decisions and subsequently impact local vulnerability to hazards. In most cases, these statutes allow county level and local governments to establish their own rules and regulations.

5.2 Administrative and Technical Capabilities

Larimer County OEM is the primary agency responsible for emergency management and hazard mitigation in the County. However, mitigation is an interdisciplinary effort that requires collaboration across numerous departments and individuals. Administrative and technical resources are summarized in Table 5-2. Per this assessment, the County is well-staffed and equipped to assess and mitigate hazards, and to manage exposure through land management and building requirements.

Table 5-2 Administrative and Technical Capabilities

Personnel Resources	Yes/No	Position/Department/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	County Engineer, Development Review team, County Planning
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	County Engineer, Development Review team, Building Official, Building inspection and plan review staff, Road and Bridge engineers
Planner/engineer/scientist with an understanding of natural hazards	Yes	County Engineering, Community Development, Office of Emergency Management
Transportation Planner	Yes	County Engineering
Resiliency Planner	Yes	Office of Emergency Management
Personnel skilled in GIS	Yes	IT Dept., Community Development staff
Full time building official	Yes	County Building Official, County Community Development
Floodplain manager	Yes	County Floodplain Administrator, County Engineering
Emergency manager	Yes	Office of Emergency Management, Director of Emergency Management
Grant writer	Yes	Office of Emergency Management
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	GIS staff/IT
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	PSAPs, Emergency Notification System and EAS activated through L.C. Sheriff's Office, Larimer Emergency Telephone Authority.
Other key personnel	Yes	IT Dept., Community Development staff, Purchasing Director

5.3 Financial Capabilities

The Finance Department provides all necessary accounting, budget, payroll, and purchasing and sales tax support and information to all County departments and the citizens of Larimer County.

Table 5-3 details a variety of financial tools that can be used for mitigation and their availability to the County. Per this assessment, many of these funding mechanisms are eligible in Larimer County but would require additional development to be accessible to use. For example, new taxes or debt would require voter approval.

Table 5-3 Financial Resources

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	CDBG-DR grants following the High Park Fire and 2013 Flood
Capital improvements project funding	Yes	Unknown	
Authority to levy taxes for specific purposes	Yes	Yes	Would need citizen vote
Fees for water, sewer, gas, or electric services	No	No	
Stormwater Service Fees	Yes	Yes	Boxelder Basin Regional Stormwater Authority and West Vine Basin
Impact fees for new development	Yes	No	
Incur debt through general obligation bonds	Yes	No	Would need citizen vote
Incur debt through special tax bonds	Yes	No	Would need citizen vote
Incur debt through private activities	Yes	No	
Withhold spending in hazard prone areas	No	No	

5.4 Other Mitigation Programs and Partnerships

Table 5-4 Education and Outreach Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	See below
Firewise	No	6 communities within the county are Firewise communities
StormReady	Yes	Larimer County and Cities of Fort Collins and Loveland
Other		

5.4.1 Public Outreach

Successful sustained mitigation depends upon robust collaboration between the public and private sector, different levels of government, municipal jurisdictions, departments, agencies and community groups within Larimer County. Larimer County has several active public education programs to educate the public about hazards and actions they can take to mitigate against those hazards. Several of these groups serve to communicate hazards risks to the public.

Larimer Connects Program – This program is in place to increase outreach and education to Larimer County community members not only of concepts as emergency preparedness, but resilience overall. The program seeks to increase resilience through promoting and encouraging social connectivity and grassroots action.

Community Events – Larimer OEM strives to have a presence at as many community events as is feasible around the County to provide outreach and education on preparedness and resilience. This includes non-traditional events such as community pancake breakfasts, HOA annual meetings, craft fairs, and holiday events as well

New Employee Orientation – Larimer OEM is responsible for providing the preparedness education for place of business preparedness to all new employees during their orientation day at Larimer County.

Resilient Communities are Connected Communities Seminar – As part of the Larimer Connects Program, this seminar is conducted to educate participants on community resilience, social connectivity, and empowers grassroots action. This seminar is typically conducted bi-annually. At the time of this plan update, this seminar is undergoing revisions for improvement before being held again, as well as modifications for COVID-19 precautions since it is traditionally conducted as an in-person class.

Larimer-Weld County Emergency Preparedness and Family Safety Expo – This has been an ongoing event since 2015 and has been a collaborative effort between Larimer and Weld Counties to bring together all emergency services agencies to provide public education on emergency preparedness and safety.

VOAD Zombie Apocalypse Event – Larimer County participates in this annual event (initiated 2018) that creates a family-friendly atmosphere to teach emergency preparedness. This event is a disaster simulation with zombies as focus. Participants are asked to solve problems that are disaster-related and interact with the different partners that act during a disaster.

Wildland Fire Preparedness Education – Larimer OEM and the LCSO Emergency Services Unit both provide ongoing public education on wildfire preparedness, including community tabletop and functional exercises.

5.4.2 Watershed Coalitions

Larimer County works closely with several nonprofit watershed coalitions that do significant mitigation projects as well as public education and outreach. The following coalitions participated on the planning team for the 2021 HMP Update process.

The Coalition for the Poudre River Watershed (CPRW) was formed after the 2012 High Park and Hewlett Gulch wildfires burned almost 90,000 acres of the Poudre Watershed. CPRW works across the entire Poudre watershed from headwaters to the confluence with the South Platte River on issues relating to rivers, forest resilience and wildfire mitigation. CPRW stakeholder committees include representatives from the US Forest Service, Colorado State University, Larimer County, City of Fort Collins, City of Greeley, Colorado State Forest Service, Town of Windsor, and Weld County among others.

The Big Thompson Watershed Coalition (BTWC) was formed after Colorado's devastating 2013 floods to foster resilience in that watershed by providing multi-purpose and multi-stakeholder benefits to water and forest resources, as well as the wildlife and people who depend on them. Since 2013 BTWC has helped raise over $10 million dollars in federal, state, and local funds for river improvement projects, developed 3 large-scale river management and restoration plans, completed 10 major river enhancement projects, and worked with over 150 private landowners and organizations in the process.

The Estes Valley Watershed Coalition (EVWC) was also formed after the 2013 floods as a grassroots organization to work with the community and partners to protect natural resources, watershed health, forest health, and wildlife in the Estes Valley. EVWC has completed fourteen stream restoration projects totaling five miles on the Big Thompson River, Fall River and Fish Creek. The projects have added, new floodplain areas, more vegetation to absorb high water, fish spawning locations and beaver ponds, and has made the valley more resilient to future events.

5.4.3 Firewise

Firewise USA® is a voluntary program that provides a framework to help neighbors get organized, find direction, and take action to increase the ignition resistance of their homes and community. The program

is co-sponsored by the USDA Forest Service, the U.S. Department of the Interior, and the National Association of State Foresters. As of August 2020, the following communities in Larimer County have joined the Firewise program:

- Big Elk Meadows, Lyons
- Cherokee Meadows, Livermore
- Crystal Lakes
- Glacier View Fire Protection District
- Glen Haven
- Mountain River Townhomes, Estes Park
- Windcliff, Estes Park

5.4.4 Storm Ready

As of August 2020, Larimer County, and the Cities of Fort Collins and Loveland are certified as StormReady communities. The National Weather Service's StormReady program helps local governments handle extreme weather and improve the timeliness and effectiveness of hazardous weather related warnings for the public. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally
- Promote the importance of public readiness through community seminars, and
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

5.4.5 National Flood Insurance Program (NFIP) and the Community Rating System (CRS)

Larimer County has been mapped for flood hazards and participates in the National Flood Insurance Program (NFIP). Details of local jurisdiction participation status from the NFIP's Community Information System (CIS) are shown in Table 5-5. See also Section 6.3.1 for the participating jurisdictions' commitment to continue participation in the NFIP.

Table 5-5 Communities Participating in the FEMA NFIP

CID	Community	Initial FIRM Identified	Current Effective Map Date	Policies in Force	Total Coverage	# of Claims Paid	Total Losses Paid
080101	Larimer County	04/02/79	02/06/13	521	$147,103,300	332	$10,506,874
080296	Town of Berthoud	12/19/06	02/06/13	7	$2,128,000	1	$139,343
080193	Town of Estes Park	01/17/79	12/19/06	197	$52,158,800	99	$1,983,498
080102	City of Fort Collins	12/04/84	01/06/12	353	$108,494,500	64	$687,909
080103	City of Loveland	09/01/78	02/06/13	124	$41,560,800	28	$1,450,959
080250	Town of Johnstown	12/19/06	01/15/21	15	$4,411,000	1	$9,971
080005	Town of Timnath	12/19/06	12/19/06	3	$910,000	1	$4,074
080104	Town of Wellington	02/15/79	12/19/06	30	$10,578,400	10	$52,161
080264	Town of Windsor	09/27/91	09/27/91	64	$20,100,000	11	$6,932
Total				**1,314**	**$387,444,800**	**547**	**$14,841,721**

Source: FEMA, current as of September 1, 2020

In addition to participating in the NFIP, the Cities of Fort Collins and Loveland participate in the Community Rating System (CRS). CRS is a voluntary program for NFIP participating communities focused on reducing flood damages to insurable property and encouraging a comprehensive approach to floodplain management. The CRS provides incentives in the form of insurance premium discounts to communities that go above and beyond the minimum floodplain management requirements and develop extra measures to reduce flood risk. There are 10 CRS classes, and the classification determines the insurance premium discount for policy holders, as shown in Table 5-6.

Table 5-6 CRS Premium Discounts

Class	Discount		Class	Discount	
1	45%		6	20%	**SFHA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class. SHFA (Zones A99, AR/A, AR/AE. AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9. Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1-6; 5% discount for Classes 7-9. In determining CRS premium discount, all AR and A99 Zones are treated as non-SFHAs.**
2	40%		7	15%	
3	35%		8	10%	
4	30%		9	5%	
5	25%		10	--	

Source: FEMA CRS Coordinators Manual

All CRS participating communities start out with a Class 10 rating (which provides no premium discount). Class 1 requires the most credit points and offers the largest premium discount. Within the CRS program, there are 18 activities recognized as measures for eliminating local exposure to flooding. Credit points are assigned to each activity, which have been organized under four main categories:

- Public Information
- Mapping and Regulation
- Flood Damage Reduction
- Flood Preparedness

Within Larimer County, the communities of Fort Collins and Loveland participate in the CRS. Fort Collins is a Class 2 community, one of only nine communities nationwide to qualify for a Class 2 or higher rating. Loveland is rated as a Class 6 community.

5.5 Opportunities for Enhancement

Based on the capability assessment, Larimer County has several existing mechanisms in place that already help to mitigate hazards, including numerous planning tools and many available funding mechanisms. There are also opportunities for the County to expand or improve on its capability to further protect the community.

One such capability enhancement already in progress is that County Engineering is working to implement a grading/stormwater permit system and hire additional staff in coming years.

Other opportunities include the continuation of incorporating updated risk information into updates of the County's Comprehensive Plan and Resiliency Framework. As well as ensuring risk information is taken into consideration in the Land Use Code updates and during the development review process.

An additional opportunity for capability enhancement includes leveraging ongoing recovery efforts to implement a focus on working with impacted community members to further identify ways to create equitable processes and policies for disaster management and decrease barriers to resources for marginalized and underserved communities that are traditionally disproportionately affected by a crisis.

Another opportunity being considered to reduce flood losses is for Larimer County to join the Community Rating System (CRS) and help other communities do the same. As discussed in Section 4.3.6, the City of Fort Collins has been a national leader in the CRS program for years and has achieved a Class 2 rating, making them one of the 10 highest-rated CRS communities in the nation. The City of Loveland has also been very active in the program with a Class 6 rating. The annual savings to their flood insurance policy holders is shown in Table 5-7.

Table 5-7 Current CRS Participation and Summary Information

Community	Current Rating	Policies	Total Premiums	Discount	Current Annual Saving
Fort Collins	2	355	$210,943	40%	$44,040
Loveland	6	129	$101,067	20%	$11,624

Source: FEMA, as of 8/27/20

Table 5-8 shows the potential annual savings to policy holders for each CRS Rating, along with the current ratings and savings for comparison. The direct financial benefits for Berthoud, Johnstown, Timnath, Wellington, and Windsor are fairly low, due to the small number of NFIP policies. However, the County could save tens of thousands of dollars a year even with a relatively low CRS Rating. The Town of Estes Park could also potentially save several thousands of dollars a year. Deciding whether or not to join the CRS program must be based on balancing those benefits against the staff time and jurisdictional commitments required to achieve and maintain certification.

Table 5-8 Potential Benefits of CRS Ratings By Jurisdiction

Community	Class 9 Annual Savings	Class 8 Annual Savings	Class 7 Annual Savings	Class 6 Annual Savings	Class 5 Annual Savings	Class 4 Annual Savings	Class 3 Annual Savings	Class 2 Annual Savings	Class 1 Annual Savings
Larimer County	$28,382	$55,048	$81,715	$110,096	$136,763	$163,429	$190,095	$216,762	$243,428
Berthoud	$0	$0	$0	$0	$0	$0	$0	$0	$0
Estes Park	$3,661	$5,644	$7,626	$11,287	$13,269	$15,251	$17,234	$19,216	$21,198
Fort Collins	$6,627	$11,758	$16,889	$23,515	$28,647	$33,778	$38,909	$44,040*	$49,171
Johnstown	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loveland	$3,119	$5,812	$8,505	$11,624*	$14,317	$17,010	$19,704	$22,397	$25,090
Timnath	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wellington	$385	$770	$1,155	$1,539	$1,924	$2,309	$2,694	$3,079	$3,464
Windsor	$169	$283	$396	$566	$679	$793	$906	$1,202	$1,134

Source: FEMA, as of 8/27/20; * indicates current savings based on 2020 CRS status.

6 MITIGATION STRATEGY

This section of the Plan provides the blueprint for Larimer County and its participating jurisdictions to become less vulnerable to natural hazards. The goals and objectives are based on the consensus of the Larimer County Planning Team and local stakeholder feedback, along with the findings of the Hazard Identification and Risk Assessment. This section consists of the following subsections:

- Overview
- Goals and Objectives
- Progress on Previous Mitigation Plan Actions
- Identification and Prioritization of Mitigation Actions
- 2021 Mitigation Plan Action

6.1 Overview

The intent of the Mitigation Strategy is to provide the County and its participating jurisdictions with the goals that will guide future mitigation policy and project administration. The Mitigation Strategy includes a list of proposed actions deemed necessary to meet those goals and reduce the impact of natural hazards. The development of the strategy included a thorough review of natural hazards and identified policies and projects intended to not only reduce the future impacts of hazards, but also to help Larimer County and participating jurisdictions balance and achieve their economic, environmental, and social goals. The development of the Mitigation Strategy was strategic, in that all policies and projects have been linked to established priorities. Moreover, projects have been assigned to specific departments or individuals responsible for their implementation. Potential funding sources are identified when possible and identified projects were categorized as being realistically achievable over the next five years.

- **Goals** are general guidelines that explain what the county wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results.
- **Objectives** describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date.
- **Actions** provide more detailed descriptions of specific work tasks to help the county and its municipalities achieve prescribed goals and objectives.

Based on participation from the Larimer County Hazard Mitigation Planning Team, the mitigation strategy from the 2016 Hazard Mitigation Plan has been modified and updated. The goals and objectives were updated, the status of previously identified actions was updated, and new actions have been added to address hazards facing Larimer County and its participating jurisdictions.

Larimer County has also been proactive in integrating hazard mitigation into their post-disaster recovery strategy, as detailed in the County's Disaster Recovery Plan, Recovery Support Function 8: Hazard Mitigation.

6.2 Goals and Objectives

As described above, mitigation goals are overarching targets and describe the ideal long-term outcomes envisioned by the community, while mitigation objectives describe the "how" of the mitigation strategy and are specific and measurable. The 2021 Planning Team approved the following updated mitigation goals and objectives for Larimer County and the participating jurisdictions to provide direction for reducing future hazard-related losses across Larimer County:

2021 Larimer County Hazard Mitigation Goals:

- **Goal 1:** Protect people, property, and natural resources
- **Goal 2:** Increase level of community resilience county-wide and improve capability to reduce disaster losses
- **Goal 3:** Strengthen communication and coordination among public agencies, non-governmental organizations, businesses, and citizens
- **Goal 4:** Increase public awareness of natural and human-caused hazards and mitigation options
- **Goal 5:** Integrate hazard mitigation into other planning mechanisms

2021 Larimer County Hazard Mitigation Objectives:

- **Objective 1:** Continue to develop and expand public awareness and information programs
- **Objective 2:** Enhance training for hazard prevention and mitigation options
- **Objective 3:** Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans
- **Objective 4:** Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
- **Objective 5:** Reduce the vulnerability of local assets and members of the community to the impacts of hazards.

Larimer County's mitigation goals and objectives originated with the goals identified in the 2010 Northern Colorado Regional Hazard Mitigation Plan, which subsequently evolved into the goals and objectives in the 2016 Larimer County HMP. The goals and objectives from those previous plans are listed below to show continuity and give a sense of how the County's strategy have changed over time.

2010 Northern Colorado Regional Hazard Mitigation Plan Goals:

- Goal 1: Protect Life and Property
- Goal 2: Improve Public Awareness
- Goal 3: Strengthen Partnerships and Promote Plan Implementation
- Goal 4: Improve Emergency Services Response Plans

2016 Larimer County Multi-Jurisdictional Hazard Mitigation Plan Goals and Objectives:

- Goal 1: Protect people, property, and natural resources
- Goal 2: Improve capability to reduce disaster losses
- Goal 3: Strengthen communication and coordination among public agencies, nongovernmental organizations, businesses, and citizens
- Goal 4: Increase public awareness of natural hazards and mitigation options
- Goal 5: Integrate hazard mitigation into other planning mechanisms

- Objective 1: Continue to develop and expand public awareness and information programs
- Objective 2: Enhance training for hazard prevention and mitigation options
- Objective 3: Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans
- Objective 4: Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
- Objective 5: Reduce the vulnerability of local assets to the impacts of hazards.

For the 2021 Update, the Planning Team reviewed the goals and objectives from the 2016 Plan, and determined they still reflect the County's desired mitigation strategy. Three edits were made to the 2016 goals and objectives based on suggestions from Planning Team members:

- Goal 2: The words "Increase level of community resilience county-wide" were added to better align the Plan with the County's resiliency strategy.
- Goal 4: Reference to human-caused hazards was added to reflect the plan's evolution beyond just natural hazards, and
- Objective 5: The words "and members of the community" were added to clarify that the mitigation strategy is not just about protecting physical property.

In order to maintain continuity within the local mitigation strategy, each mitigation objective is associated with one or more mitigation goals (as is shown in the following table). This helps communities stay on track during the development of the mitigation strategy and focus their planning efforts around clear priorities. Together, the goals and objectives of the Larimer County mitigation strategy establish the scope and focus of the proposed mitigation actions outlined in this Plan.

Table 6-1 2021 Larimer County Mitigation Strategy – Updated Goals and Objectives

Goal	Objective
GOAL 1: Protect people, property, and natural resources	1. Continue to develop and expand community preparedness education and resilience programs.
	2. Enhance training for hazard prevention and mitigation options.
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.
	5. Reduce the vulnerability of local assets and members of the community to the impacts of hazards.
GOAL 2: Increase level of community resilience county-wide and improve capability to reduce disaster losses	1. Continue to develop and expand community preparedness education and resilience programs.
	2. Enhance training for hazard prevention and mitigation options.
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.
	5. Reduce the vulnerability of local assets and members of the community to the impacts of hazards.
GOAL 3: Strengthen communication and coordination among public agencies, non-governmental organizations, businesses, and citizens	1. Continue to develop and expand community preparedness education and resilience programs.
	2. Enhance training for hazard prevention and mitigation options.
GOAL 4: Increase public awareness of natural and human-caused hazards and mitigation options	1. Continue to develop and expand community preparedness education and resilience programs.
	2. Enhance training for hazard prevention and mitigation options.
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.

Goal	Objective
	5. Reduce the vulnerability of local assets and members of the community to the impacts of hazards.
GOAL 5: Integrate hazard mitigation into other planning mechanisms	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.
	5. Reduce the vulnerability of local assets and members of the community to the impacts of hazards.

6.3 Progress on Previous Mitigation Plan Actions

The 2016 Plan identified a number of mitigation actions, which the County and jurisdictions have been successful in implementing to work steadily towards meeting their mitigation goals and objectives. During the 2021 plan update process, the Planning Team reviewed the mitigation actions in the 2016 Plan, and updated their status based on input from the responsible agency for each action, describing which actions had been completed, which were either in progress or not yet started, and if any should be deleted as no longer relevant of achievable.

The 2016 Plan contained a total of 131 mitigation actions. (This does not include 6 actions from jurisdictions that did not participate in the 2021 update, as noted in Section 3.3.) Of those, 57 actions were reported as having been completed. The majority of the actions that had not been completed were reported as being in progress, waiting on funding, or deferred due to competing priorities and limited resources. Overall, the high number of actions that have been completed is a sign of the effectiveness of Larimer County's hazard mitigation program and that the County and its jurisdictions are steadily working towards the goals of this plan.

The statuses of the 2016 mitigation actions are summarized by jurisdiction in Table 6-2 below along with the number of new actions added in 2021. Larimer County's completed actions are listed in Table 6-3; actions completed by other participating jurisdictions are listed in that jurisdiction's annex.

Table 6-2 Mitigation Actions Summary by Jurisdiction

Jurisdiction	# of Actions in 2016 HMP	# of Actions Completed	# of Actions Deleted	# of New Actions	Total # of 2021 Actions
Larimer County	22	12	1	19	28
Town of Berthoud	6	5	0	4	5
Berthoud Fire Protection District	6	3	0	2	5
Crystal Lakes Fire Protection District	5	1	0	3	7
Town of Estes Park	7	4	1	5	7
Estes Park Health	2	1	0	2	3
Estes Valley Fire Protection District	1	1	0	3	3
Estes Valley Recreation & Park District	1	1	0	2	2
City of Fort Collins	32	10	0	13	35
Glacier View Fire Protection District	3	0	0	3	6
Town of Johnstown	2	0	0	2	4
Livermore Fire Protection District	5	4	0	3	4
City of Loveland/Loveland Fire Rescue	7	5	0	24	26

Jurisdiction	# of Actions in 2016 HMP	# of Actions Completed	# of Actions Deleted	# of New Actions	Total # of 2021 Actions
Northern Water	1	0	0	11	12
Pinewood Springs Fire Protection District	5	3	0	3	5
Poudre Canyon Fire Protection District	1	0	0	1	2
Poudre Fire Authority	3	0	0	2	5
Thompson Valley EMS	3	0	0	1	4
Town of Timnath	3	0	0	2	5
Upper Thompson Sanitation District	3	2	0	2	3
Town of Wellington	2	1	0	1	5
Wellington Fire Protection District	2	1	0	3	4
Town of Windsor	6	1	2	4	7
Windsor Severance Fire Rescue	3	2	0	4	5
Grand Totals	**131**	**57**	**4**	**119**	**192**

Table 6-3 Completed and Deleted County Mitigation Actions From the 2016 HMP

2016 Action ID	Hazard(s)	Mitigation Action	Comments
Larimer – 3	Extreme Temperatures and Fire	Wildfire Education and Outreach. Development of a coordinated wildfire education and outreach program with multiple wildfire and natural lands partners.	This effort has been successful through the Larimer Connects Program and due to the fact that OEM partners with many departments including Public Health, Emergency Services, and more to promote information at community events such as FireWise community events, assisting with development of local CWPPs, during the Preparedness and Family Safety Expo, and more.
Larimer – 5	Land Subsidence, Flood, Severe Storm and Fire	Flood Risk Velocity and Depth Criteria Project. Develop velocity and depth criteria for all floodplains in Larimer County and incorporate criteria into floodplain regulations	The Engineering Department completed a feasibility project to determine if flood risk should be measured via velocity and depth criteria. This information was presented to the BCC who opted not to change our current evaluation criteria.
Larimer – 8	Flooding	High Water Mark Initiative Project. Purchase and install 2013 Flood High Water Mark placards	This project was completed and implemented in 2018 and was done in partnership with FEMA, City of Loveland, and City of Fort Collins in a series of 3 public events. This project includes signage that demonstrates the high water marks from the 1997 Spring Creek Flood and the 2013 Larimer County Flood and further provides flood education and preparedness information to the public.
Larimer – 9	Fire and Flood	Post Fire Restoration. Identifying which areas of the burn area are still at risk of degrading water quality and threatening life and property and then designing on the ground restoration treatments	Coalition for the Poudre River Watershed and stakeholders completed an analysis of remaining post-fire priorities. Based on that analysis, additional stakeholder input, and available funding, CPRW and partners completed 3 post-fire restoration projects (Skin Gulch, UT3,

2016 Action ID	Hazard(s)	Mitigation Action	Comments
		that help reduce erosion and stabilize channels and reduce runoff volumes.	Seaman Reservoir). Monitoring in the watershed indicates that there are few to no remaining post-fire impacts to streams and rivers. Thus, implementation actions are considered complete. However, planning for responding to the next post-wildfire is an ongoing, annual action.
Larimer – 11	Earthquake, Flood, Severe Storm, and Fire	Bridge Improvement Project. In accordance with the Larimer Strategic Plan, replace all structurally deficient bridges in Larimer County by 2020	The Engineering Department had a goal in 2013 Strategic Plan to update all structurally deficient bridges, this was completed.
Larimer – 12	Flood	Hydrology Analysis and Infrastructure Upgrades. Analyze need for bridge and crossing improvements and pursue funding for replacement structures.	The Engineering Department had a goal in the 2013 Strategic Plan to complete infrastructure updates. This was completed.
Larimer – 13	Drought, Earthquake, Land Subsidence, Extreme Temperatures , Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	Long-Range Community Planning. The purpose of this mitigation action is to develop a long-range plan for the area affected by the 2012 High Park Wildfire and 2013 Flood, plus other areas susceptible to natural hazards.	Larimer County successfully completed a full update to the Larimer County Comprehensive Plan, adopted in 2018. This was a 2-part plan including the Mountain Resilience Plan and the Eastern Plains Plan that take into account the unique needs of both regions. This plan provides a framework for identifying best solutions for community planning and development county-wide.
Larimer – 14	Drought, Earthquake, Land Subsidence, Extreme Temperatures , Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	Mitigation Code Changes. Update Larimer County Land Use, Wildfire and Building Codes with recommendations approved by the Board of Commissioners, Planning Commission and Flood Review Board to decrease future risk and disaster losses.	Implemented and completed
Larimer – 17	Earthquake, Land Subsidence, Flood, Severe Storm, Fire	Transportation Master Plan Update. Review and update the Transportation Master Plan.	This effort was completed and implemented in 2018
Larimer – 18	Civil Disturbance and Hazmat	Risk Assessment Program. Develop a risk assessment program for large businesses, hazardous materials fixed facilities,	Finalized in 2017, Larimer County participated in the RRAP in partnership with Idaho National Labs and the City of Fort Collins to Identify impacts to critical infrastructure. This was expanded in 2018 and 2019 to the RIIP (Resilient Infrastructure

2016 Action ID	Hazard(s)	Mitigation Action	Comments
		schools, and industry to develop awareness, decrease risk and improve response protocols.	Improvement Project), which then informed the development of the tool CASCARTA. This tool looks at upstream and downstream dependencies to better identify how to allocate resources for critical infrastructure and key resources county-wide. In 2019, Larimer County also completed a THIRA (Threat and Hazard Identification and Risk Assessment) which is an assessment of current capabilities associated with ESFs and RSFs county-wide. Collaborated with Federal, State and Local partners on Infrastructure Protection Gateway Tool
Larimer – 19	Flood	River Restoration Projects. Resilient restoration techniques which focus on holistic watershed health, including stabilizing river channel and banks, considering how infrastructure is located in the floodplain; creating and improving aquatic and riparian habitat.	All project milestones have been implemented on this project, and like CPRW, the Big Thompson Watershed Coalition is expanding efforts into longer-term sustainability and forest restoration projects.
Larimer – 20	Flood	River Restoration and Mitigation Projects. Resilient restoration techniques which focus on holistic watershed health, including stabilizing river channel and banks, considering how infrastructure is located in the floodplain; creating and improving aquatic and riparian habitat.	All project milestones have been implemented on this project, and like CPRW, the Big Thompson Watershed Coalition is expanding efforts into longer-term sustainability and forest restoration projects. However, the Little Thompson Watershed Coalition disbanded in 2019.
Larimer-21	Flood	Cotton Willows Subdivision Engineering Study. Conduct 1) a Groundwater and Drainage Study and 2) a Floodplain Mitigation Study	Deleted. Unable to implement mitigation measures for this area due to private land issues.

6.3.1 Continued Compliance with NFIP

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, an emphasis will be placed on continued compliance with the NFIP by Larimer County and its participating communities including the Cities of Fort Collins and Loveland, and the Towns of Berthoud, Estes Park, Johnstown, Timnath, Wellington, and Windsor. As NFIP participants, these communities have and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance. Other details related to NFIP participation are discussed in the flood vulnerability discussion in Section 4.3.6, in Section 5.5.4 of the Capability Assessment, and the individual jurisdictional annexes.

Larimer County and participating jurisdictions have been proactive in implementing mitigation activities focused on reducing the impacts to critical facilities from flooding and other hazards. The 12 facilities

protected by levee in Table 4-32 are an example of removing facilities from the 1% and 0.2% floodplain. Actions completed since the last plan update that specifically addressed reducing the vulnerability of critical facilities to flooding include the following actions, as listed in Section 6.3 and the jurisdictional annexes:

- Larimer-11
- Larmier-12
- Larimer-20
- Estes Park-3
- EPMC-1
- EVRP-1
- Fort Collins-1
- Fort Collins-6
- Fort Collins-7
- Fort Collins-14
- Loveland-4
- Loveland-5
- Pinewood Springs FPD-3

Several new and continuing mitigation actions listed in Section 6.5 and the jurisdictional annexes target reducing the vulnerability of critical facilities to flooding.

- LC-4
- LC-6
- LC-10
- LC-12
- LC-13
- LC-16
- LC-25
- LC-26
- A-2
- D-2
- E-1
- H-1
- H-2
- H-5
- H-6
- H-9
- H-10
- H-12
- H-13
- H-14
- H-16
- H-20
- H-21
- H-22
- H-26
- H-27
- H-28
- H-29
- H-30
- H-33
- H-34
- J-2
- J-3
- J-4
- L-1
- L-25
- L-91
- L-130
- M-1
- T-3
- V-4
- V-5
- V-6
- V-7
- R-2
- R-3
- R-5

As mentioned in Section 4.3.6, the Larimer County Recovery Plan outlines policies and procedures to recover from floods and other disasters. The plan includes roles and responsibilities, the concept of operations, direction and coordination, and financial management, along with 17 Recovery Support Functions (RSFs). Post-flood recovery should focus on activities to protect public health and safety, such as providing safe drinking water, monitoring for disease and contaminants, and cleaning up debris.

Other plans, policies, regulations, or programs in place to reduce the vulnerability of critical facilities to flooding, such as floodplain ordinances, stormwater management programs, and Drainage Basin Master Plan, are discussed in Section 5.1 of the Base Plan and in the Capability Assessment sections of the Jurisdictional Annexes.

6.4 Identification and Prioritization of Mitigation Actions

The natural and human-caused hazards identified in Section 4 Risk Assessment were evaluated to identify and prioritize mitigation actions to support the mitigation goals and objectives described above.

6.4.1 Identification of New Mitigation Actions

The Planning Team considered the following categories of mitigation actions, as defined in FEMA's 2013 *Local Mitigation Planning Handbook*:

- **Plans and regulations:** These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and infrastructure projects:** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- **Natural systems protection:** These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.

- **Education and awareness:** These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.

The Planning Team also considered the following categories as defined in the Community Rating System:

- **Prevention:** Administrative or regulatory actions or processes that influence the way land and buildings are developed and built.
- **Property protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area.
- **Structural:** Actions that involve the construction of structures to reduce the impact of a hazard.
- **Natural resource protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Emergency services:** Actions that protect people and property during and immediately after a disaster or hazard event.
- **Public information/education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

At planning meeting #3, the Planning Team was provided with handouts describing the categories and listing examples of potential mitigation actions for each category, as well as for the identified hazards. FEMA's 2013 document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* was also referenced and made available for reference. Attendees were then asked to submit mitigation action ideas via an online poll. Action submissions included details describing how the actions will be implemented and administered, to include cost estimates, potential funding sources, and estimated timeline for completion. Each action was required to be tied to one or more of the goals and objectives.

It was not always feasible or realistic for every jurisdiction to develop mitigation actions against every identified hazard. However actions were compared against identified hazards to ensure that the plan contains a comprehensive range of mitigation actions and projects for each of the most high risk hazards. An emphasis on new and existing buildings and infrastructure was stressed. While the Planning Team focused primarily on those hazards identified as posing the highest risk to the jurisdiction, mitigation actions were also suggested for some low priority hazards. Similarly, while the primary focus was on developing mitigation actions in the categories described above, some jurisdictions identified actions that do not fall into one of the above categories and which may be better defined as planning or preparedness actions. Some of these actions were nonetheless included in the plan, as the jurisdiction felt they were important actions to reduce losses from future disasters even if they do not meet the strict definition of mitigation.

A total of 92 new actions were submitted, as summarized in Table 6-2 and detailed in Table 6-4.

6.4.2 Prioritization Process

After the planning team had developed new mitigation actions as described above, those new actions were consolidated into lists by jurisdiction for prioritization. Continuing actions from the 2016 Plan were also included in the list so they could be re-prioritized relative to the new actions. Due to the COVID-19 pandemic that was ongoing at the time, it was not possible to conduct a facilitated prioritization exercise in person. Instead, the list of new and continuing actions was developed into an online poll, with planning team members prioritizing the actions for their jurisdiction.

The Planning Team was provided with several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- **Social:** Does the measure treat people fairly? (e.g., different groups, different generations) Does it consider social equity, disadvantaged communities, or vulnerable communities?
- **Technical:** Will it work? (Is the action technically feasible? Does it solve the problem?)
- **Administrative:** Is there capacity to implement and manage the project? (adequate staffing, funding, and other capabilities to implement the project?)
- **Political:** Who are the stakeholders? Did they get to participate? Will there be adequate political and public support for the project?
- **Legal:** Does the jurisdiction have the legal authority to implement the action? Is it legal? Are there liability implications?
- **Economic:** Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- **Environmental:** Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the Disaster Mitigation Act requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action included:

- Does the action address hazards or areas with the highest risk?
- Does the action protect lives?
- Does the action protect infrastructure, community assets or critical facilities?
- Does the action meet multiple objectives (Multiple Objective Management)?
- What will the action cost?
- What is the timing of available funding?

The above criteria were used to prioritize actions in an iterative process over the course of the plan update process. At the start of the process, participating jurisdictions were asked to validate or update the priorities of their continuing actions from the 2016 Plan. When submitting new mitigation actions, planning team members were asked to prioritize those as well. Finally, once all new and continuing actions had been collated into a draft mitigation strategy, jurisdictions were asked to verify or update the priorities of each action compared to their other actions.

6.5 2021 Mitigation Action Plan

The 2021 Larimer County mitigation action plan lists the actions developed and prioritized as described above, to include continuing actions from the 2016 Plan. The action plan details how the participating jurisdictions will reduce the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. All actions are tied to specific goals and objectives to ensure alignment with the Plan's overall mitigation strategy. Over time the implementation of these projects will be tracked as a measure of demonstrated progress on meeting the plan's goals.

Many of these mitigation actions are intended to reduce impacts to existing development. Those that protect future development from hazards, as required per the DMA 2000 regulations, are indicated by an asterisk '*' in the action identification number. These actions include those that promote wise

development and hazard avoidance, such as building code, mapping, and zoning improvements, and continued enforcement of floodplain development regulations.

Larimer County's mitigation actions are listed in Table 6-4 below. Mitigation actions for the other participating jurisdictions are summarized in Table 6-2 above and detailed in each jurisdiction's Annex.

Table 6-4 2021 Larimer County Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status and Implementation Notes
LC-1	Goals 1,2,4 Objectives 1,2,5	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Larimer Connects Project.** Location: Countywide. Issue: Community Outreach regarding mitigation measures is currently lacking. Recommendation: The purpose of this project is to build community connections – within communities, between communities and the connections that reach past communities into formal structures (municipalities, special districts, counties, region, and state). Action: Larimer Connects Community Outreach includes the development of community connections through coursework, education and outreach throughout all of Larimer County to increase overall community knowledge, education, and readiness leading to a culture of community resilience at the lost local level. The project components involve three phases: 1) community assessment and identification of resources, 2) synthesis of available data, and 3) implementation of the program.	**Larimer OEM,** All municipal and other emergency management partners in the county	~$100,000	The Board of Commissioners has approved $100,000 for the initial study.	High	Ongoing	Annual Implementation. The Larimer Connects Project was successfully implemented in 2017 and continues to the present. This project was put in place to increase emergency preparedness through outreach and education and to foster and encourage social connectivity and grassroots resilience throughout Larimer County. The project has made a presence in numerous community events including expos, pancake breakfasts, annual meetings, holiday events, and more to increase awareness. The Resilient Communities are Connected Communities workshop has trained over 80 people since its inception with biannual events being offered. The project also helped to jumpstart hub networks at the local level, led by community champions. This led to the creation of the North 40 Mountain Alliance in the northern mountain communities that have a robust system of volunteers that have been instrumental in helping their neighbors and solving problems during disaster (i.e. information sharing during wildfires, and most recently, delivering 16,000+ pounds to elderly or vulnerable neighbors in partnership with the Food Bank during the COVID-19 pandemic).
LC-2	Goals 1,2,4 Objectives 1,2,5	Public Health	**Emergency Preparedness Public Education/ Outreach.** Location: Countywide. Issue: During the recent wildfire and flood events, many residents, especially in mountain areas, were not prepared to evacuate or to shelter-in-place. Many ran out of water, medicines,	**Health and Environment,** OEM, CDPHE, CDC	Cost will depend upon each specific recovery project	Emergency Preparedness and Response grant	High	Ongoing	Annual Implementation. This effort has been successful through the Larimer Connects Program and due to the fact that OEM partners with many departments including Public Health, Emergency Services, and more to

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			diapers, etc., in two or three days and expected government to provide resources for them. Some refused to leave their homes because they had no plans for dealing with pets or livestock. Recommendation: Continue public education/outreach, especially in mountainous areas, encouraging residents to develop Family Disaster Plans and assemble an Emergency Kit. Action: Continue to post information on Health Department website. Attend safety and health fairs. Develop displays/educational materials and create opportunities to present information to mountain locations.						promote information at community events, during the Preparedness and Family Safety Expo, and more.
LC-3	Goals 1,2,3 Objectives 4,5	Wildfire	**Forest Resilience and Wildfire Fuels Reduction.** Work with the Watershed Coalitions, the Northern Colorado (NoCo) Fireshed Network, LCSO, Youth Corps, and other organizations and individual volunteers to identify and conduct collaborative forest resilience/fuels reductions projects to reduce the negative impacts of wildfires. This will include a focus on areas where county lands are adjacent to private lands for effective fuels and forest health treatment. Will work together to identify opportunities to partner on outreach efforts and united communications to the public and/or landowners.	**CPRW,** Watershed coalitions, Nature Conservancy, Wildlands Restoration Volunteers, CSFS, NRCS, Larimer County Conservation Corps, and Boy Scout Ranch, LCSO, NoCo Fireshed Network, USFS, Colorado State Forest Service	~$100,000 annually	City of Fort Collins, CSFS, Patagonia, New Belgium Brewing, and Dept Natural Resources.	High	Ongoing	Annual Implementation. CPRW has a robust forest management program established and frequently partners with many entities including CFRI, CSFS, USFS, Larimer Emergency Services, Nature Conservancy, and more to conduct prescribed burning management and helps foster relationships for this effort between public and private landowners. Additionally, CPRW partnered with Larimer County to fund a forest restoration project benefitting both the Poudre and Big Thompson Watersheds in 2019. CPRW also facilitates the Northern Colorado Fireshed Network, a collaborative that seeks to bring increased prescribed burning and mitigation efforts to northern Colorado.
LC-4	Goals 1,2 Objectives 3,4,5	Flood, Severe Storm, and Wildfire	**Flood and Fire Recovery Mitigation Activities.** Location: Areas impacted by 2013 Floods, High Park Fire and Cameron Peak Fire. Issue: Larimer County continues to move through the recovery from the 2012 High Park	**Engineering Department and Community Development**	Cost will depend upon each specific	FEMA Public Assistance funding, HMGP funding,	High	Ongoing	In progress. The 2012 High Park Wildfire was closed out in 2017. Larimer OEM continues to monitor the ground for impacts during high rain events, otherwise recovery is

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			Wildfire, the 2013 Flood, and the 2020 Cameron Peak Wildfire. Many projects remain unfinished, allowing the county to look at mitigation opportunities for the future. Recommendation: Assess all unfinished recovery projects for possible mitigation opportunities and implement alternatives when appropriate. Action: Include mitigation alternatives in flood and fire recovery efforts whenever possible.	, Public Works and OEM	recovery project	county resources			complete. The 2013 Flood is still in recovery and we remain working with FEMA to close out final projects.
LC-5	Goals 1,2,3 Objectives 5	Land Subsidence, Flood, Severe Storm, Wildfire	**Rainfall and Stream Gauge Monitoring System.** Location: Larimer County Watersheds. Issue: Rainfall and stream gauges exist on a small section of the county's watersheds and many of these gauges were damaged or destroyed during the 2013 Flood. Recommendation: Install rainfall and stream gauges throughout Larimer County's major watersheds, including the Big Thompson River, Little Thompson River and the Cache la Poudre River and connect all with a monitoring system that can provide real-time data and early warning to citizens and emergency responders. Action: Install rainfall and stream gauge monitoring hardware and software in major watersheds throughout Larimer County.	**Engineering Department,** Community Development and OEM	$300,000	2015 HMGP funding for partial implementation county funding	High	2021	In progress. Completed and implemented those for the Big Thompson River. The Cache La Poudre and Little Thompson Rivers will be completed in 2021.
LC-6*	Goals 1,2,3 Objectives 1,3,5	Flood	**Full Adoption of Updated FEMA Floodplains.** Location: Countywide. Issue: Floodplain mapping is out of date and the 2013 Flood caused extensive changes to current floodplains. Recommendation: Work with FEMA on updating current floodplain mapping throughout Larimer County. Action: By 2020, all Larimer County watersheds will be mapped and adopted	**Engineering Department,** Community Development and OEM	$300,000	Colorado State Flood Hazard Mapping Project	Medium	2021-2022	In progress. Both CHAMP and RiskMAP are all in various states of adoption, but not complete. The new mapping for the Little Thompson will be approved by FEMA in July and then we have 6 months to approve it. This adoption will be official by the end of the year. The other mapping projects will be complete in the next few years.
LC-7	Goals 1,2,3,4 Objectives 1,4,5	Public Health	**Maintain adequate public health monitoring, surveillance, response capabilities.** Location: Countywide. Issue: Larimer County is vulnerable to a wide variety of public health threats, including disease	**Health and Environment,** OEM, CDPHE, CDC, local hospitals and	TBD	Emergency Preparedness and Response grant, other	High	Ongoing	Annual Implementation. Larimer County has established a robust EPR program and Incident Command System that is closely connected to and remains in contact with OEM. This

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			epidemics and exposure to chemical, biological or radiological agents. Recommendation: Continue to ensure that adequate resources are in place to monitor public health threats and take the necessary steps to prevent or limit the scope and magnitude of threats that could escalate into public health emergencies. Action: Continue to monitor disease outbreaks and remain prepared to provide safe and rapid prophylaxis of residents during large-scale events through the SNS program. Maintain capability to identify and respond to chemical, biological or radiological incidents. Maintain systems for education, notification, and communication with partners.	other healthcare providers, Larimer County Emergency Healthcare Coalition.		grant and general fund monies.			partnership and subsequent efforts of this program have been vital in addressing the current COVID-19 Pandemic. In order to accomplish the project milestones, are in collaboration with hospital partners and serve as a facilitator/chair in the local Healthcare coalitions.
LC-8	Goals 1,2 Objectives 3,5	Land Subsidence, Flood and Severe Storm	**Box Elder Stormwater and Drainage Master Plan Implementation.** Location: Countywide. Issue: The Box Elder Stormwater and Drainage Master Plan has been established and needs to be implemented. The Box Elder Basin Regional Stormwater Authority has begun the regional portions of the project. The Larimer County portion of the master plan will follow. Recommendation: Implement the Larimer County portions of the master plan. Action: Larimer County will need to upgrade infrastructure to fully implement the master plan, including increasing flow capacity at county crossings.	**Engineering Department,** Community Development	$5.3 million in county resources and another $14 million from the authority	Larimer County and authority resources. BRIC grant	Medium	Dec 2021	In progress. The Boxelder Basin regional stormwater improvements are mostly completed. The regional flood control facilities are fully completed, and the downstream floodplains now reflect their existence. The Boxelder Authority is dealing with the need to mitigate for groundwater that was exposed in the bottom of the flood control reservoir that either requires a subdrain or a water augmentation plan. The City of Fort Collins also improved downstream bridge crossings on Boxelder Creek along Prospect Road. However, it should be noted that this is only a portion (about one-third) of the total improvements identified in the original stormwater master plan. For example, upgrades to most County road crossings upstream of CR 52 are still needed.
LC-9	Goals 1,2 Objectives 5	Severe Storm, Wildfire	**Vehicle for Severe Storm and Fire Events.** Issue: In severe weather, particularly snowstorms, there are many miles of public	**Red Feather Lakes Volunteer**	$110,000	Red Feather Lakes VFD,	Medium	1 year	Not started. Currently seeking funding.

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			and private roads which will not be cleared. Any emergency response (Law, Fire, EMS) may be delayed for hours or days until roads can be cleared. Many residential roads are not maintained and can be impassable until a contractor can remove snow. Some of these roads are miles long. Recommendation: Obtain a vehicle which is capable of transporting responders and supplies/equipment into a scene, and be capable of removing citizens trapped or in distress when over the road vehicles are not able to make access. Action: Determine vehicle configurations are adaptable to fire and EMS situations that can travel off-road or over snow-closed road. Obtain trailer for such vehicle, if needed, obtain storage location which will be accessible to Red Feather Lakes Fire Protection Members when roads are impassable. Train members on the use operation, use, and driving. Red Feather Lakes Fire would maintain and repair this vehicle. They would also make other agencies aware of this capability and of its availability for situations in their district. We would also make this available for organizations providing essential services for our area. (REA, Verizon, etc.)	**Fire Department,** Crystal Lakes Fire Protection District, Sheriff Office		fund raising, grants.			
LC-10*	Goals 1,2,4,5 Objectives 1,3,5	Flooding	**Larimer County Floodplain Code Update.** The County floodplain regulations under Section 4.2.2 are being updated to better enforce building regulations under the NFIP within regulatory floodplains.	**Engineering Department,** Community Development Department	Staff time	General fund	High	2020-2021	New in 2021.
LC-11*	Goals 1,2 Objectives 3,5	Flooding, erosion, environmental (pollutant discharge)	**Development of Land Disturbance Permit.** Land Disturbance Permit will be developed to provide controls over grading, stockpiling, and other land disturbance activities, particularly within the MS4 permit area and in proximity to waterways.	**Engineering Department,** Natural Resources, Community Development	$27,000 for consultant + staff time	General fund	Medium	Dec. 2021	New in 2021.

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LC-12*	Goals 1,2 Objectives 3,5	Flooding and drainage	**Larimer County Stormwater Design Standards Update.** The County's stormwater design standards last revised in 2006 will be updated to meet current standards per the Mile High Flood District's Urban Storm Drainage Criteria Manual.	**Engineering Department,** Community Development	$85,000	General fund	Medium	Dec. 2021	New in 2021.
LC-13	Goals 1,2 Objectives 5	Flooding	**Larimer County Strategic Plan Improvements.** A selected plan of floodplain and drainage projects will be identified to improve adverse flooding & drainage impacts. These projects may include projects such as upsizing culverts or other crossings, floodplain stabilization, construction of overflow paths, and others.	**Engineering Department,** County Fire Departments, OEM	TBD, project specific	FEMA HMP Grants	Medium	Dec. 2020	New in 2021.
LC-14	Goals 1,2 Objectives 5	Wildfire	**Wildfire Initial Attack module that is All Hazards capable.** Hire six full time wildland firefighters (2 squad Bosses and 4 firefighters) at the Larimer County Sheriff's Office. Supplemented with an additional 4 seasonal firefighters in the summer months funded by grant monies if available. Currently the Initial Attack (IA) Module is solely grant funded and supplemented with on-call firefighters. The IA module has a turnover about every two years as people gain experience and then move to jobs in fire that are not as tenuous, creating a gap in skills and knowledge in the fire program. The on-call firefighter program fluctuates with availability, especially for initial attack. The IA Module's primary work is with County Parks and some Watershed coalitions working on hazardous wildfire fuels reduction and forest health projects. If there is no grant funding available, the IA module would be dissolved and needed mitigation work would not get done. Grant monies are getting harder to obtain. Vision would be to expand to 10 during the summer months funded with grants, allowing for 7-day coverage. Hazardous wildfire fuels reduced to sustain forest health, neighborhoods assessed for	**Larimer County Sheriff's Office,** Emergency Services County Fire Departments, OEM	$275,000	General fund, supplemented by grants if available	High	2021 initiate, ongoing into the future	New in 2021.

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			needed work to increase survivability as well as evacuation route updates						
LC-15	Goals 1,2 Objectives 5	Wildfire, Utility Disruption	**Wildfire Communications Infrastructure Mitigation.** Create an assessment/inventory of communications infrastructure assets in wildfire prone areas of Larimer County and identify mitigation solutions based on risk	**Larimer OEM,** LCSO Emergency Services LETA 911, ARES	$100,000	TBD	Medium	2023	New in 2021.
LC-16	Goals 1,2,3,4 Objectives 1,2,4,5	Flooding: Flash flooding, (debris flow) post-fire flooding, riverine flooding	**River Restoration Projects.** As a result of flooding and wildfires in Larimer County since 2013, efforts still continue to conduct river restoration and subsequently forest restoration work for our watersheds. This effort seeks to identify projects in collaboration with local watershed coalitions including the Coalition for the Poudre River Watershed, the Big Thompson Watershed Coalition, and the Estes Valley Watershed Coalition where river restoration could occur that also minimize flood risk and impacts. This also includes outreach and education efforts to involve landowners and the public in understanding risk and being engaged in mitigation efforts	**Larimer OEM** BTWC, EVWC, CPRW, NoCo Fireshed Network	TBD, project specific	USFS, CSFS, CWCB, DOLA	High	2025	New in 2021.
LC-17	Goals 1,2,3,4 Objectives 1,4,5	Wildfire Risk (evacuation)	**Ingress & Egress Mapping and Solution Implementation.** There are many communities in Larimer County that have a single point of ingress and egress for the community, and many of these are in wildfire-prone communities. This project would be conducted in partnership with the LCSO to map these communities and subsequently identify and implement potential solutions to increase egress for residents.	**LCSO**, Larimer OEM LETA	TBD, project specific	TBD	High	2023	New in 2021.
LC-18	Goals 1,2,3 Objectives 4,5	Biological contagion	**Point of Distribution (POD) Planning.** The 2020 COVID-19 crisis has emphasized the need for more robust POD planning, especially when the entirety of the community may be in need of vaccination to minimize spread of disease. This type of effort requires a lot of collaboration between multiple	**Health and Environment** Larimer OEM, CDPHE, Hospital systems, CSU, Health District	TBD	CDPHE, CDC	High	2021	New in 2021.

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			different agencies. This project would be to develop a comprehensive County-wide POD plan.						
LC-19	Goals 1,2,3 Objectives 4,5	Biological contagion	**Pandemic Plan.** The 2020 COVID-19 pandemic has illuminated the fact that much of the information and procedures outlined in the current Larimer County pandemic plan are outdated or are no longer feasible. This project would be to conduct a complete overhaul and re-development of the Larimer County Pandemic plan.	**LCDHE** Larimer OEM, LCSO, Hospital systems, Health District, CSU, CDPHE	TBD	CDPHE, CDC	High	2021	New in 2021.
LC-20	Goals 1,2,3 Objectives 4,5	Communication failure (Wildfire, Flood scenarios)	**HAM Radio Capacity Expansion.** In many of our rural unincorporated communities, communications infrastructure is very limited due to geography. Additionally, in many of our disasters, communications have broken down as a result of other systems failing (i.e. internet, cell, landline) but radio always tends to be an effective backup. We would like to work with local partners like the Amateur Radio Emergency Services and our LCSO office to implement HAM radio infrastructure at local fire districts in rural areas, to improve HAM radio infrastructure as needed to ensure connectivity and functionality, and to help train local citizens to be HAM radio operators so we have capacity within the mountain communities themselves to help assist with communications efforts.	**Larimer County OEM,** ARES, LCSO	$50,000, project specific	EMPG	High	2025	New in 2021.
LC-21	Goals 1,2,3 Objectives 4,5	Wildfire	**Big Thompson Watershed Forestry and Fuels Management.** Reducing high fuel loads in critical forested catchments in the Big Thompson Watershed, downstream of Olympus Dam. Collaborative planning and implementation of forest resilience/fuels reductions projects to reduce the negative impacts of wildfires. BTWC will work with partners, private landowners, funders, private contractors and volunteers to thin forests and manage fuels for up to 50 acres of high priority forests per year over the next 5 years.	**Big Thompson Watershed Coalition,** CPRW, EVWC, USFS, Larimer Co OEM, Larimer Co Sheriff, LFRA, CSFS, Northern Water, City of	$150,000 per year	CSFS, Northern Water, City of Fort Collins, CWCB, Peaks to People, other grants/municipal and water utilities investment	High	Goal of 50 acres set for every year over the next 5 years	New in 2021. Related to Action LC-3.

ID	Related Goal(s)	Hazard(s) Mitigated	Description	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status and Implementation Notes
			Prioritizing the communities of Cedar Park/Storm Mountain and Glen Haven. Life, property, and water resource threatening wildfire.	Fort Collins, other partners					
LC-22	Goals 1,2,3,4 Objectives 1,2,4,5	Wildfire	**Big Thompson Forest Resilience and Wildfire Preparedness Outreach.** No Co Fireshed Network and other local collaborative networks are aiming to increase the consistency and accuracy of information sharing around forest health, resilience, management, and community preparedness for wildfire while expanding partnerships and capacity-leveraging across public-private sectors to increase the scale and pace of forest management and wildfire fuel reduction. Watershed Coalitions provide facilitation and communication between resource management partners and local communities within the watershed through one-on-one engagement opportunities, relationship building, and other resources that encourage on-the-ground participation. BTWC is developing its forestry program, emphasizing community outreach on forest health and wildfire fuel reduction through annual in-person and remote engagement opportunities, project partnership opportunities, and hard-copy resource distribution.	**Big Thompson Watershed Coalition (and other Coalitions)** USFS, CSFS, LFRA, CPRW, EVWC, and other partners as described in other forestry project submission	$20,000 per year	CWCB, USFS	High	Ongoing over the next 5 years	New in 2021.
LC-23	Goals 1,2,3,4 Objectives 1,2,4,5	Wildfire, Post Fire Flooding/ Erosion/ Damage	**NoCo Fireshed Collaborative - Stakeholder Planning, Engagement, & Implementation**. To mitigate against future high-intensity wildfires that impact communities and watershed resources, stakeholders (federal, state, local agencies, local nonprofits, and community organizations have been coordinating and planning landscape scale, cross-boundary forest management projects. These efforts are primarily geared to increasing the pace and scale of wildfire mitigation using prescribed fire. Additionally,	**CSU-CFRI,** CPRW, USFS-ARP, USFS-Rocky Mtn Research Station, The Nature Conservancy, Forest Stewards Guild, other watershed	$200,000+	USFS, other grants	High	10 years	New in 2021.

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			this effort incorporates significant community outreach and engagement around these issues. In Larimer County, there are several implementation projects in various stages of planning/implementation, including Magic Feath Collaborative Burn, North Rim Rd, & South Fork/Jack's Gulch.	coalitions, other community groups					
LC-24	Goals 1,2,3,4,5 Objectives 1,3,4,5	Wildfire	**Long Term Wildfire Mitigation Strategy.** Documented in the Glen Haven VFD Community Wildfire Preparation Plan/Firewise Risk Assessment. This strategy is integrated with mitigation plans on public land by the USFS. It includes creation of fuel reduction zones, mitigation of escape routes, and property defensible space. Larimer County Sheriff's Office Emergency Services is assisting us with execution of this plan by sending a crew to perform mitigation work in Sept. and may continue to do so in the future. The remaining work will be conducted using volunteer labor.	**Glen Haven Area VFD,** Larimer County Sheriff's Office	TBD, project specific	Fireshed collaborative partners, CSFS, USFS, NRCS	High	2025	New in 2021.
LC-25	Goals 1,2,3,4,5 Objectives 3,4,5	Flood, Landslide/ Rockslide	**Wildfire Recovery and Restoration.** Larimer County has experienced multiple large wildfires in the last decade. The largest wildfire in County history occurred in August 2020 burning over 200,000 acres of USFS lands, Rocky Mountain National Park and county/private lands. This mitigation action is to assist in mitigating against future flooding, debris flows, and sediment flows from the burn scar. Values at risk include private residences, businesses, county and state critical infrastructure, roads and bridges.	**Larimer OEM**, USFS-ARP, CSU, CPRW, State of CO	$1,000,000	General Fund, BRIC, FEMA, CO Water Conservation Board, Division of Water Resources, other grants	High	2023	New in 2021
LC-26	Goals 1,2,3,4,5 Objectives 3,5	Drought, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Public Health	**Implementation of Climate Smart Larimer Framework.** Climate change will continue to have impacts on our community and environment into the future and will exacerbate hazards and the risks associated with them (including such things as catastrophic wildfire potential, drought, infectious disease, severe storms, etc). Larimer	**Larimer County**, Fort Collins, CSU	TBD	TBD	Medium	2022	New in 2021

ID	Related Goal(s)	Hazard(s) Mitigated	Description	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status and Implementation Notes
			County, along with several partners have drafted a framework to address climate change and have outlined different recommendations for strategies Larimer County can take for climate change mitigation and adaptation. Reduction of or adaptation to long-term climate change impacts including catastrophic wildfire potential, extreme heat conditions for the public, increased flood potential, etc. and the associated social, environmental, and economic impacts						
LC-27	Goals 2,3,5 Objectives 3,4,5	Wildfire, Flood	**Cameron Peak Wildfire Recovery and Mitigation.** Coordinate with LCSO, USFS, and other partners to identify and implement post-fire recovery and post-fire flooding mitigation projects as a result of the Cameron Peak Wildfire.	**Larimer OEM**	Unknown	HMGP, BRIC	High	2020-2021	New in 2021. This project is related to LC-25 above, but is specific to the more recent Cameron Peak fire and is more extensive due to the size of that fire.
LC-28	1, 3, 4	Dam Inundation	**Dam Non-failure Inundation Mapping to further identify flood risk and inform mitigation and response activities.** In 2020 the Colorado Division of Water Resources Dam Safety Branch was working to map non-failure inundation below 40 high hazard dams in Larimer County. The mapping represents where the potential areas of flooding where outlet capacity exceeds the downstream channel capacity. The mapping can be used to understand downstream flood risk by local emergency managers and planners.	**CO DWR Dam Safety Branch, Larimer County OEM,** City of Fort Collins, City of Loveland	$90,000	CO CWCB, Risk MAP	High	2020-2021	New in 2021. Project funded and in progress with anticipated completion in fall 2021.

7 PLAN IMPLEMENTATION AND MAINTENANCE

DMA Requirement §201.6(c)(4)(ii):
[The plan shall include] (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. *(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.* *(iii) Discussion on how the community will continue public participation in the plan maintenance process.*

Having a solid plan for monitoring, evaluating, and updating the County's mitigation strategy is critical to maintaining its value and success. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This chapter provides an overview of the strategy for plan implementation and maintenance; outlines the method and schedule for monitoring, evaluating, and updating the plan; and explains who will be responsible for maintenance activities and what those responsibilities entail. The chapter also discusses incorporating the plan into other planning mechanisms and how to ensure continued public involvement in mitigation planning.

7.1 Implementation

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. Implementation will be accomplished through the routine actions of monitoring agendas, as well as attending meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and ongoing enforcement of existing policies and vigilant review of programs for coordination and multi-objective opportunities.

Implementation will also be accomplished by adhering to the schedules identified for each mitigation action in Table 6-4 in Section 6 Mitigation Strategy, and through pervasive efforts to network and highlight the multi-objective, win-win benefits of each project to Larimer County and its jurisdictions and stakeholders. These efforts include the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community.

Simultaneously to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the costlier recommended actions. This will include creating and maintaining a bank of ideas on how to meet local match or participation requirements, should grants be pursued; this will help ensure participating jurisdictions are in a position to capitalize on the opportunity when funding becomes available. Funding opportunities to be monitored include special pre- and post-disaster funds, special district budgeted funds, state and federal earmarked funds, and other grant programs, including those that can serve or support multi-objective applications.

7.1.1 Implementation and Maintenance of the 2016 Plan

In general, the County has made considerable progress on the implementation of the plan, and on decreasing the County's vulnerability to hazards. The 2016 Plan included a process for implementation and maintenance of the plan, which was generally followed. The 2016 Plan stated that the Planning Team would conduct a bi-annual review with participating jurisdictions of all mitigation actions included in the 2016 Mitigation Strategy. Over the past five years, the Planning Team has met five times during the County's annual All-Risk Summit with all agencies.

The status of mitigation actions and success stories are captured in Chapter 6. The 2016 Plan also discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. Larimer County's implementation strategy included:

- The Larimer County Office of Emergency Management will be the lead agency for the plan and the follow up. Meetings will occur at least once every six months to check in on mitigation actions and determine next steps.
  - The Planning Team determined that meeting annually was sufficient.
- The Larimer County Office of Emergency Management has standing public meetings with the Board of Commissioners on key projects and will ensure the HMP is reviewed and updated during these meetings.
  - This was accomplished. OEM meets with the BCC quarterly and regularly reviewed status updates on mitigation plan.
- We will update our hazard mitigation codes in the Land Use, Wildfire and Building Code documents.
  - This was accomplished through the formal code review process and approved by the BCC and Land Use Committee.

Additional ways in which the County incorporated information from the 2016 HMP into other plans and processes include:

- The 2016 HMP is referenced in the 2019 Larimer County Comprehensive Plan: "High risk hazard areas (wildfire, flood, geologic, and soils) affect current and future land uses. As part of the comprehensive planning process, questions relating to regulating development in known high hazards areas were vetted to help reduce or minimize impacts on the built environment and reduce the liability to taxpayers who subsidize those who chose to build in hazard-prone areas. The Comprehensive Plan also helps fulfill two land-use related mitigation projects identified in the HMP: 1) A long-range community planning effort to bring together all watershed coalition, governmental and non-governmental plans into one unified planning effort, and 2) an update to the Larimer County Land Use, Wildfire and Building Codes with recommendations to decrease future risk and disaster losses."
- The Larimer Community Resiliency Framework, completed in 2016, references the 2016 HMP as a source of hazards information and recommended mitigation actions.
- The Larimer County Emergency Operations Plan (EOP) was last updated in 2018; hazards and vulnerability information from the HMP was used to inform the EOP update by ensuring processes and procedures were consistent across multiple hazards.
- Local Emergency Managers meet monthly to coordinate and report out on status. All ES agencies meet once a year in an All-Risk Summit. City of FC may have additional info for the CRS requirements.

The jurisdictional annexes include additional information on how they incorporated the 2016 HMP into other planning mechanisms and processes, as well as their plans to continue this integration with the 2021 Plan.

7.1.2 Role of the Planning Team and Floodplain Management Steering Committee in Implementation and Maintenance

With adoption of this plan Larimer County and its participating jurisdictions will be tasked with plan implementation and maintenance. This will be accomplished by keeping the Planning Team and FMSC active throughout the lifecycle of the plan. The participating jurisdictions agree to:

- Act as a forum for hazard mitigation issues,

- Disseminate hazard mitigation ideas and activities to all participants,
- Pursue the implementation of high-priority, low/no-cost recommended actions,
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters,
- Maintain a monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists,
- Monitor and assist in implementation and update of this plan,
- Report on plan progress and recommended changes to the County Commissioners, City/Town Councils, governing boards, and other partners, and
- Inform and solicit input from the public.

Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on the County and jurisdiction websites, in the local newspaper, and on social media. Other Larimer County communities not participating in this plan may nevertheless be integrated into mitigation implementation where possible.

7.2 Plan Maintenance

The Larimer County Hazard Mitigation Plan is a living document that may be adjusted or updated as conditions change, actions progress, or new information becomes available. This section describes the method and schedule the participating jurisdictions will follow for monitoring, evaluating, and updating the Plan over the next five years. Each participating jurisdiction will follow the process and schedule described below, unless they have made modifications to the process and schedule as detailed in that jurisdiction's Annex.

7.2.1 Monitoring

Monitoring refers to tracking the implementation of the plan over time. Larimer County OEM will be responsible for reaching out to lead and supporting agencies identified in the Mitigation Actions table for status on those mitigation actions. OEM will also coordinate with Planning Team and FMSC members at least annually to identify and track any significant changes in their agencies' mitigation efforts.

Larimer County OEM will use the following process to track progress, note changes in vulnerabilities, and consider changes in priorities as a result of project implementation:

- A representative from the responsible entity identified in each mitigation action will be responsible for tracking and reporting to the Planning Team when project status changes. The representative will provide input on whether the project as implemented meets the defined goals and objectives, and is likely to be successful in reducing vulnerabilities.
- If the project does not meet identified goals and objectives, the Planning Team may select alternative projects for implementation.
- Projects that were not ranked high priority but were identified as potential mitigation strategies will be reviewed periodically to determine feasibility of future implementation.
- New mitigation projects identified will require an individual assigned to be responsible for defining the project scope, implementing the project, monitoring success of the project.
- Mitigation activities not identified as actions in this plan will also be tracked to ensure a comprehensive hazard mitigation program, and to assist with future updates.

7.2.2 Evaluation

Evaluating refers to assessing the effectiveness of the plan at achieving its stated purpose and goals. Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan, such as:

- Decreased vulnerability because of implementing recommended actions,
- Increased vulnerability because of failed or ineffective mitigation actions, and/or
- Increased vulnerability because of new development (and/or annexation).

The Planning Team will meet quarterly to evaluate the implementation of the plan and consider any changes in priorities that may be warranted. Larimer County OEM will coordinate with all participating jurisdictions to facilitate an effective maintenance and implementation process. Completed projects will be evaluated to determine how they have reduced vulnerability. Changes will be made to the plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency with established criteria, the time frame, priorities, and/or funding resources.

7.2.3 Updates

The Larimer County Hazard Mitigation Plan will be reviewed and revised at least once every five years in accordance with the DMA 2000 requirements and latest FEMA and DHSEM hazard mitigation planning guidance. Updates to this plan will consider:

- Has the nature or magnitude of hazards affecting the County changed?
- Are there new hazards that have the potential to impact the County?
- Have growth and development changed the County's vulnerabilities?
- Do the identified goals and actions still address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the plan?
- Should additional local resources be committed to address identified hazards?
- The updated plan will document success stories where mitigation efforts have proven effective, as well as areas where mitigation actions were not effective, and will include re-adoption by all participating entities following DHSEM/FEMA approval.

7.3 Integration Into Other Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is the incorporation of the hazard mitigation plan recommendations and their underlying principles into other jurisdictional plans and mechanisms. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. The mitigation plan can be considered as the hub of a wheel with spokes radiating out to other related planning mechanisms that will build from the information and recommendations contained herein. Properly implemented, the HMP should serve as one of the foundational documents of the jurisdictions' emergency management programs, since everything emergency management does should relate back in one way or another to the hazards the jurisdiction faces.

As stated in Section 7.1 above, implementation through existing plans and/or programs is recommended wherever possible. Based on this Plan's capability assessment and progress made on mitigation actions noted in Chapters 5 and 6, the participating jurisdictions continue to implement policies and programs to reduce losses to life and property from natural and human-caused hazards. The Planning Team will be

responsible for integrating the data, goals and objectives, and other elements of this Plan into other plans, as appropriate.

The following sections provide some guidance on how Larimer County may use the updated HMP to inform and improve other plans, procedures, and programs. The jurisdictional annexes include additional information on how they will incorporate the updated HMP into their planning mechanisms and processes.

7.3.1 Comprehensive Plans

Integrating hazard mitigation into the jurisdiction's comprehensive or general plan is considered a best practice by both FEMA and the American Planning Association. The Larimer County Comprehensive Plan was last updated in 2019, and included hazards information from the 2016 HMP, as described in 7.1.1 above. Larimer County OEM will work with the County Planning Department to ensure that hazards data and mitigation goals and objectives inform the next Comprehensive Plan update.

7.3.2 Threat and Hazard Identification and Risk Assessment (THIRA)

Larimer County has completed a County-level Threat and Hazard Identification and Risk Assessment (THIRA). CPG201 "Threat and Hazard Identification and Risk Assessment (THIRA) establishes Step 1 as "Identify the Threats and Hazards of Concern" and lists HIRAs and HMPs as possible sources of threat/hazard information.

The criteria for selecting which Threats/Hazards are "of concern" are defined as:

- Factor #1: Likelihood of a Threat or Hazard Affecting a Community
- Factor #2: The Impacts of a Threat or Hazard

Each natural and human-caused hazard profiled in the HIRA (Section 4) contains a section analyzing the probability of future events, which provides a data-driven answer to Factor #1. Similarly, the vulnerability assessment section of the hazard profiles address what impacts can realistically be expected from both routine and extreme events of each hazard, which specifically addresses Factor #2.

Step 2 of CPG 201 is to "Give the Threats and Hazards Context" by creating a scenario for each hazard of concern, with specifics like time of day, area, and magnitude of the event, which are then used to establish capability targets for each of the 32 core capabilities. All the hazards profiled in the HIRA contain detailed information to ensure the hazard scenarios are plausible. For some hazards, such as flood or earthquake, detailed Hazus modeling runs have been done that can easily be incorporated as THIRA scenarios. Other hazards include details on the most extreme historical events on record that can quickly be updated to modern scenarios.

7.3.3 Response Plans

The Larimer County Emergency Operations Plan (EOP) was last updated in 2018. While the EOP is an all hazards document, it also contains hazard-specific information and concerns. Hazard information from this HMP update will be incorporated into the next EOP update. At a minimum, all high significance hazards identified in this Plan should be addressed in future EOP updates.

Several other operational or functional response plans are also influenced by information contained in the HMP. These plans include but are not limited to:

- Damage Assessment Plan: A review of the vulnerability and estimated losses detailed in the hazard profiles can help identify what areas to initially prioritize following a hazard event. Similarly, a review

of Section 4.2 Asset Summary can help identify what critical facilities need to be assessed following a hazard event.

- Debris Management Plan: HAZUS runs conducted for earthquake and flood scenarios include an estimate of how many tons of debris would likely be generated by those scenarios. These estimates can be used as bounding limits for how much and what type of debris generation is likely to be required, as well as what areas are most likely to see heavy debris generations.
- Evacuation & Sheltering Plan: A review of the vulnerability and estimated losses detailed in the hazard profiles can help identify what areas are more likely to need evacuation in different hazard scenarios. The Community Profile in Section 2 can help identify not only how many people would potentially be impacted by disasters, but how many are likely to need assistance with transportation, special medical or sheltering needs, etc. This review can also help evaluate the impacts of multiple or cascading hazards, so that evacuees are not relocated into an area that puts them at risk from other hazards.

7.3.4 Recovery Plan

The Larimer County Recovery Plan was last updated in 2018. The risk and vulnerability data in the HMP should help inform the pre- and post-disaster recovery planning process, especially by ensuring that the recovery elements of those plans fully consider the dangers posed by other hazards, rather than focusing exclusively on the most recent hazard event. The HMP in turn will be revisited during recovery to help identify opportunities to incorporate mitigation in the recovery and rebuilding process, including maximizing FEMA PA and HMGP funding where applicable.

The FEMA publication "Pre-Disaster Recovery Planning Guide for State Governments" notes:

> *"…much of the research involved in the development of mitigation plans can be used to inform the pre-disaster recovery planning effort.*
>
> *"The pre-disaster recovery planning process will benefit from and build upon hazard mitigation as:*
>
> - *The mitigation planning process identifies local hazards, risks, exposures, and vulnerabilities;*
> - *Implementation of mitigation policies and strategies will reduce the likelihood or degree of disaster-related damage, decreasing demand on resources post-disaster;*
> - *The process will identify potential solutions to future anticipated community problems; and*
> - *Mitigation activities will increase public awareness of the need for disaster preparedness.*
>
> *"Pre-disaster recovery planning efforts also increase resilience by:*
>
> - *Establishing partnerships, organizational structures, communication resources, and access to resources that promote a more rapid and inclusive recovery process;*
> - *Describing how hazard mitigation will underlie all considerations for reinvestment;*
> - *Laying out a process for implementation of activities that will increase resilience; and*
> - *Increasing awareness of resilience as an important consideration in all community activities."*

At the time of this plan update, Larimer County is creating a post-disaster recovery plan for the COVID-19 pandemic and is considering creating one for the Cameron Peak Fire. The information in this HMP will be consulted to help inform those plans.

7.3.5 Resiliency Framework

The terms mitigation and resiliency are often used interchangeably, but while both relate to reducing the impacts of disasters and other stresses, they approach the subject from two different directions. The Larimer Community Resiliency Framework, adopted in 2016, describes this distinction:

> "This Framework is not a hazard mitigation plan. It is not intended to provide an exhaustive review of all the shocks and stresses that might impact the community, but instead is intended to broaden understanding of shocks and stresses and how they have impacts across many aspects of the community."
>
> "[R]esiliency addresses vulnerability arising from both acute shocks and latent stresses. A resilient community is one that thrives in good times and bad. Hence, resiliency planning necessarily addresses a broader array of issues than traditional hazard mitigation planning. For example, hazard mitigation may help reduce the flood exposure of a neighborhood while resiliency planning recognizes that disparate conditions in that neighborhood, whether due to poverty, illness, language barriers, or other underlying factors, create and exacerbate negative outcomes before, during, and after a hazard event occurs."

The Larimer Community Resiliency Framework is currently being updated in a parallel planning process to this HMP update. Information from the 2021 HMP, including hazards data, social vulnerability information, and proposed mitigation activities, are being used to inform that update, and vice-versa.

7.3.6 Continuity of Operations Plans (COOP)

All departments and agencies of Larimer County government are required to maintain a Continuity Of Operations Plan (COOP) that details that agency's critical functions and how they will protect those functions in order to continue to provide essential services during a disaster or interruption. By defining and describing the hazards facing the County, including frequency and severity, the HIRA informs agency COOP plans by giving context to what types of disasters of interruptions are most likely to occur. Critical facilities and assets located in hazard areas in Section 4.2 should be prioritized for COOP planning.

7.3.7 Training and Exercise Plan

Training on hazard mitigation principles and procedures should be included in the County's training and exercise planning. Any training and exercise needs identified in the Capabilities Assessment (Section 5) and Mitigation Strategy (Section 5) should also be included in the County's training and exercise planning.

7.3.8 Public Awareness and Education Programs

The County's ongoing public education and outreach efforts should reflect the hazards and vulnerabilities described in this Plan. In addition to preparing for disasters, public education should include ways in which the public can reduce their vulnerability to natural and human caused hazards. Furthermore, mitigation activities and success stories should be communicated to the public to show the benefits of effective mitigation planning.

7.3.9 Critical Infrastructure Protection Plan

Critical facilities and assets identified in Section 4.2 should be included in Critical Infrastructure Protection Planning (CIPP), with prioritization given to assets located in hazard-prone areas. Hazardous materials facilities in particular should be viewed both as critical assets in need of protection, and as potential hazards in their own right.

7.3.10 Capital Improvements Plan

Many of the mitigation actions listed in the Mitigation Strategy (Section 6.4.2) came from the County's Capital Improvements Plan, and thus have already been identified for funding. Other high-dollar actions listed or identified in the future can also be added to the Capital Improvements Plan to ensure that hazard mitigation projects continue to receive funding. The prioritization of actions listed in Table 6-4, while not binding on capital improvement planning, can be used to inform the prioritization of those actions. Even projects for which the County intends to seek grant funding may also need to be addressed in the Capital Improvements Plan, given that most mitigation grants require significant local matching funds.

7.3.11 Sustainability Plans

Sustainability is a separate area of concern from hazard mitigation, but there are areas where the two fields overlap and influence one another positively or negatively.

Sustainability plans should be reviewed to identify where there may be synergy between sustainability and mitigation/resiliency. For example, sustainability efforts aimed at increasing County's adaptability to climate change can also make the County more resilient to drought and severe weather. Increasing the percentage of food obtained locally could make the County more resilient to supply-chain interruptions or the impacts of disasters in other states. Adding more trees and grass to urban areas to reduce the heat island effect could help mitigate the impact of extreme weather events, as well as reducing flood risk by increasing the amount of permeable surfaces. This may help raise the priority of some sustainability efforts, as well as suggest complimentary mitigation efforts.

It is equally important to identify areas where sustainability efforts may work to reduce the County's resilience to hazards. For example, a sustainability goal of promoting use of public transit and reducing private car ownership could potentially make it harder to evacuate the public during a disaster if public transit is damaged and offline (as was observed during Hurricane Sandy). Similarly, reduced production of solid waste could lead to a reduction in the number of public resources such as dump trucks, which means that in a disaster those resources would not be available for debris removal and similar tasks. The intent of this review is not to say that sustainability goals should not be pursued, but rather to identify areas of concern that should be considered during implementation of these goals. For example, evacuation plans may need to be revised to reflect a larger percentage of families without cars; or contracts may need to be put in place to obtain additional dump trucks in a disaster.

At the time of this plan update, Larimer County has completed the initial draft of the Climate Smart Larimer Framework, which outlines recommendations and strategies for climate change adaptation and mitigation. The current Hazard Mitigation Plan has been drafted in parallel with this framework to ensure that the two plans complement one another, and that strategies and actions align.

7.4 Continued Public Involvement

Continued public involvement is also imperative to the overall success of the Plan's implementation. This updated HMP will be posted on the County's website for reference and can be used to help inform the County's ongoing public education and outreach program, such as the completion of mitigation actions that reduce the community's vulnerability, can be shared with the public through forums like the Local Emergency Planning Committee (LEPC), public meetings, public preparedness and resilience trainings, and through social media. This helps keep the concept of hazard mitigation alive and helps show the public that their government officials are working to keep them safe.

The update process provides an opportunity to publicize success stories from the Plan implementation and seek additional public comment. When the Planning Team reconvenes for the five-year plan update,

they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the plan. The plan maintenance and update process will include continued public and stakeholder involvement and input through participation in designated committee meetings, surveys, web postings, and press releases to local media.

A. TOWN OF BERTHOUD

"Garden Spot of Colorado, where good things grow. A small progressive community which endeavors to provide the quality of life enjoyed by past and present generations while ensuring its position for the future within the dynamic Front Range economic corridor. A town that works together to control its own destiny by being proactive in planning for future growth while preserving and enhancing its rural character."

-- 2014 Berthoud Comprehensive Plan

A.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Berthoud participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section A.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

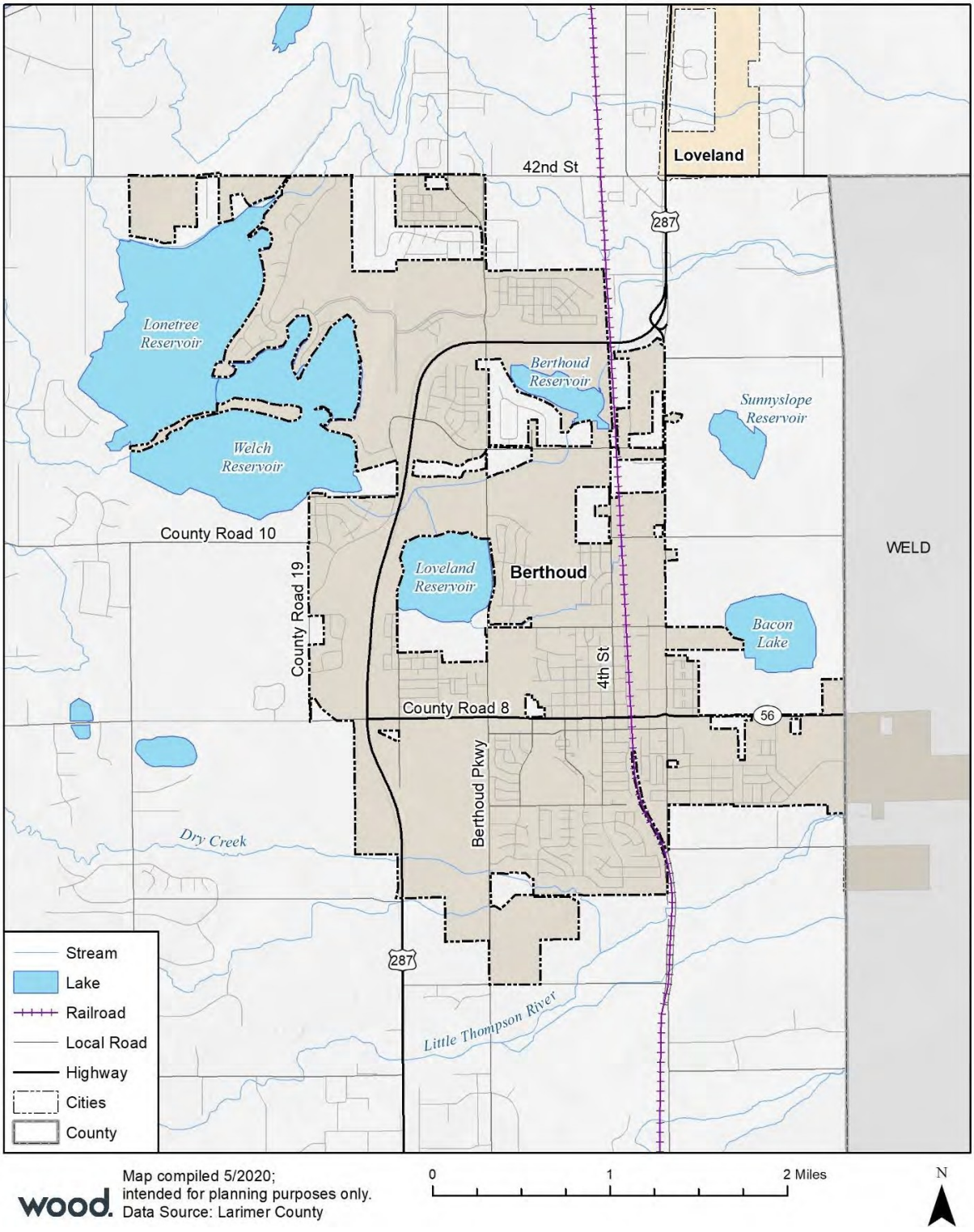
A.2 Community Profile

The Town of Berthoud is located north of the Little Thompson River and west of Interstate 25 between Longmont and Loveland. The Town is located in both Larimer and Weld counties. Berthoud is a small community surrounded by mostly farmland. Rich in agricultural history (wheat was the first crop to be gown, followed by alfalfa and beets), Berthoud quickly became an agricultural center of Larimer County.

Berthoud's Comprehensive Plan states that in the face of future population growth and development, the town will remain a small to medium-sized community featuring a "vibrant mixed use commercial and residential core as well as a state-of-the-art mixed use residential, educational, employment and commercial presence at I-25. Downtown will be surrounded by vibrant strong neighborhoods, and regional business and commercial facilities will be featured along U.S. 287, I-25 and Larimer County Road 17. Outside of Berthoud neighborhoods, the rural pattern of development will be a mix of agricultural, open space and large lot residential property. Parks, open spaces, neighborhoods and outlying areas will be connected by community and regional trails." This vision will guide planning and development decisions as well as future hazard mitigation and risk reduction activities in and around the town.

Figure A-1 shows a map of the Town of Berthoud.

Figure A-1 Map of the Town of Berthoud



A.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Berthoud.

Table A-1 Town of Berthoud Demographic and Social Characteristics, 2014-2018

Town of Berthoud	2014	2018	% Change
Population	5,323	6,518	22.45%
Median Age	42.3	40.3	-4.7%
Total Housing Units	2,167	2,652	22.4%
Housing Occupancy Rate	95.1%	97.1%	2.1%
% of Housing Units with no Vehicles Available	1.90%	3.40%	78.9%
Median Home Value	$230,300	$304,300	32.1%
Unemployment Rate	9.7%	6.3%	-35.1%
Mean Travel Time to Work (minutes)	29.4	27.8	-5.4%
Median Household Income	$90,828	$72,849	-19.8%
Per Capita Income	$28,576	$34,683	21.4%
% of Individuals Below Poverty Level	7.5%	7.4%	-1.3%
% Without Health Insurance	10.3%	10.7%	3.9%
# of Households	2,061	2,576	25.0%
Average Household Size	2.6	2.5	-2.3%
% of Population Over 25 with High School Diploma	96.7%	95.5%	-1.2%
% of Population Over 25 with bachelor's degree or Higher	31.2%	32.1%	2.9%
% with Disability	9.9%	12.4%	25.3%
% Speak English less than "Very Well"	1.0%	0.9%	-10.0%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table A-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Berthoud	County	Colorado
Median Age	40.3	35.9	36.6
Housing Occupancy Rate	97.1%	91.7%	89.8%
% of Housing Units with no Vehicles Available	3.4%	4.1%	5.2%
Median Home Value	$304,300	$336,200	$313,600
Unemployment	6.3%	5.0%	4.7%
Mean Travel Time to Work (minutes)	27.8	23.2	25.5
Median Household Income	$72,849	$67,664	$68,811
Per Capita Income	$34,683	$35,390	$36,415
% of Individuals Below Poverty Level	7.4%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Berthoud	County	Colorado
% Without Health Insurance	10.7%	6.3%	8.1%
Average Household Size	2.5	2.5	2.6
% of Population Over 25 with High School Diploma	95.5%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	32.1%	46.3%	40.1%
% with Disability	12.4%	9.8%	10.6%
% Speak English less than "Very Well"	0.9%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table A-3 Demographics by Race and Sex

Berthoud	Population	%
Total Population	6,518	100%
Male	3,279	50.3%
Female	3,239	49.7%
White, not Hispanic	5,943	91.2%
Hispanic or Latino	516	7.9%
Black	7	0.1%
Asian	0	0.0%
American Indian and Alaska Native	12	0.2%
Native Hawaiian and Other Pacific Islander	19	0.3%
Some other race	122	1.9%
Two or more races	85	1.3%

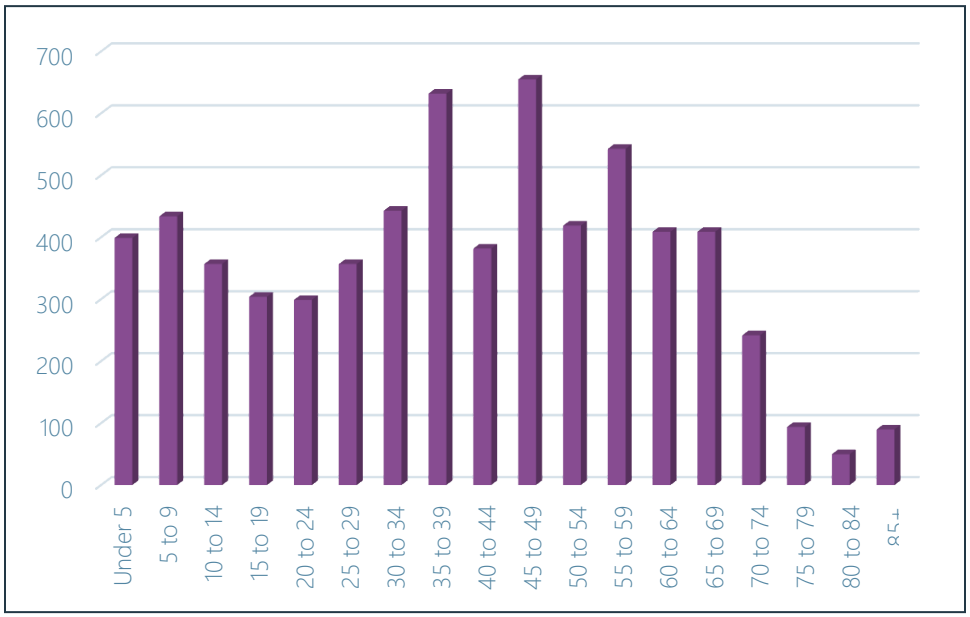
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table A-4 Types and Total Amounts of Housing Units in Berthoud

Type of Housing Units	Total	%
Total housing units	2,652	100%
1-unit detached	2,056	77.5%
1-unit attached	97	3.7%
2 units	15	0.6%
3 or 4 units	115	4.3%
5 to 9 units	52	2.0%
10 to 19 units	76	2.9%
20 or more units	0	0.0%
Mobile home	241	9.1%
Boat, RV, van, etc.	0	0.0%

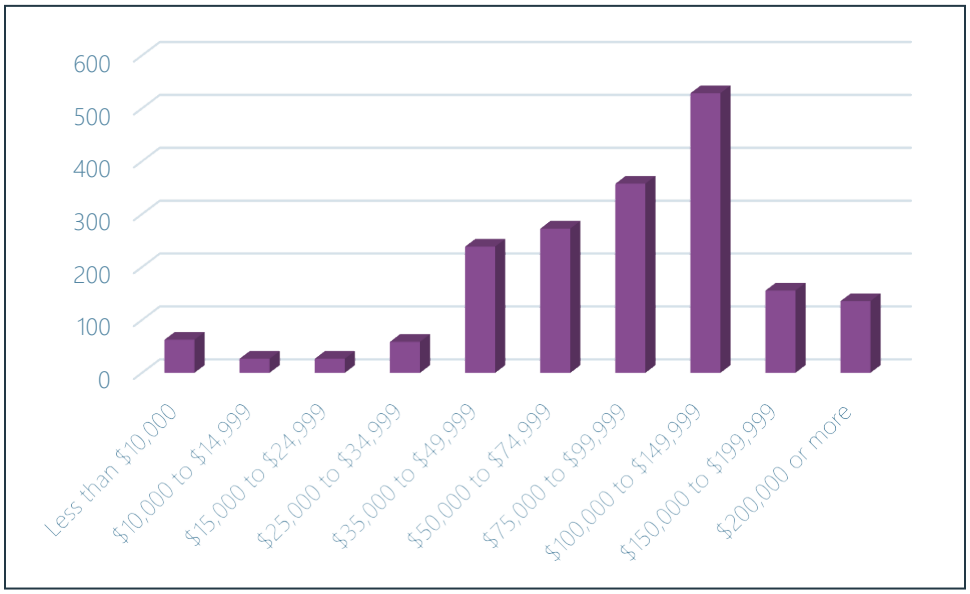
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure A-2 Town of Berthoud Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure A-3 Town of Berthoud Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

A.2.2 Social Vulnerability

Social vulnerability scores for the Town of Berthoud can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Berthoud's overall social vulnerability is above average compared to the rest of Larimer County and Colorado as a whole. In particular, Berthoud's vulnerability ranks high in the household composition and disability vulnerability category. However, the Town's vulnerability ranks low in the minority status and language vulnerability category.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

A.3 Hazard Identification and Risk Assessment

The Town of Berthoud is situated in both Larimer and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the town that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table A-5 Hazard Identification and Risk Assessment Summary for the Town of Berthoud

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Unlikely	Extensive	Critical	Low
Civil Disturbance	Occasional	Limited	Negligible	Low
Dam Inundation	Occasional	Limited	Significant	Medium
Drought	Likely	Extensive	Significant	Medium
Earthquake	Occasional	Significant	Critical	Low
Flood	Highly Likely	Limited	Negligible	Medium
Hazardous Materials	Unlikely	Extensive	Critical	Low
Landslide/Rockslide	Unlikely	Limited	Negligible	Low
Soil Hazards	Occasional	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Negligible	Medium
Tornado	Likely	Extensive	Catastrophic	Medium
Utility Disruption	Likely	Significant	Negligible	Low
Wildfire	Occasional	Significant	Significant	Medium
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

A.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Berthoud, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For the purpose of this plan, only the parts of the city that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

A.4.1 Community Asset Inventory

Table A-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Berthoud. See Section 4.2.2 of the Base Plan for details and methodology.

Table A-6 Total Exposure of Improved Properties within the Town of Berthoud

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	7	9	$2,177,570	$2,177,570	$4,355,140
Commercial	187	218	$64,659,447	$64,659,447	$129,318,894
Exempt	28	161	$49,195,096	$49,195,096	$98,390,192
Industrial	11	11	$10,360,100	$15,540,150	$25,900,250
Mobile Home	9	195	$12,426,982	$6,213,492	$18,640,474
Multiple Unit	19	59	$31,917,795	$31,917,795	$63,835,590
Residential	3,395	3,482	$1,045,359,190	$522,679,591	$1,568,038,781
Total	**3,656**	**4,135**	**$1,216,096,180**	**$692,383,141**	**$1,908,479,321**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

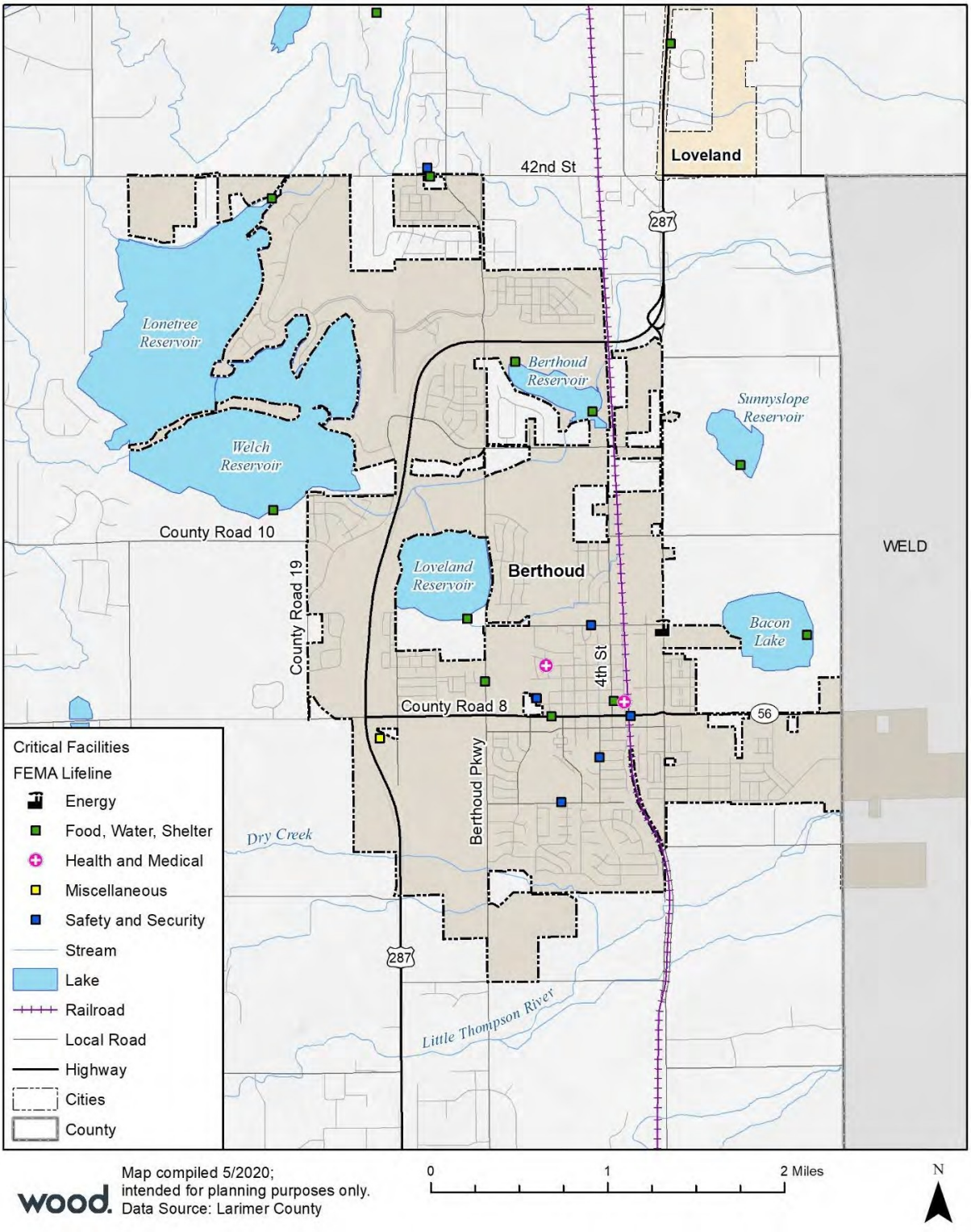
Table A-7 lists summary information about the 16 critical facilities and other community assets identified by the Town as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure A-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table A-7 Town of Berthoud Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Energy	1
Food, Water, Shelter	6
Health and Medical	2
Miscellaneous	1
Safety and Security	6
Total	**16**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure A-4 Town of Berthoud Critical Facilities and Infrastructure



A.4.2 Dam Inundation

Potential dam inundation areas in and around the Town of Berthoud are shown in Figure A-5.

Figure A-5 Dam Inundation Areas for the Town of Berthoud

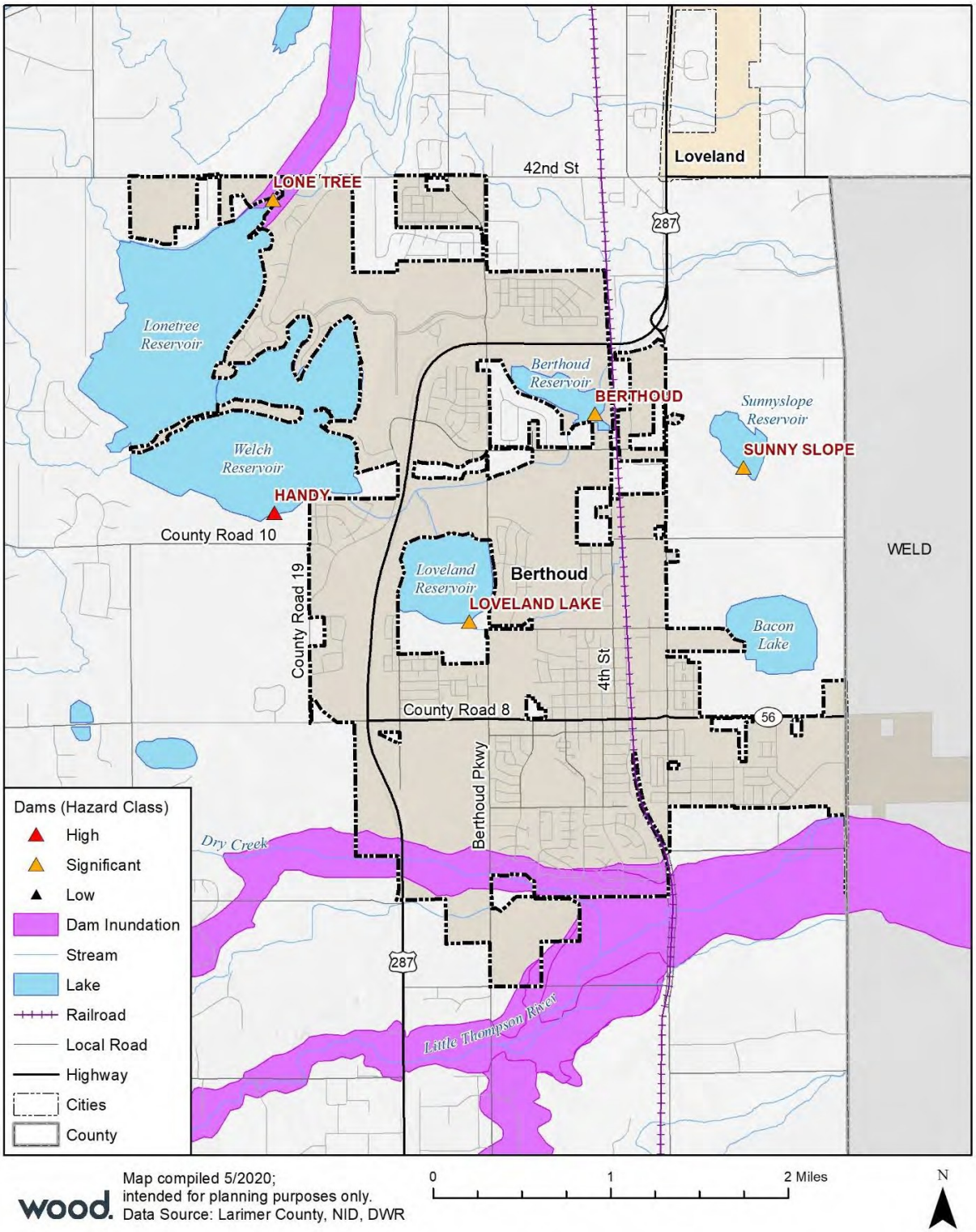


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. Dams upstream of the Town of Berthoud are:

- Dry Creek
- Ish #3 (Main Dam)
- Highland #2 (North)

Table A-8 shows that Berthoud has 110 parcels potentially at risk of dam inundation, valued at $50M; an estimated 275 residents live in those parcels.

Table A-8 Town of Berthoud Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Residential	110	110	$33,361,699	$16,680,845	$50,042,544	275
Total	**110**	**110**	**$33,361,699**	**$16,680,845**	**$50,042,544**	**275**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

None of the critical facilities identified in the Town of Berthoud are located in areas at risk of dam inundation.

Based on the above analysis, the spatial extent and severity of the dam inundation hazard in the Town of Berthoud is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

A.4.3 Flood

FEMA mapped floodplains in and around the Town of Berthoud are shown in Figure A-6.

The Town of Berthoud does not have any parcels in areas of 1% annual chance of flooding. As shown in Table 4-36 in Section 4.3.6 of the Base Plan, there are an estimated 38 parcels and 95 residents located in the 0.2% annual chance flood hazard area, with a total value of $16,503,962 and estimated losses of $4,125,991.

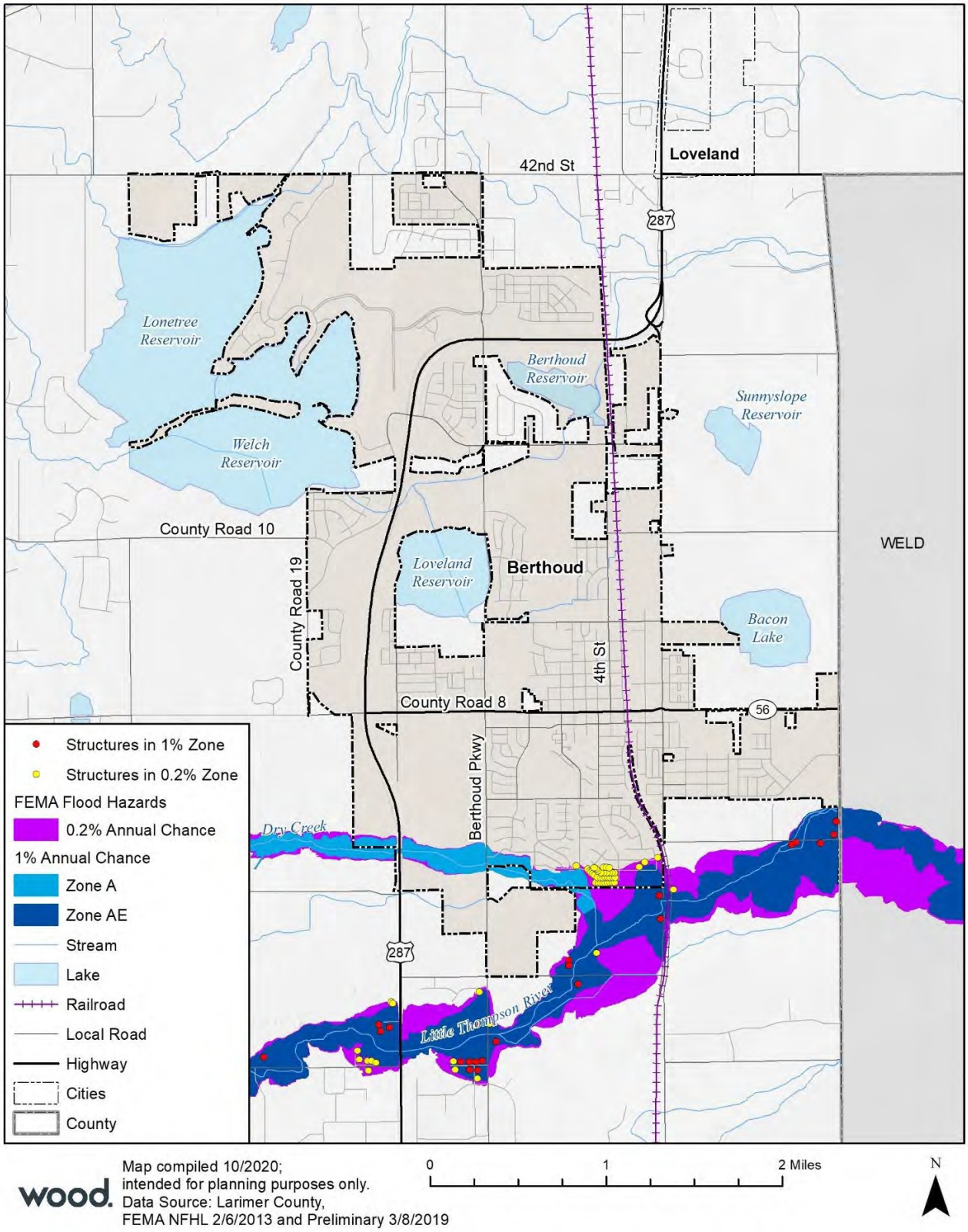
The Town does not have any critical facilities in 1% or the 0.2% annual chance flood hazard areas.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Berthoud is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

National Flood Insurance Program Policy Analysis

The Town of Berthoud has participated in the National Flood Insurance Program (NFIP) since 1978. NFIP insurance data shows that as of January 2021 there are 7 flood insurance policies in force in the Town with $2,128,000 of coverage. There has been only one historical claim for flood losses, for $139,313. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The Town of Berthoud does not participate in the Community Rating System (CRS) program.

Figure A-6 FEMA Special Flood Hazard Areas for the Town of Berthoud



A.4.4 Hazardous Materials Incident

There are no designated hazardous materials routes passing through the Town of Berthoud. However hazardous materials are still shipped through the Town, primarily along US 287 and the rail line. There is one Risk Management Plan (RMP) facility located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes 6 hazardous materials incidents in or near the Town of Berthoud from 1987 through 2019. This averages out to one hazardous materials incident every 5-6 years. Only two of those incidents resulted in injuries, for a total of 6 injuries and no deaths; however as noted in the Base Plan, it is likely that the majority of those injuries came from the physical impacts of the accident that caused the release, rather from exposure to hazardous materials themselves.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Berthoud is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

A.4.5 Landslide/Rockslide

There are no identified areas of landslide or rockslide risk in the Town of Berthoud. The overall significance of this hazard for the Town is Low.

A.4.6 Soil Hazards

No historically undermined areas or areas at risk of land subsidence have been identified in the Town of Berthoud. However significant portions of the Town are at risk of collapsible or expansive soils, as shown in Figure A-7 and Figure A-8.

Table 4-49 in Section 4.3.9 of the Base Plan shows 2,976 parcels and 3,424 buildings at risk to collapsible soils, with a total value of $1,539,195,231. This represents more than 81% of all parcels in the Town. An estimated 7,478 residents are also at risk.

Similarly, Table 4-50 in Section 4.3.9 of the Base Plan shows 2,755 parcels and 3,138 building at risk to expansive soils, with a total value of $1,416,877,810. This represents more than 75% of all parcels in the Town. An estimated 7,163 residents are also at risk.

Figure A-7 Potential Collapsible Soils Areas – Town of Berthoud

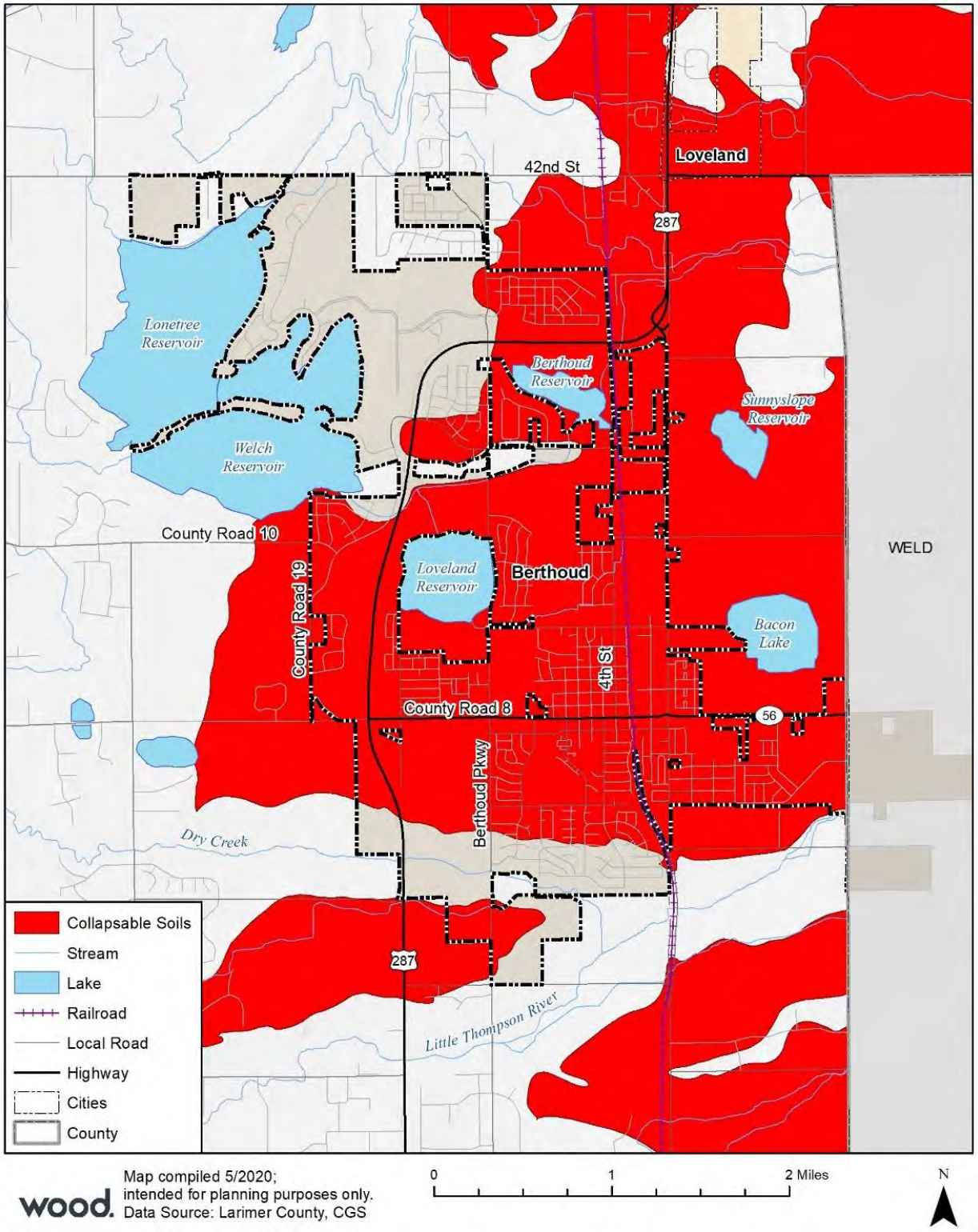
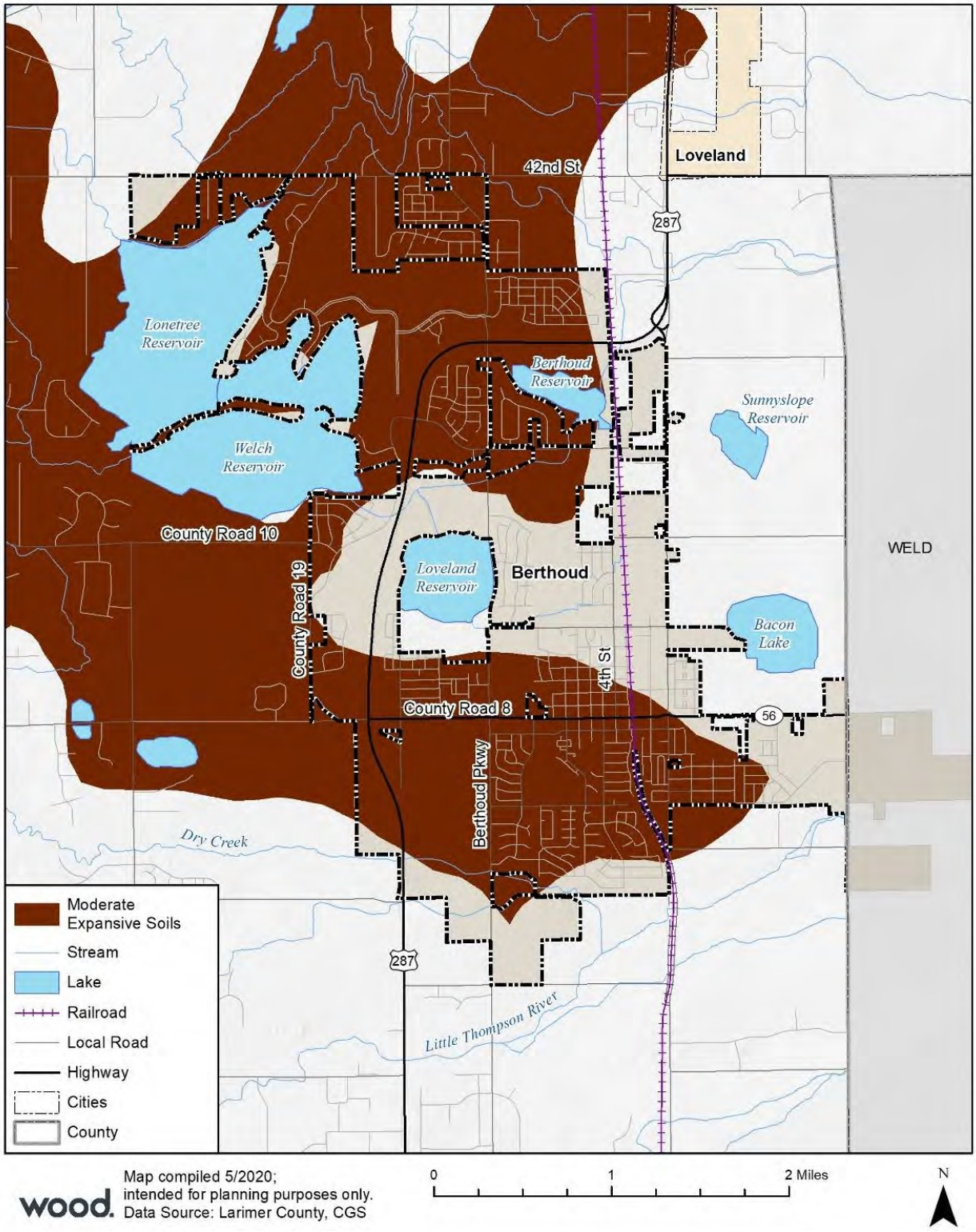


Figure A-8 Potential Expansive Soils Areas – Town of Berthoud



The critical facility exposure analysis shows 15 critical facilities in Berthoud potentially at risk of collapsible soils and 14 potentially at risk of expansive soils, as shown in Table A-9.

Table A-9 Berthoud Critical Facilities with Potential Soil Hazards

FEMA Lifeline	Collapsible Soils	Expansive Soils	Total
Energy	1	0	1
Food, Water, Shelter	5	6	11
Health and Medical	2	2	4
Miscellaneous	1	1	2
Safety and Security	6	5	11
Total	**15**	**14**	**29**

Source: Cascarta

While the Town is at low risk of land subsidence or undermined areas, significant portions of the Town are exposed to expansive or collapsible soils compared to Larimer County as a whole. The overall significance of this hazard for the Town is Low.

A.4.7 Wildfire

The Town of Berthoud has not had a significant history of wildfire activity in or adjacent to the Town, although the Town has felt impacts from wildfires in other areas of the County.

Areas in and around the Town of Berthoud at risk of wildfire, based on CO-WRAP assessment, are shown in Figure A-9.

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town has only 178 parcels and 190 buildings at moderate, high, or highest risk of wildfire, with a total value of $103,883,778. An estimated 435 residents live in these at-risk areas.

The Town has three critical facilities identified at being at risk of wildfires, as shown in Table A-10.

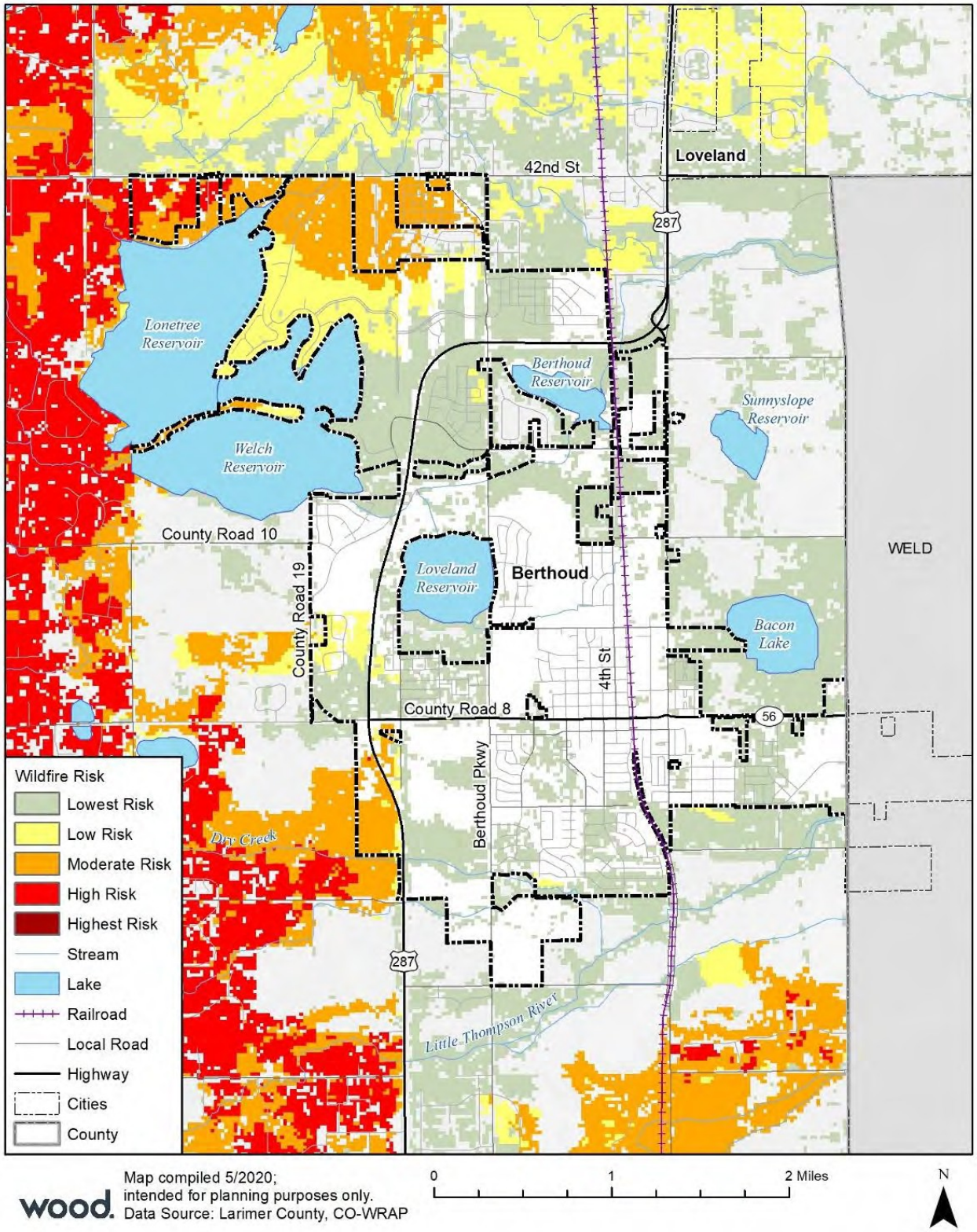
Table A-10 Berthoud Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Miscellaneous			1			**1**
Safety and Security	2					**2**
Total	**2**	**0**	**1**	**0**	**0**	**3**

Source: Cascarta, CO-WRAP

While a relatively low percentage of the Town's total parcels and structures is at direct risk of wildfire, a look at Figure A-9 shows a significant portion of the land immediately west or south of the Town are at moderate or high wildfire risk. The overall significance of this hazard for the Town is Medium.

Figure A-9 Berthoud Wildfire Risk



A.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Town of Berthoud to reduce hazard impacts or that could be used to implement hazard mitigation activities.

A.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table A-11 Town of Berthoud Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/ No	Comments
Comprehensive Plan	Yes	https://www.berthoud.org/home/showdocument?id=50 and a new comp plan coming in 2021
Zoning ordinance	Yes	Municipal Code Section 30-3
Subdivision ordinance	Yes	Municipal Code Section 30-3
Growth management ordinance	Yes	Municipal Code Section 30-2
Floodplain ordinance	Yes	Adopted with 2014 Comp Plan
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Municipal Code section 30-2-119 B, data provided by FEMA
Building codes	Yes	Municipal Code section 30-6-102 and 30-2-123
Fire department ISO rating	Yes	International Building Code 2018 plus amendments
Erosion or sediment control program	Yes	https://berthoudfire.org/about/about/#:~:text=The%20Berthoud%20Fire%20Protection%20District%20received%20a%20Public%20Protection%20Classification,miles%20of%20either%20fire%20station.
Stormwater management program	Yes	Municipal Code Section 30-6-112
Site plan review requirements	Yes	Municipal 30-2-123
Capital improvements plan	Yes	Municipal Code section 30-6-112
Economic development plan	Yes	Municipal Code section 30-6-112
Local emergency operations plan	Yes	
Other special plans	Yes	
Flood insurance study or other engineering study for streams	Yes	
Elevation certificates (for floodplain development)	No	

Source: Town of Berthoud planning team

Table A-12 Town of Berthoud Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Director
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Public Works Director
Planner/engineer/scientist with an understanding of natural hazards	Yes	Planner I
Personnel skilled in GIS	Yes	Planner I
Full time building official	No	Contracted out with Pro Code
Floodplain manager	Yes	Community Development Director

Personnel Resources	Yes/No	Department/Position/Comments
Emergency manager	Yes	Sergeant Jim Anderson
Grant writer	Yes	Dispersed throughout staff
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Planner I
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	
Other key personnel	Yes	Building Technicians

Source: Town of Berthoud planning team

Table A-13 Town of Berthoud Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	Yes	Yes	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	Yes	No	

Source: Town of Berthoud planning team

Table A-14 Town of Berthoud Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	

Source: Town of Berthoud planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Berthoud has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

A.5.2 Opportunities for Enhancement

Based on the capability assessment, Berthoud has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and Town Council on how best to

integrate hazard information and mitigation projects into the Town policies and ongoing duties of the Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

The Town will also explore becoming a StormReady and/or Firewise community.

A.6 Mitigation Strategy

The Town of Berthoud has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had six mitigation actions in the 2016 Plan, and has completed five of them:

- Full Adoption of Updated FEMA Floodplains
- Flood Recovery Mitigation Activities
- Emergency Operations Plan
- Continuity of Operations Plan
- Town of Berthoud Update Snow Removal Plan

The remaining action has been carried over into the 2021 Plan, along with two new actions.

The local planning team identified and prioritized the following mitigation actions for the Town of Berthoud based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Berthoud will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table A-15 Town of Berthoud 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
A1	Goals 1,2,3,4,5 Objectives 1,2,3,4,5	Spring/Summer Storm and Tornado	**Severe Weather Warning System.** Issue: The Town of Berthoud does not have a severe weather warning system. An F3 tornado struck an area south west of the Town of Berthoud in June 2014. Recommendation: To secure funding to contract the design and installation of a severe weather warning system for the Town of Berthoud to include all annexed areas. Action: Contact vendors who design and install severe weather warning systems, obtain funding through a grant or donations and award a bid to complete the project.	**Town of Berthoud** Larimer County Office of Emergency Management, Berthoud Fire Protection District	$219,273	Grants / Donations	Medium	Ongoing	Continue- Not Completed. Residents are encouraged to sign up for LETA.
A2	Goals 1,2 Objectives 3,5	Tornadoes, Wildfire, Flood, Spring/Summer Storm, Earthquake, Soil Hazards	**Creation of Hazard Mapping Database.** Berthoud currently does not have a mapping database dedicated to past hazard events in the area. Benefits: A better understanding of historic disaster events to help predict and plan for future events.	**Town of Berthoud** NOAA, Larimer County GIS	Staff time, minimal cost	Revenues from property and sales tax / Grants	High	Six months	New in 2021
A3	Goals 1,2,4 Objectives 1,2,5	Biological, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazardous Materials, Landslide/Rockslide, Soil Hazards, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Multi-Hazard Public Education Program.** Educate residents on natural hazard threats, impacts, mitigation opportunities, and advanced preparations to make in advance of events. Print materials will be developed and distributed at local government buildings and public libraries. Include the Los Ranchos Citizen Corps Program as part of this effort.	**Town of Berthoud** Larimer County Office of Emergency Management,	TBD	Town budget, grants	Medium	12 months	New in 2021

A.7 Plan Maintenance and Implementation

The Town of Berthoud has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

A.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Berthoud's implementation strategy included:

- The Town, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Board of Trustees.
  - The parties continuously meet to discuss items included in the 2016 HMP and other items as they arise.
- The Town will post information on the website and utilize the marketing and communications firm to get information to citizens and businesses.
  - The Town posted the HMP when it was adopted five years ago, and continuously posts hazard event updates to its website to help make citizens aware.
- The Town has a Comprehensive Master Plan that is continually updated. All actions will be documented or planned in advance. Budgeted items will be reviewed annually.
  - The Town is currently in the process of updating its Comprehensive Plan, and hazard items are being discussed and included.

A.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

One of the Planners will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Planner involved will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Council.

Integration Into Other Planning Mechanisms

The Town of Berthoud will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically:

- Items from the HMP will be incorporated into the Comprehensive Plan.
- Post information on the Town's website to get information to citizens and businesses.

Continued Public Involvement

The Town of Berthoud will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

A.8 Letter of Intent to Participate

Town of Berthoud
807 Mountain Ave
P.O. Box 1229
Berthoud, CO 80513
970.532.2643

December 11, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Tori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Berthoud (Berthoud) is submitting this letter of intent to confirm that the Town of Berthoud has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Berthoud agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The Town of Berthoud understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Christopher Kirk, commit the Town of Berthoud to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 11th day of December, 2018

Chris Kirk
Town Administrator

B. BERTHOUD FIRE PROTECTION DISTRICT

"To Serve, To Care, To Support"

– Mission Statement, Berthoud Fire Protection District

B.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Berthoud Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section B.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

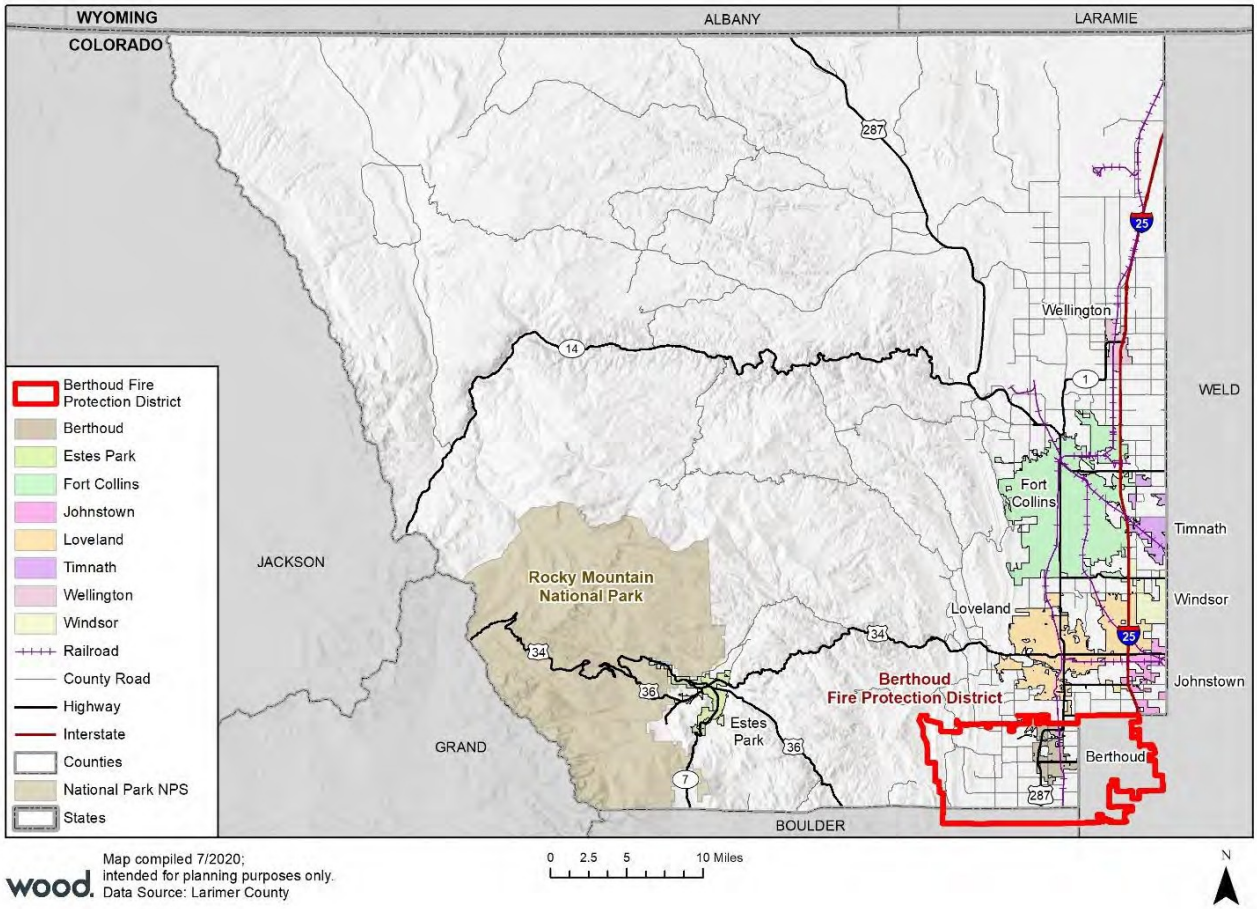
More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

B.2 Community Profile

The Berthoud Fire Protection District is a Special District under Title 32, Colorado Revised Statutes. The District celebrated 125 years of service to the Berthoud community in 2013. The District serves more than 17,500 residents within its 103 square mile area. Fire protection, emergency medical, rescue, hazardous material response and emergency management services are provided to portions of Larimer, Weld and Boulder Counties. The District has maintained a vision to provide the highest quality and cost effective service, community involvement, and excellence as a public service agency to the Town of Berthoud and surrounding area.

Figure B-1 shows a map of the Berthoud Fire Protection District.

Figure B-1 Map of the Berthoud Fire Protection District



Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall social vulnerability ranges from above average in the Town of Berthoud to below average in the rural areas of the District. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

B.3 Hazard Identification and Risk Assessment

Berthoud Fire Protection District covers parts of Larimer, Boulder, and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the district that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table B-1 Hazard Identification and Risk Assessment Summary for the Berthoud Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Significant	Critical	Medium
Civil Disturbance	Likely	Limited	Negligible	Medium
Dam Inundation	Occasional	Limited	Significant	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Significant	Low
Flood	Likely	Significant	Significant	Medium
Hazardous Materials	Likely	Significant	Significant	Medium
Landslide/Rockslide	Unlikely	Limited	Negligible	Low
Soil Hazards	Likely	Limited	Negligible	Low
Spring/Summer Storm	Highly likely	Significant	Significant	High
Tornado	Likely	Limited	Significant	Medium
Utility Disruption	Highly Likely	Significant	Significant	Medium
Wildfire	Likely	Significant	Negligible	High
Winter Storm	Likely	Extensive	Limited	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

B.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Berthoud Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials Incident
- Soil Hazards
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For the purpose of this plan, only the parts of the District that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

B.4.1 Dam Inundation

Areas at risk of dam inundation in the District can be seen in Figure A-5 in Annex A (Town of Berthoud) and Figure 4-5 in the Base Plan. Additional information about assets at risk can be found in Annex A and Section 4.3.3 of the Base Plan.

Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. High Hazard dams in or upstream of the Berthoud Fire Protection District are:

- Carter Lake Dam #1
- Carter Lake Dam #2
- Dry Creek
- Handy
- Ish #3 (Main Dam)

Based on the above analysis, the spatial extent and severity of the dam inundation hazard in the Berthoud FPD is lower than that of Larimer County as a whole. The overall significance of this hazard for the District is Medium.

B.4.2 Flood

FEMA mapped floodplains in and around the Berthoud Fire Protection District can be seen in Figure A-6 in Annex A (Town of Berthoud) and Figure 4-19 in the Base Plan. Additional information about assets at risk can be found in Annex A and Section 4.3.6 in the Base Plan.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Berthoud Fire Protection District is lower than that of Larimer County as a whole. The overall significance of this hazard for the District is Medium.

B.4.3 Landslide/Rockslide

There are no identified areas of landslide or rockslide risk in the Berthoud Fire Protection District. The overall significance of this hazard for the District is Low.

B.4.4 Wildfire

The Berthoud Fire Protection District has not had a significant history of wildfire activity in or adjacent to the Town, although the District has felt impacts from wildfires in other areas of the County.

Areas in and around the District at risk of wildfire, based on CO-WRAP assessment, are shown in Figure A-9 in Annex A (Town of Berthoud) and Figure 4-43 in the Base Plan. A significant portion of the central and western part of the District are at Moderate to High risk of wildfires.

Additional information about assets at risk can be found in Annex A and Section 4.3.13 in the Base Plan.

The overall significance of this hazard for the Town is Medium.

B.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Berthoud Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

B.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table B-2 Berthoud Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Emergency Operations Plan/Larimer County
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	Yes	
Floodplain ordinance	Yes	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Community Wildfire Protection Plan, railway, water treatment plant
Building codes	Yes	
Fire department ISO rating	Yes	ISO 2
Erosion or sediment control program	Yes	
Stormwater management program	Yes	
Site plan review requirements	Yes	Reviewed to insure fire apparatus access and fire protection in accordance with 2018 IFC
Capital improvements plan	Yes	Annually
Economic development plan	Yes	Completed in 2020 by James Vincent Group
Local emergency operations plan	Yes	
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	
Other special plans	No	Continuity of Operations, BNSF Railroad Mitigation, Standards of Cover, Impact Fee Study, Staffing Needs Assessment, Risk Mgmt. Framework

Source: Berthoud Fire Protection District planning team

Table B-3 Berthoud Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/ Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Curt Freese
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Adam Olinger
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	Ben Butterfield, LETA
Full time building official	No	
Floodplain manager	No	
Emergency manager	No	County OEM
Grant writer	No	

GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Ben Butterfield, LETA
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Kimberly Culp

Source: Berthoud Fire Protection District planning team

Table B-4 Berthoud Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	No	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	Yes	Yes	As of 2018
Incur debt through general obligation bonds	Yes	No	
Incur debt through special tax bonds	Yes	Yes	
Incur debt through private activities	Yes	No	
Withhold spending in hazard prone areas	No	No	

Source: Berthoud Fire Protection District planning team

Table B-5 Berthoud Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Annual wildfire meetings w/ residents of west side
Firewise	Yes	
StormReady	No	

Source: Berthoud Fire Protection District planning team

B.5.2 Opportunities for Enhancement

Based on the capability assessment, the District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

The District will explore creating additional contingency plans for specific hazards and updating existing plans where needed.

B.6 Mitigation Strategy

The Berthoud Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had six mitigation actions in the 2016 Plan, and has completed four of them:

- Emergency Operations Plan
- Continuity of Operations Plan

- Burlington Northern Santa Fe Railroad Threat and Risk Assessment and Mitigation Plan.
- Community Wildfire Protection Plan

The remaining two actions have been carried over into the 2021 Plan, along with two new actions. The District has also conducted a wildland fire mitigation project west of Berthoud, consisting of tree cutting and fuel reduction.

The District planning team identified and prioritized the following mitigation actions for the Berthoud Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table B-6 Berthoud Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
B-1	Goals 1,2, Objectives 3,5	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Structural and Wildland Fire, Public Health Emergencies, Hazardous Material Releases, Civil Unrest and Terrorist Attacks	**Standard of Cover.** Review current plan, complete a deployment analysis that determines the distribution and concentration of fixed and mobile resources of the District. The Standard of Cover will include, through research, risk assessment, critical task analysis, agency service level objectives, and distribution and concentration measures. The Standard of Cover will also provide documentation of reliability studies and historical performance and conclude with policy recommendations.	**Berthoud Fire Protection District** National Fire Services Office, Sylvania, Georgia	Staff hours 80 / staff cost $4,556 National Fire Services Office cost $3,500 / total cost $8,056	District revenues from property taxes (gas/oil revenue included) and specific ownership taxes / Grants	Medium	Ongoing	Annual Implementation
B-2	Goals 1,2 Objectives 3,4,5	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Structural and Wildland Fire, Public Health Emergencies, Hazardous Materials Release, Civil Disturbance	**Operational Response Guidelines & Policy**. Contract with Lexipol, LLC of Aliso Viejo, California to work with staff to develop new operating guidelines.	**Berthoud Fire Protection District** Lexipol, LLC, Aliso Viejo, California	Staff hours 160 hours / staff cost $3,884 / Lexipol, LLC cost $3,836 / total cost $7,720	District revenues from property taxes (gas/oil revenue included) and specific ownership taxes / Grants	Medium	2021	In progress
B-3	Goals1,2,5 Objectives 3,5	Biological, Hazmat, Wildfire	**Operational Response Guidelines and Policies.** Update response guidelines and policies for natural disasters, civil unrest, fires, public health emergencies, hazmat, etc. Improving response times, resource allocation, alarm assignments. Benefits: injuries/fatalities, property damage, economic losses	**Berthoud Fire** LCSO Berthoud Squad, Town of Berthoud, Lexipol LLC	Lexipol LLC policy development and online database: $5055. Staff hours $3355	General fund property tax revenue	Medium	Ongoing; target dates for Sept. 2020, Dec. 2020, March 2021	New in 2021.
B-4	Goals1,2,3, 4 Objectives 1,4,5	Wildfire	**Roadside Community Chipping Program Grant.** The District will be submitting an application for grant monies to provide a "dead and down" tree litter chipping day to residents on the western edge of the District, which has been identified in the CWPP as the highest wildfire hazard for the District.	**Berthoud Fire** Anchor Point Wildland Fire Solutions	$5000	Grant/matching funds	High	Spring/ summer 2021	New in 2021

B.7 Plan Maintenance and Implementation

The Berthoud Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the District will continue public participation in the plan maintenance process.

B.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our mitigation actions will be reviewed by staff and the District's Board of Directors on annual basis.
  - This was accomplished after completion of most recent wildfire mitigation actions in October of 2019.
- Changes to our mitigation actions and priorities will be announced publicly and posted on the District's website for public review and comment.
  - This was not accomplished due to conflicting priorities.
- We will continue to identify specific hazards in our community and address them by completing a risk and vulnerability assessment, policy and/or codes will be adopted to address the issues.
  - This was accomplished through data analysis of response/incident occurrences and participation of our fire marshal and staff in technical review committees with Berthoud Planning Department.
- We've completed a Community Wildfire Protection Plan and an R / A on the Burlington Northern Santa Fe Railroad which transverses our community.
  - This was completed in 2019.

Additionally, the District incorporated information from the 2016 HMP into other plans and processes to include:

- Continuity of Operations Plan
- 2018 International Fire Code
- 2nd Update of the 2011 Burlington Santa Fe Railroad Threat & Risk Assessment
- 2nd Update of the Community Wildfire Protection Plan
- Standard of Cover Updated Annually

B.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Fire Chief and Operations Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The [job title] will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Berthoud Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically:

- The District will incorporate the HMP into its annual review of standards of cover, updates to the District Strategic Plan, Wildfire Community Protection Plan, Technical Review Committee participation, and risk reduction education efforts.
- The District will meet annually with the Division of Fire Prevention and Control, representatives from BNSF Railroad, Anchor Point LLC, and the BlueCell to begin a process of incorporating public education and community awareness.
- Post information on the Town's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will continue to be incorporated in capital improvement planning.
- Incorporate information from the HMP into the next update of the Town of Berthoud's comprehensive plan/zoning code/etc.]

Continued Public Involvement

The Berthoud Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

B.8 Letter of Intent to Participate

Berthoud Fire Protection District

LETTER OF INTENT TO PARATICIPATE

September 16, 2014

Larimer County Office of Emergency Management
Lori R. Hodges, Director
300 West Oak Street, 2nd Floor
Fort Collins, CO 80522-1190

Re: "Statement of Intent to Participate" as a participating jurisdiction in Larimer County Office of Emergency Management, Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6 which specifically identify criteria that allow for multi-jurisdictional mitigation plan, the Berthoud Fire Protection District is submitting this letter of intent to confirm that Larimer County Office of Emergency Management has agreed to participate in the Larimer County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Berthoud Fire Protection District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Larimer County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Berthoud Fire Protection District understands that it must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc);
- Documentation of an effective process, to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Box 570 • 275 Mountain Ave. • Berthoud, CO 80513
(970) 532-2264 Phone • (970) 532-4744 Fax • www.berthoudfire.org

C. CRYSTAL LAKES FIRE PROTECTION DISTRICT

C.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Crystal Lakes Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section C.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

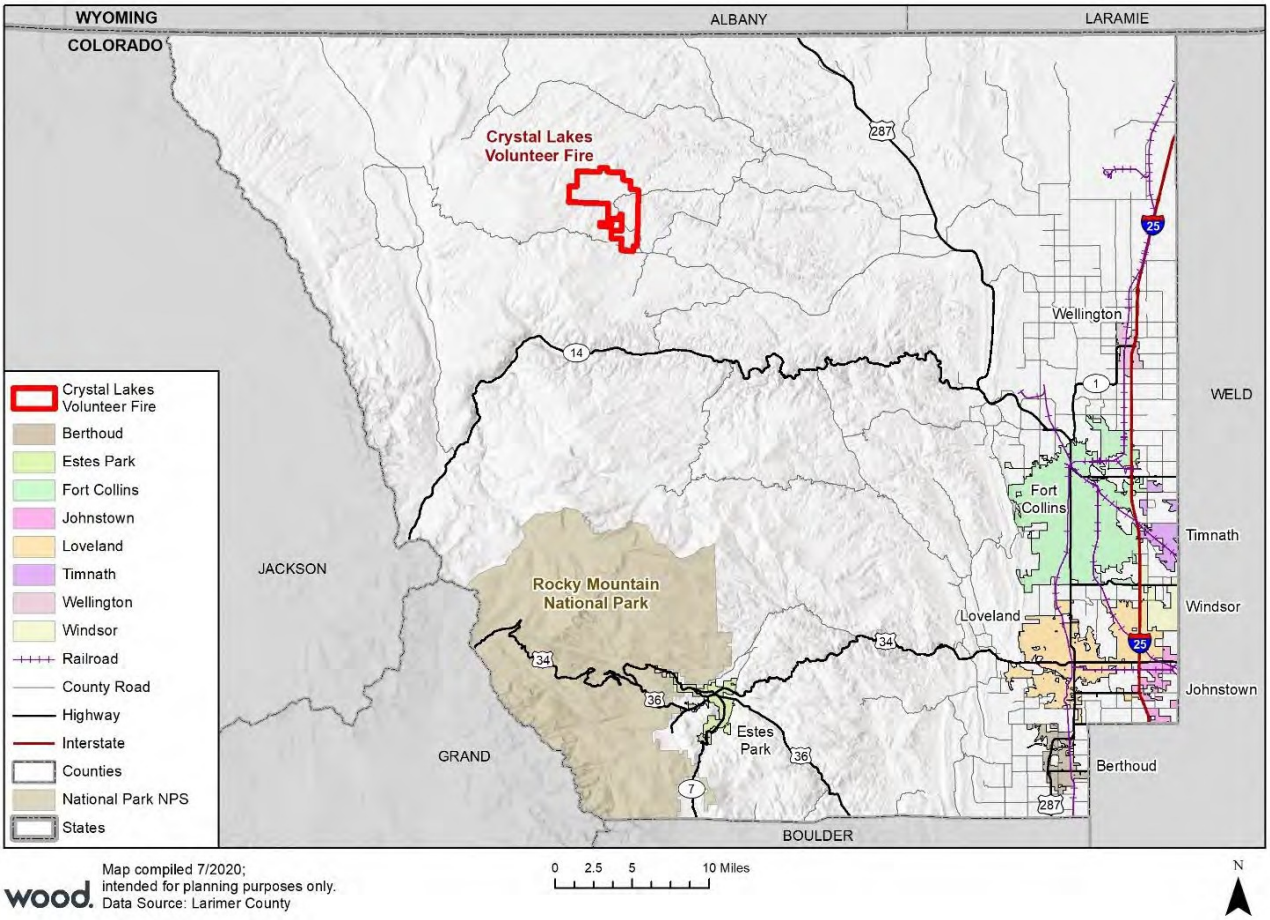
More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

C.2 Community Profile

The Crystal Lakes Fire Protection District (CLFPD) covers an area of approximately 4,800 acres and is surrounded by the Roosevelt National Forest fifty miles northwest of Fort Collins. The vegetation at this elevation (8,000 to 9,500 feet) ranges from grassy meadows to stands of aspen and pine and there are several lakes in the area. The District encompasses more than 600 cabins and residences on 1,700 lots, a community center, a small mountain resort (Beaver Meadows and associated land), and approximately 95 miles of unpaved roads. The only road in and out of the District is North County Road 73C, which is in good condition south of the district, but is often difficult to pass to the north-east (it becomes primarily single-lane, gets very rough, and has several hairpin turns). This results in the community having only one viable evacuation route (except for those driving high-clearance 4WD vehicles). There is a private dirt airstrip which is owned by Hank's Flying Service, Inc., north of Ottawa Way at Tami Road.

Figure C-1 shows a map of the Crystal Lake Fire Protection District.

Figure C-1 Map of the Crystal Lakes Fire Protection District



The fire district's community partners are Crystal Lakes Water & Sewer Association and Crystal Lakes Road & Recreation Association. Water & Sewer handles the Water Mitigation Plan for the area, maintaining several man-made lakes and reservoirs. Only a couple of dozen properties in the district have water and sewer-line service. All other properties are on wells/cisterns and septic systems/vaults. There is one hydrant (gravity-fed) near the community center. The primary source of water for firefighting activities is drafting out of the lakes. The large reservoir called Crystal Lakes (aka: Panhandle Reservoir) has an earthen dam, with approximately four dozen properties in the floodplain area below it. The Road & Recreation Association handles snowplowing and maintenance of the community roads, and has opened a slash-disposal depot for property owner use. They also maintain large tracts of community-owned greenbelts, mitigation of which is ongoing. There is a great deal of fire mitigation that needs to be done in this community, both on the publicly owned greenbelts and the privately owned lots. The Crystal Lakes Road & Recreation Association has been an important partner in the implementation of wildfire mitigation. The pine beetle infestation of recent years has killed off a number of trees, and mitigation efforts are ongoing.

Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall, Crystal Lakes Fire Protection District is characterized by medium-low levels of social vulnerability, however it does rank high in housing and transportation vulnerability. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

C.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table C-1 Hazard Identification and Risk Assessment Summary

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Critical	High
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Occasional	Significant	Significant	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Critical	Medium
Flood	Occasional	Significant	Critical	Medium
Hazardous Materials	Unlikely	Limited	Significant	Low
Landslide/Rockslide	Occasional	Limited	Negligible	Low
Soil Hazards	Occasional	Significant	Significant	Low
Spring/Summer Storm	Likely	Extensive	Significant	Medium
Tornado	Unlikely	Limited	Significant	Low
Utility Disruption	Highly Likely	Significant	Significant	Medium
Wildfire	Likely	Extensive	Critical	High
Winter Storm	Highly Likely	Extensive	Significant	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

C.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Crystal Lake Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Earthquake
- Landslide/Rockslide
- Spring/Summer Storm
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

C.4.1 Civil Disturbance

There is no significant history of civil disturbance risk in the Crystal Lakes Fire Protection District. The overall significance of this hazard for the District is Low.

C.4.2 Dam Inundation

While there are a number of dams in the Crystal Lakes Fire Protection District, only Crystal Lake/Panhandle Reservoir Dam is ranked as High Hazard. The overall significance of this hazard for the District is Medium due to potential property damage and loss of life.

C.4.3 Flood

The Crystal Lakes Fire Protection District has no history of damaging floods, except for road damage due to localized flash and storm-related flooding. There are identified buildings (residences/cabins) in flood areas below Crystal/Panhandle Dam; however, no there are no critical facilities located in identified special flood hazard areas. While localized flash flooding is always possible, the District's flood risk is lower than the County as a whole. The overall significance of this hazard for the District is Medium.

C.4.4 Hazardous Materials Incident

There is no significant history of hazardous materials incidents in the Crystal Lakes Fire Protection District. The overall significance of this hazard for the District is Low.

C.4.5 Soil Hazards

There is no significant history of expansive/collapsible soils or land subsidence in the Crystal Lakes Fire Protection District. The overall significance of this hazard for the District is Low.

C.4.6 Tornado

There is no significant history of tornadoes in the Crystal Lakes Fire Protection District, although thunderstorm wind exceeding 60-70mph are seasonally common. The overall significance of this hazard for the District is Low.

C.4.7 Wildfire

Crystal Lakes has experienced large wildfire events caused by small plane crashes, both of which took place several decades ago. The most recent substantial wildfire took place in September of 2015, burning approximately twenty acres and no structures. The District did not experience any structure or property damage due to the 2020 Cameron Peak Wildfire; however, District residents faced mandatory evacuation for six weeks and local perimeter properties were mitigated by Department firefighters to minimize the fire's potential impact.

As seen in Section 4.3.13 of the Base Plan, most of the District is classified as being at Low risk of wildfires. However, the risk of fires is always present, and the fact that there is only one evacuation route out of the District is of concern. The overall significance of this hazard for the District is High.

C.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Crystal Lakes Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

C.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table C-2 Crystal Lakes Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	No	
Zoning ordinance	No	
Subdivision ordinance	No	
Growth management ordinance	No	
Floodplain ordinance	No	
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	
Building codes	Yes	Larimer County
Fire department ISO rating	Yes	
Erosion or sediment control program	No	
Stormwater management program	No	
Site plan review requirements	Yes	Architectural Control Committee
Capital improvements plan	Yes	CLRRA & CLWSA Reserve Studies, addition of classroom to fire station
Economic development plan	No	
Local emergency operations plan	Yes	Part of Firewise Community
Other special plans	Yes	Emergency Evacuation Plan
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	

Source: Crystal Lakes Fire Protection District planning team

Table C-3 Crystal Lakes Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	CLVFD member
Full time building official	No	
Floodplain manager	No	Response: CLVFD. CLRRA/CLWSA construction/management

Personnel Resources	Yes/No	Department/Position/Comments
Emergency manager	Yes	Association Manager and District Fire Chief
Grant writer	Yes	Department member
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Architectural Control Committee/CLRRA Board
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	CLRRA owns sirens, monitored and operated by CLVFD
Other key personnel: CLFPD Chief	Yes	

Source: Crystal Lakes Fire Protection District planning team

Table C-4 Crystal Lakes Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	Mil levy revenue
Authority to levy taxes for specific purposes	Yes	Yes	CLFPD with voter approval
Fees for water, sewer, gas, or electric services	Potentially	Yes	Association-related
Impact fees for new development	No	No	
Incur debt through general obligation bonds	Yes	Yes	Fire Station Remodel
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Crystal Lakes Fire Protection District planning team

Table C-5 Crystal Lakes Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local citizen groups that communicate hazard risks	Yes	Association Committees and Boards
Firewise	Yes	
StormReady	No	
Series of Department-sponsored seminars	Yes	Presented every summer on topics such as Mitigating your property, when to get out (evacuation), insurance issues

Source: Crystal Lakes Fire Protection District planning team

C.5.2 Opportunities for Enhancement

Based on the capability assessment, Crystal Lakes Fire Protection District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff and leadership on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

C.6 Mitigation Strategy

The Crystal Lakes Fire Protection District has adopted the hazard mitigation goals and objectives developed by the HMPC and described in Section 6.2 of the Base Plan.

The District had five mitigation actions in the 2016 Plan, one of which has been completed:

- Evacuation Routes

The remaining four actions have been carried over into the 2021 Plan, along with two new actions.

Additional mitigation activities completed in cooperation with the Crystal Lakes Road & Recreation Association include:

- Shaded fuel break on east and north development boundaries.
- Thinning of three green belts
- Mitigation of Crystal Lakes Base Camp
- Construction of shaded fuel break on north and west upper boundary of development
- Second mitigation of Crystal Lakes Base Camp—the "KOA" area
- Regularly fire mitigation inspections for property owners

The local planning team identified and prioritized the following mitigation actions for the Crystal Lakes Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table C-6 Crystal Lakes Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
C-1	Goals 1,2,3,4 Objectives 1,5	Flood, Wildfire	Community Outreach. Issue: Property owners in the Crystal Lakes district need education in the most effective fire mitigation steps to take, when and how to safely evacuate in case of flood or fire, how to sign up for LETA, and how to ensure that their insurance is sufficient to allow them to recover from a disaster. Recommendation: Community outreach and education efforts. Action: Hold regular educational meetings covering the subjects of fire mitigation, evacuation, and property insurance. These meetings to take place on multiple occasions during the summer (when more property owners are in the area).	Crystal Lakes Volunteer Fire Department LETA, possibly LCES	$1,500	Crystal Lakes Fire Protection District; possible grants for materials costs.	High	Ongoing	In Progress
C-2	Goals 1,2,3,4 Objectives 1,5	Wildfire	**Fire Mitigation Assessments.** Issue: Property owners in the Crystal Lakes district need education in the most effective fire mitigation steps to take and assistance in determining if they've done all they can to mitigate their property. Recommendation: One-on-one mitigation assessments. Action: Provide fire mitigation assessments to district property owners. At the request of local property owners, teams of two or more members of the fire department will meet with them to tour their property and provide mitigation advice and assessment.	**Crystal Lakes Volunteer Fire Department**, Crystal Lakes Road and Recreation Board	$750	Crystal Lakes Fire Protection District; grants for materials costs.	High	Ongoing	In Progress
C-3	Goals 1,2,3 Objectives 1,3,4,5	Wildfire	**Fire Mitigation of Privately Owned Land.** Issue: Many privately owned areas in the Crystal Lakes community are in serious need of fire mitigation, and funding and resources for mitigation are lacking. The population is older, with half or more of all properties owned by retirees, and many people either lack the ability to mitigate or the money to pay for mitigation work. Recommendation: Property owners need grants and other assistance in their efforts to mitigate their properties. To assist with this effort, the Crystal Lakes Vol. Fire Dept. is in need of resources to identify unmitigated properties vital to the defense of the community and to contact these property owners with the offer of grants or other mitigation assistance needed to encourage them to do necessary mitigation work. Action: Assist property owners in mitigating their properties. The fire district can, if necessary, administer these grants, work to identify the properties most in need of mitigation, and make contact with the property owners to determine (and where possible offer) the resources would encourage mitigation work.	**Crystal Lakes Volunteer Fire Department** Larimer County	$4-5,000	Grants for homeowners' mitigation	High	Ongoing	In Progress

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
C-4	Goals 1,2,3,5 Objectives 5	Wildfire	**Water Storage Cisterns.** Issue: Crystal Lakes is a community with no community-wide water system and no system of hydrants. Fire services must draft water from ponds and lakes, and many areas in the district are more than two miles from the nearest water source. Recommendation: Buy and install water tanks and cisterns on greenbelt (publicly owned) areas or on private properties (with permanent easement agreed to by the property owner) in areas of the district which are significantly remote from water sources. Action: Install cisterns capable of containing 2500+ gallons underground where possible, and in areas where burial is not possible due to rock substrata, install IBC Tanks capable of containing 330 gallons above ground (these would have to be drained for winter to avoid freezing). The Crystal Lakes Volunteer Fire Department would be responsible for maintaining these cisterns and keeping them filled and accessible (year-round for the underground cisterns, during the fire season for the above- ground tanks).	Crystal Lakes Volunteer Fire Department	$11,000	Grants, Crystal Lakes	Medium	TBD	Not Started
C-5	Goals 1,4 Objectives 1,5	Wildfire	**Homeowner mitigation seminars.** CLVFD presents two seminars each summer to educate home/property owners on how to effectively mitigate their properties, and also offers free mitigation inspections to all district residents.	**Crystal Lakes Volunteer Fire Department** Crystal Lakes Road and Recreation Association, Crystal Lakes Fire Protection District	Staff Time	Department resources	High	8/29/ 2020?	New in 2021.
C-6	Goals 2,3,5 Objectives 3,4,5	Wildfire, Flood	**Cameron Peak Wildfire Recovery.** Coordinate with Larimer County, LCSO, USFS, and other partners to identify and implement post-fire recovery and post-fire flooding mitigation projects as a result of the Cameron Peak Wildfire.	Crystal Lakes Volunteer Fire Department	Unknown	HMGP, BRIC	Medium	2020-2021	New in 2021

C.7 Plan Maintenance and Implementation

The Crystal Lakes Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

C.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

As an all-volunteer fire district, we are limited in our ability to work on these kinds of projects. Community education efforts will continue to be undertaken by the fire department officers and monitored by the district board.

- This was accomplished and has become an ongoing program.

The district has an email list for contacting community members and will work with them and the local homeowners' associations in the planning process.

- This has been partially accomplished. The mailing list has been established and is used at least monthly to electronically transmit "Notes from the Fire Station" newsletter. (That frequency was increased to weekly during the Cameron Peak fire incident.) Detailed planning actions have yet to be developed.

We can incorporate hazard mitigation into community education efforts and encourage community participation in mitigation. We have no authority over local ordinances, community association rules, how community money is spent, etc, so we're limited in our planning options.

- This has been accomplished. CLVFD summer seminars have been successful in raising property owners' mitigation awareness and mitigation techniques. The department also conducts property mitigation inspections free-of-charge and suggests mitigation solutions to property owners when their property is inspected.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

- The District completed a long-awaited and needed station remodel program that included a complete rebuild of the apparatus bays, bringing all electrical and plumbing up to code, establishing business office space, a maintenance/work area, an exhaust evacuation system, and a Department responder dressing area

C.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Department Assistant Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Assistant Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action

items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Crystal Lakes Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- Help develop and participate in the construction of fuel breaks on the northeast and southeast boarders of the Crystal Lakes community. (USFS constructed fuel breaks on the south and southwest borders of Crystal Lakes during the Cameron Peak fire incident.)
- The Crystal Lakes VFD Assistant Chief, the designated Crystal Lakes Road and Recreation Association board member, and the designated Crystal Lakes Water and Sewer Association board member will meet annually to discuss items that need to be updated and look at progress of action items.
- Mitigation actions will continue to be incorporated in capital improvement planning, throughout the District.
- CLVFD will continue to incorporate information from the HMP into existing public education & outreach programs.
- CLVFD will continue to post information on the District's website, will continue to utilize the department's newsletter, will continue to utilize local outlets such as NextDoor blogs, and will continue to enlist the assistance of local association publications during appropriate situations and incidents to get information to citizens and businesses.
- Crystal Lakes does not have any major construction projects planned for the foreseeable future, other than private cabin and home constructions. However, existing buildings and facilities will continue to be remodeled and upgraded. HMP information will be included in all future projects.

Continued Public Involvement

The Crystal Lakes Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

C.8 Letter of Intent to Participate

Crystal Lakes Volunteer Fire Department

237 Blackfoot Rd, Red Feather Lakes, CO 80545
(970) 881-3521

December 14, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Crystal Lakes Volunteer Fire Department is submitting this letter of intent to confirm that Crystal Lakes Volunteer Fire Department has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Crystal Lakes Volunteer Fire Department agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The Crystal Lakes Volunteer Fire Department understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Mark Rode, Chief, commit Crystal Lakes Volunteer Fire Department to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 14th day of December 2018

Sincerely,

Mark Rode

Mark Rode, Chief, Crystal Lakes Volunteer Fire Department

D. TOWN OF ESTES PARK

"The Mission of the Town of Estes Park is to provide high-quality, reliable services for the benefit of our citizens, guests and employees, while being good stewards of public resources and our natural setting."

– Estes Park 2020 Strategic Plan

D.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Estes Park participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section D.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

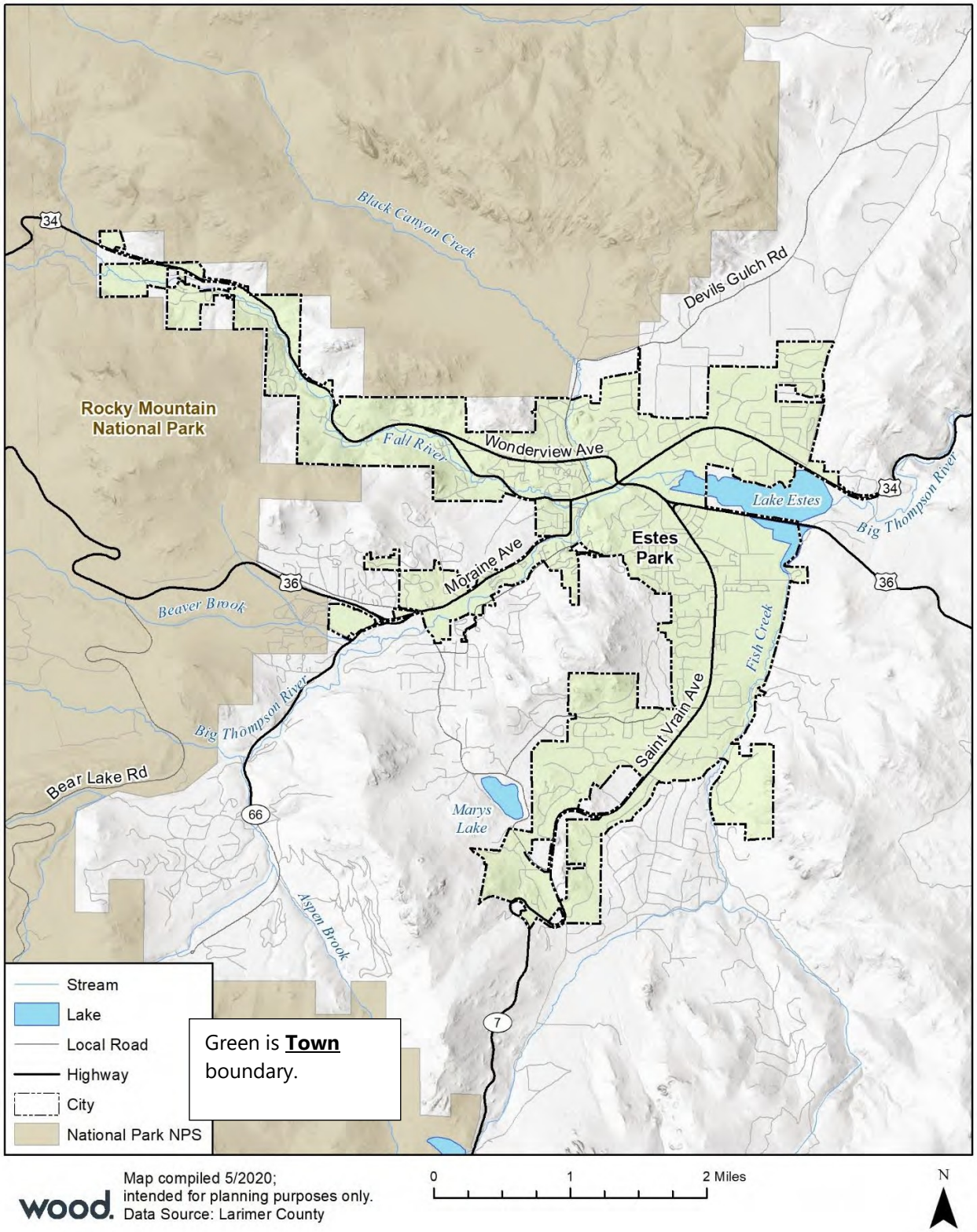
More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

D.2 Community Profile

The Town of Estes Park is located approximately 70 miles north west of Denver and is bordered to the west by Rocky Mountain National Park. Estes Park receives many visitors as the primary gateway community to Rocky Mountain National Park. The town's elevation is 7,522 feet above sea level and it lies along the Big Thompson River and Fall River. Based on the results of a recent Community Livability Survey, four in five residents of Estes Park rated their overall quality of life as excellent or good. Moreover, 77% of residents would be very or somewhat likely to recommend Estes Park as a place to live to someone who asks. Estes Park's overall appearance and overall image along with the Town as a place to live and retire received high ratings by at least four in five residents. Most of the aspects that contribute to community livability were rated positively and were at least similar to national benchmark comparisons. Additionally, Estes Park scores high in terms of Community Engagement. This metric includes emergency preparedness efforts taken by local residents.

Figure D-1 shows a map of the Town of Estes Park.

Figure D-1 Map of the Town of Estes Park



D.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Estes Park.

Table D-1 Town of Estes Park Demographic and Social Characteristics, 2014-2018

Town of Estes Park	2014	2018	% Change
Population	6,022	6,297	4.57%
Median Age	56.8	59.0	3.9%
Total Housing Units	4,227	4,653	10.1%
Housing Occupancy Rate	72.0%	69.0%	-4.2%
% of Housing Units with no Vehicles Available	7.80%	4.60%	-41.0%
Median Home Value	$309,400	$380,800	23.1%
Unemployment Rate	4.4%	5.2%	18.2%
Mean Travel Time to Work (minutes)	17.2	18.9	9.9%
Median Household Income	$56,236	$50,833	-9.6%
Per Capita Income	$36,971	$35,909	-2.9%
% of Individuals Below Poverty Level	9.1%	13.5%	48.4%
% Without Health Insurance	12.7%	12.2%	-3.9%
# of Households	3,044	3,210	5.5%
Average Household Size	2.0	2.0	-1.0%
% of Population Over 25 with High School Diploma	99.2%	96.9%	-2.3%
% of Population Over 25 with bachelor's degree or Higher	44.7%	48.0%	7.4%
% with Disability	13.3%	14.3%	7.5%
% Speak English less than "Very Well"	2.3%	5.5%	139.1%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table D-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Estes Park	County	Colorado
Median Age	59.0	35.9	36.6
Housing Occupancy Rate	69.0%	91.7%	89.8%
% of Housing Units with no Vehicles Available	4.6%	4.1%	5.2%
Median Home Value	$380,800	$336,200	$313,600
Unemployment	5.2%	5.0%	4.7%
Mean Travel Time to Work (minutes)	18.9	23.2	25.5
Median Household Income	$50,833	$67,664	$68,811
Per Capita Income	$35,909	$35,390	$36,415
% of Individuals Below Poverty Level	13.5%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Estes Park	County	Colorado
% Without Health Insurance	12.2%	6.3%	8.1%
Average Household Size	2.0	2.5	2.6
% of Population Over 25 with High School Diploma	96.9%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	48.0%	46.3%	40.1%
% with Disability	14.3%	9.8%	10.6%
% Speak English less than "Very Well"	5.5%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table D-3 Demographics by Race and Sex

Estes Park	Population	%
Total Population	6,297	100%
Male	2,871	45.6%
Female	3,426	54.4%
White, not Hispanic	5,476	87.0%
Hispanic or Latino	731	11.6%
Black	0	0.0%
Asian	14	0.2%
American Indian and Alaska Native	27	0.4%
Native Hawaiian and Other Pacific Islander	10	0.2%
Some other race	6	0.1%
Two or more races	39	0.6%

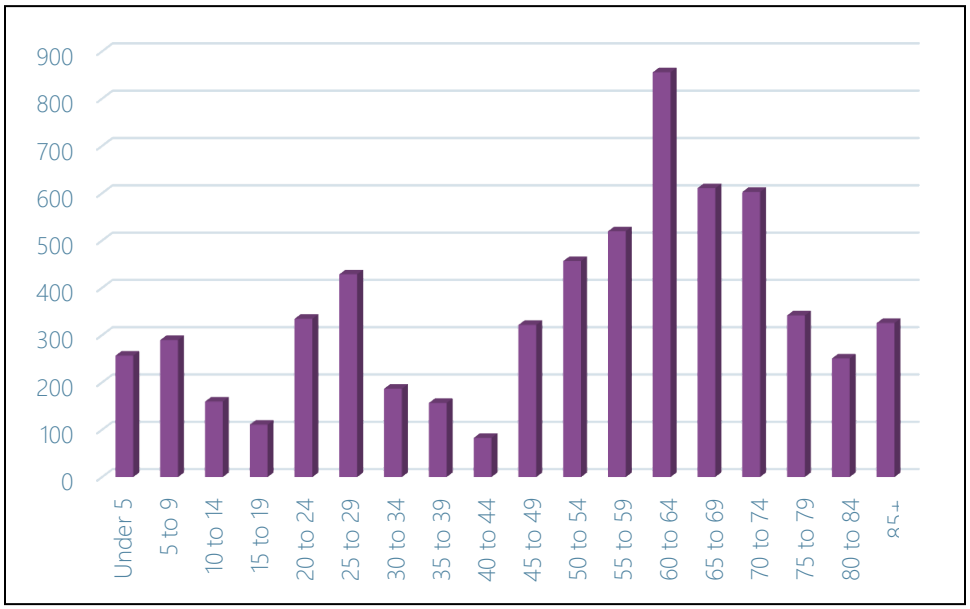
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table D-4 Types and Total Amounts of Housing Units in Estes Park

Type of Housing Units	Total	%
Total housing units	4,653	100%
1-unit detached	2,417	51.9%
1-unit attached	649	13.9%
2 units	265	5.7%
3 or 4 units	484	10.4%
5 to 9 units	437	9.4%
10 to 19 units	263	5.7%
20 or more units	124	2.7%
Mobile home	14	0.3%
Boat, RV, van, etc.	0	0.0%

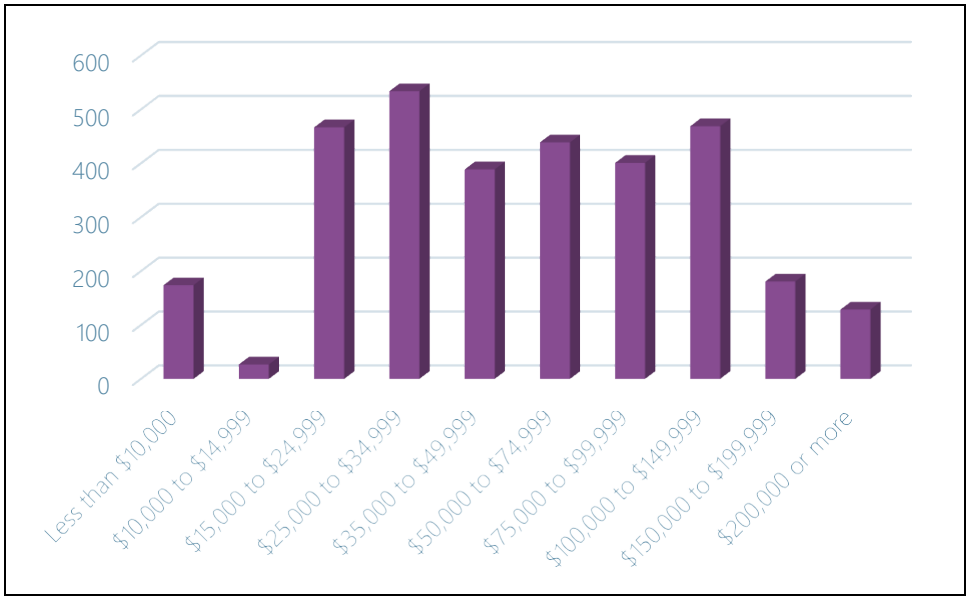
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure D-2 Town of Estes Park Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure D-3 Town of Estes Park Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

D.2.2 Social Vulnerability

Social vulnerability scores for the Town of Estes Park can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Estes Park overall social vulnerability is above average compared to the rest of Larimer County and Colorado as a whole. In particular, Estes Park' ranks high in housing and transportation vulnerability. Estes Park also has a significantly older population compared to the rest of Larimer County. The Town's median age is 59, more than 10 years above that of the County, State, and Nation (35.9, 36.6, and 37.9 respectively). 34% of Estes Park's population is 65 years or older, comapred to 16% for the rest of Larimer County.

Evaluating the individual social vulnerability indicators within the community over time will give local emergency managers, planners, and stakeholders an even clearer picture of why vulnerability to disasters may be higher in the northern region of the town as well as which social vulnerability factors have the largest negative effect on the town and its resiliency.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

D.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table D-5 Hazard Identification and Risk Assessment Summary for the Town of Estes Park

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Significant	Critical	Medium
Civil Disturbance	Unlikely	Significant	Negligible	Low
Dam Inundation	Unlikely	Limited	Significant	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Critical	Medium
Flood	Likely	Significant	Significant	Medium
Hazardous Materials	Unlikely	Limited	Significant	Medium
Landslide/Rockslide	Occasional	Significant	Significant	Medium
Soil Hazards	Unlikely	Limited	Significant	Low
Spring/Summer Storm	Highly Likely	Significant	Critical	High
Tornado	Unlikely	Limited	Critical	Low
Utility Disruption	Highly Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

D.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Estes Park, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Spring/Summer Storm
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

D.4.1 Community Asset Inventory

Table D-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Estes Park. See Section 4.2.2 of the Base Plan for details and methodology.

Table D-6 Total Exposure of Improved Properties within the Town of Estes Park

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Commercial	393	647	$266,130,469	$264,901,018	$531,031,487
Exempt	84	357	$61,282,764	$61,282,764	$122,565,528
Industrial	1	1	$356,000	$534,000	$890,000
Multiple Unit	67	161	$20,642,183	$20,642,183	$41,284,366
Residential	3,529	3,684	$1,243,317,355	$621,658,636	$1,864,975,991
Total	**4,074**	**4,850**	**$1,591,728,771**	**$969,018,601**	**$2,560,747,372**

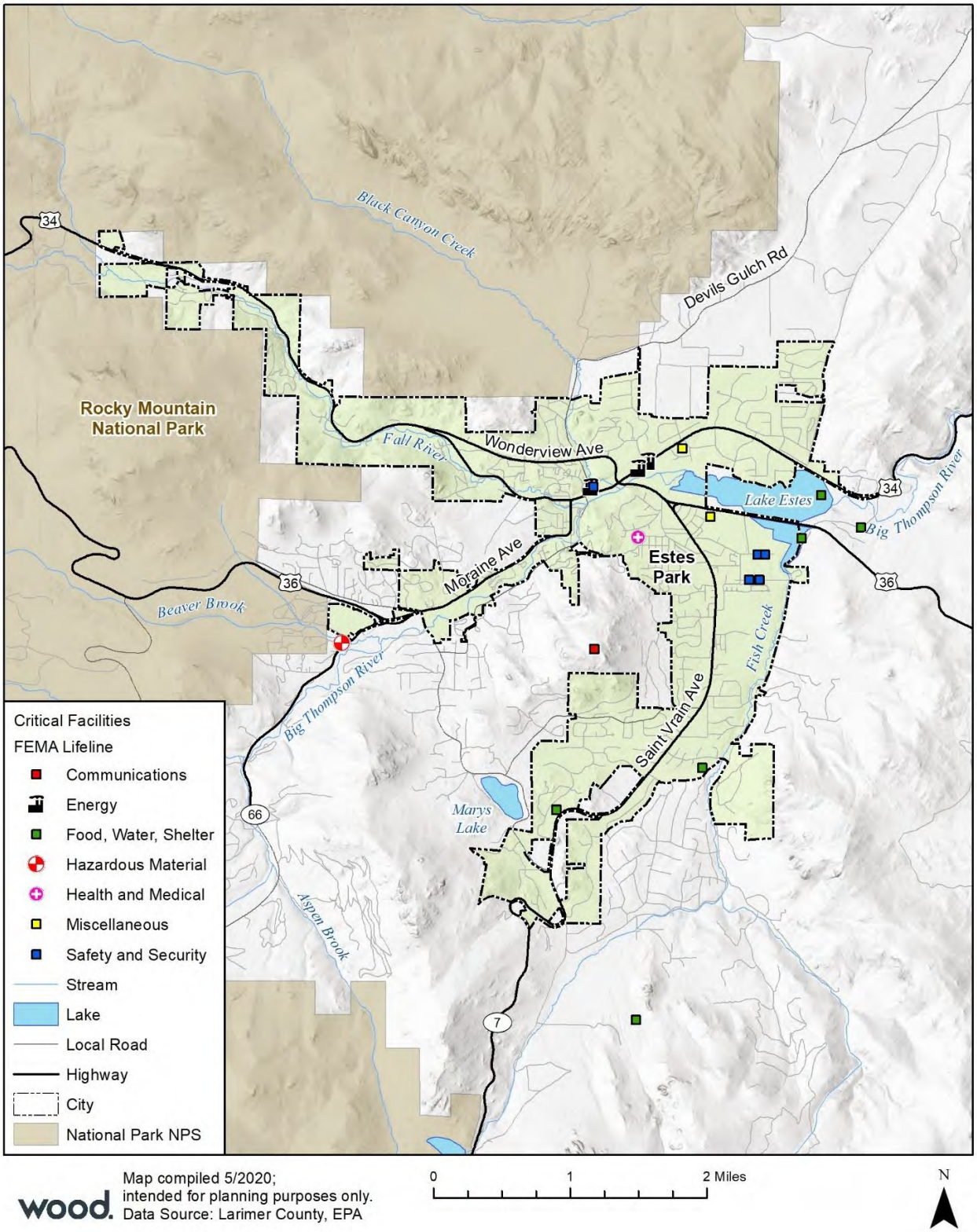
Table D-7 lists summary information about the 21 critical facilities and other community assets identified by the Town as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure D-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table D-7 Town of Estes Park Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Energy	3
Food, Water, Shelter	4
Health and Medical	2
Miscellaneous	2
Safety and Security	10
Total	**21**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure D-4 Town of Estes Park Critical Facilities and Infrastructure



D.4.2 Civil Disturbance

There is no significant history of civil disturbance in Estes Park. The overall significance of this hazard for the Town is Low.

D.4.3 Dam Inundation

Potential dam inundation areas in and around the Town of Estes Park are shown in Figure D-5, where data is available.

Figure D-5 Dam Inundation Areas for the Town of Estes Park

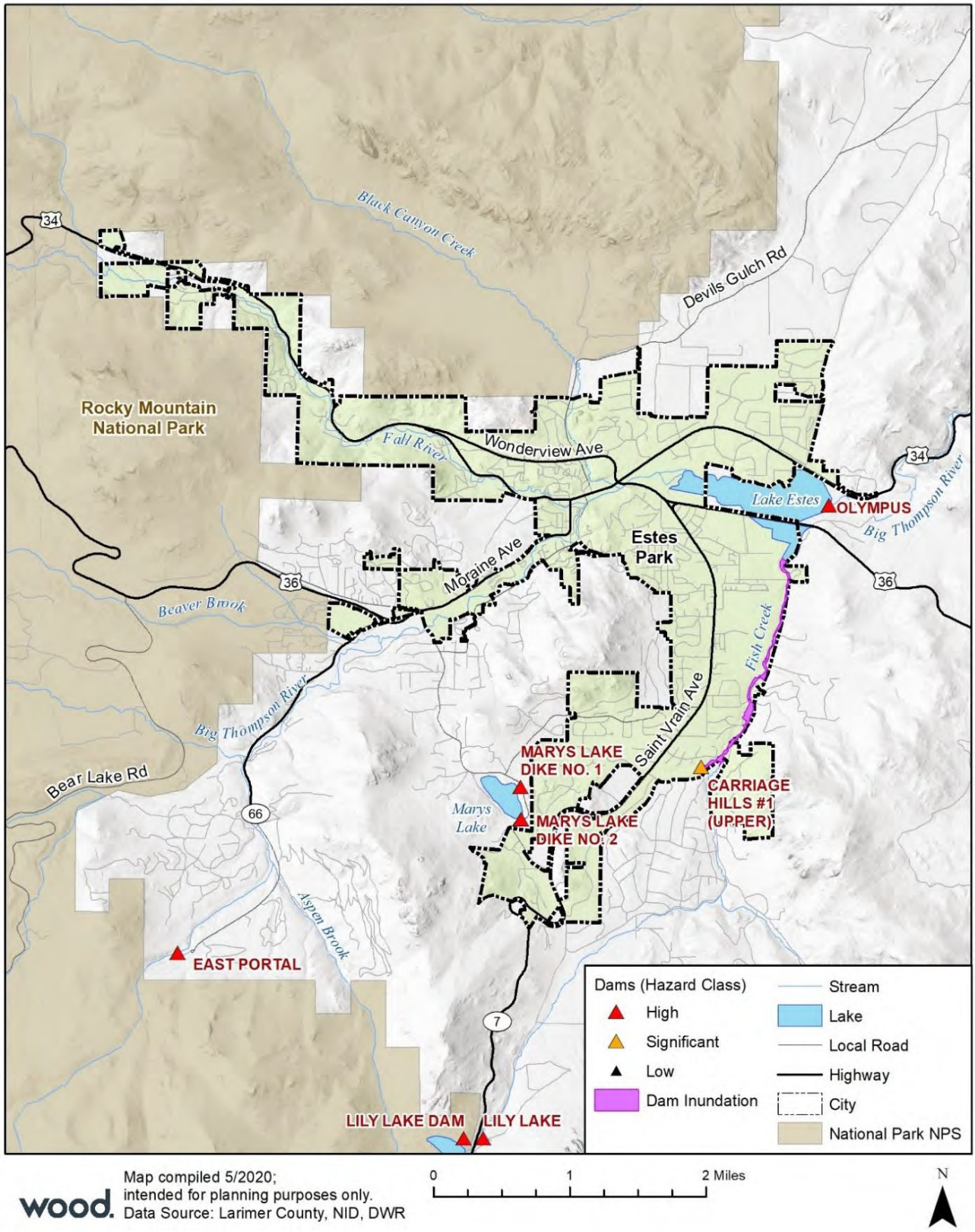


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. The dams upstream of the Town of Estes Park are Carriage Hills #1 (Upper), Mary's Lake, and Lily Lake.

Table D-8 shows that Estes Park has 4 parcels potentially at risk of dam inundation, valued at $1.7M; an estimated 8 residents live in those parcels.

Table D-8 Town of Estes Park Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Residential	4	4	$1,154,771	$577,384	$1,732,155	8
Total	**4**	**4**	**$1,154,771**	**$577,384**	**$1,732,155**	**8**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

One critical facility: food, water, shelter has been identified in the Town of Estes Park in an area at risk of dam inundation.

Based on the above analysis, the spatial extent and potential severity of the dam inundation hazard in the Town of Estes Park is considerably lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Low.

D.4.4 Earthquake

As shown in Figure 4-14 in Section 4.3.5 in the Base Plan, the earthquake risk in Eses Park is slightly higher than that of the municipalities in the eastern part of the County. The overall significance of this hazard for the Town is Medium.

D.4.5 Flood

FEMA mapped floodplains in and around Estes Park are shown in Figure D-6.

As shown in Table 4-34 in Section 4.3.6 of the Base Plan, the Town of Estes Park has 51 parcels, 75 buildings, and 90 residents in areas at 1% annual chance of flooding. Estimated losses from a 1% flood are estimated at $9,949,668; this represents roughly 1% of the Town's estimated total building exposure. Table 4-35 of the Base Plan shows there are an additional 53 parcels, 75 buildings, and 29 residents located in the 0.2% annual chance flood hazard area. Estimated losses from a 0.2% flood are estimated at $12,196,604; this represents an additional 1% of the Town building value.

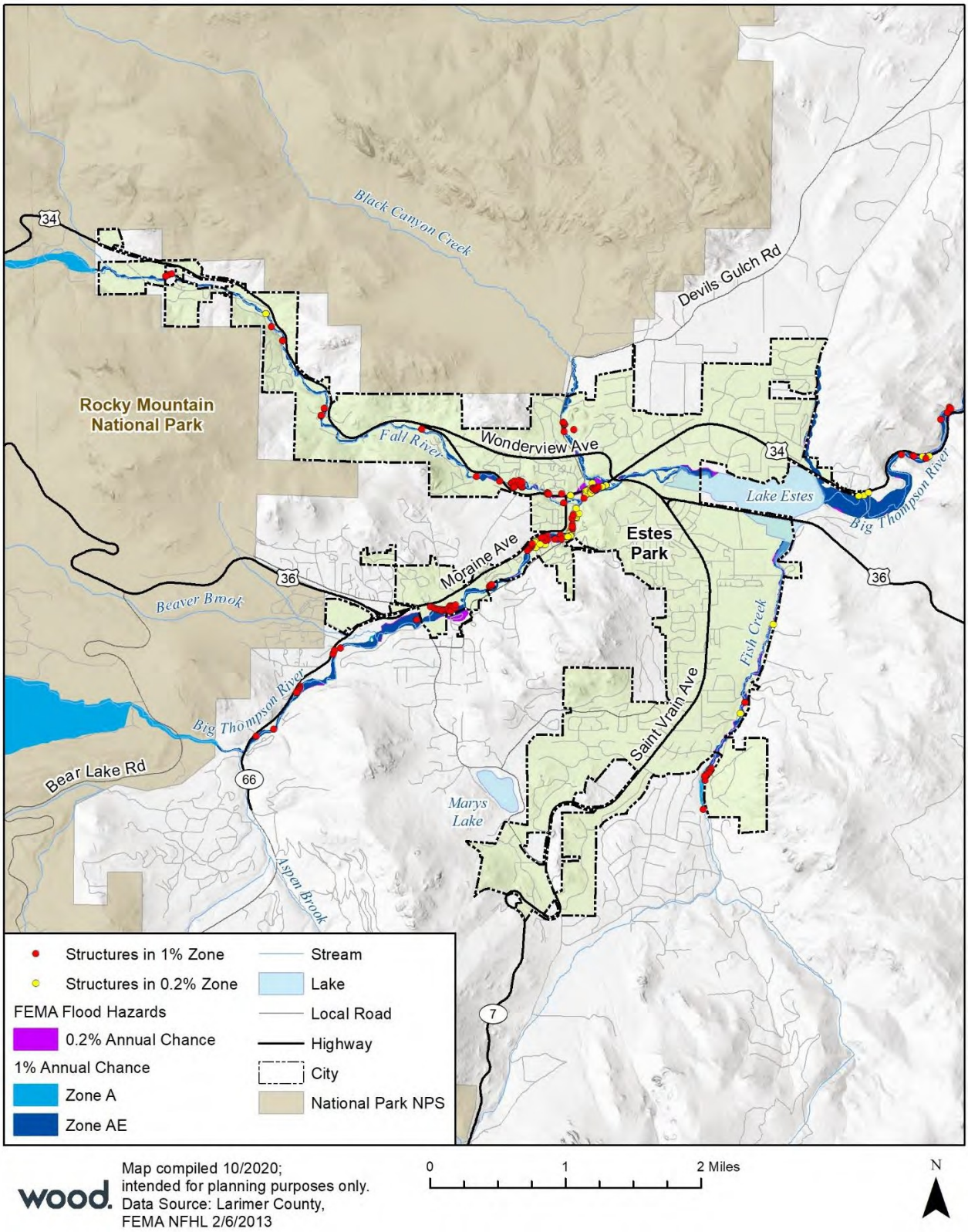
The Town does not have any critical facilities in 1% or the 0.2% annual chance flood hazard areas, based on current mapping and best available data. However, the Town Hall building (which includes the Police Department) has experienced flooding in the past.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Estes Park is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

National Flood Insurance Program Policy Analysis

The Town of Estes Park has participated in the National Flood Insurance Program (NFIP) since 1979. NFIP insurance data shows that as of January 2021 there are 189 flood insurance policies in force in the Town with $49,976,300 of coverage. There have been 99 historical claims for flood losses, totaling $1,983,498. There are 11 repetitive loss structures and no severe repetitive loss structures as defined by the NFIP. The Town of Estes Park does not participate in the Community Rating System (CRS) program.

Figure D-6 FEMA Special Flood Hazard Areas for the Town of Estes Park



Previous Occurrences

Estes Park sustained severe damages during the September 2013 Colorado flood event. Evacuations began on September 12, 2013, at approximately 3:00AM and 2,428 contacts were made to warn and evacuate neighborhoods through the LETA911 emergency notification system. The information below was provided by the Town of Estes Park and provides a snapshot of just how many residents were impacted by the flood.

Table D-9 September 2013 Flood Impact

Organization	Data
Red Cross Shelter Support	606 people signed in
	167 people sheltered in the cents
	316 people outsourced to local hotels for varying amounts of time
Salvation Army Support	3571 meals were served
	7000 snacks/drinks were served
	9000 gallons of water distributed
Utilities Outages and Restoration	Estimated $35-40 million in public infrastructure damage in the Estes Valley
	3.25 miles of Fish Creek Road are destroyed or damaged
	Caused outages for electric, water, gas, cable and phones
	Approximately 4,000 sewer taps were non-functional under "No Flush" orders within the Upper Thompson Sanitation District.
Structural Damage Assessments (incorporated Estes Park)	Rapid assessments completed for approximately 3,000 structures in the Estes Valley this week. Approximately 12 red tags were issued for properties that were determined to be unsafe for occupancy due to structural damage or electrical safety.
	2,383 estimated residences affected by water, mud, sewer access, road access
	183 estimated businesses affected by water, mud, sewer access, road access

D.4.6 Hazardous Materials Incident

There are no designated hazardous materials routes passing through the Town of Estes Park. However hazardous materials are still shipped through the Town, primarily along US34 and US36. There are no Risk Management Plan (RMP) facilities located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes 18 hazardous materials incidents in or near the Town of Estes Park from 1987 through 2019. This averages out to one hazardous materials incident every 1-2 years. None of those incidents reported any deaths, injuries, or significant property damage.

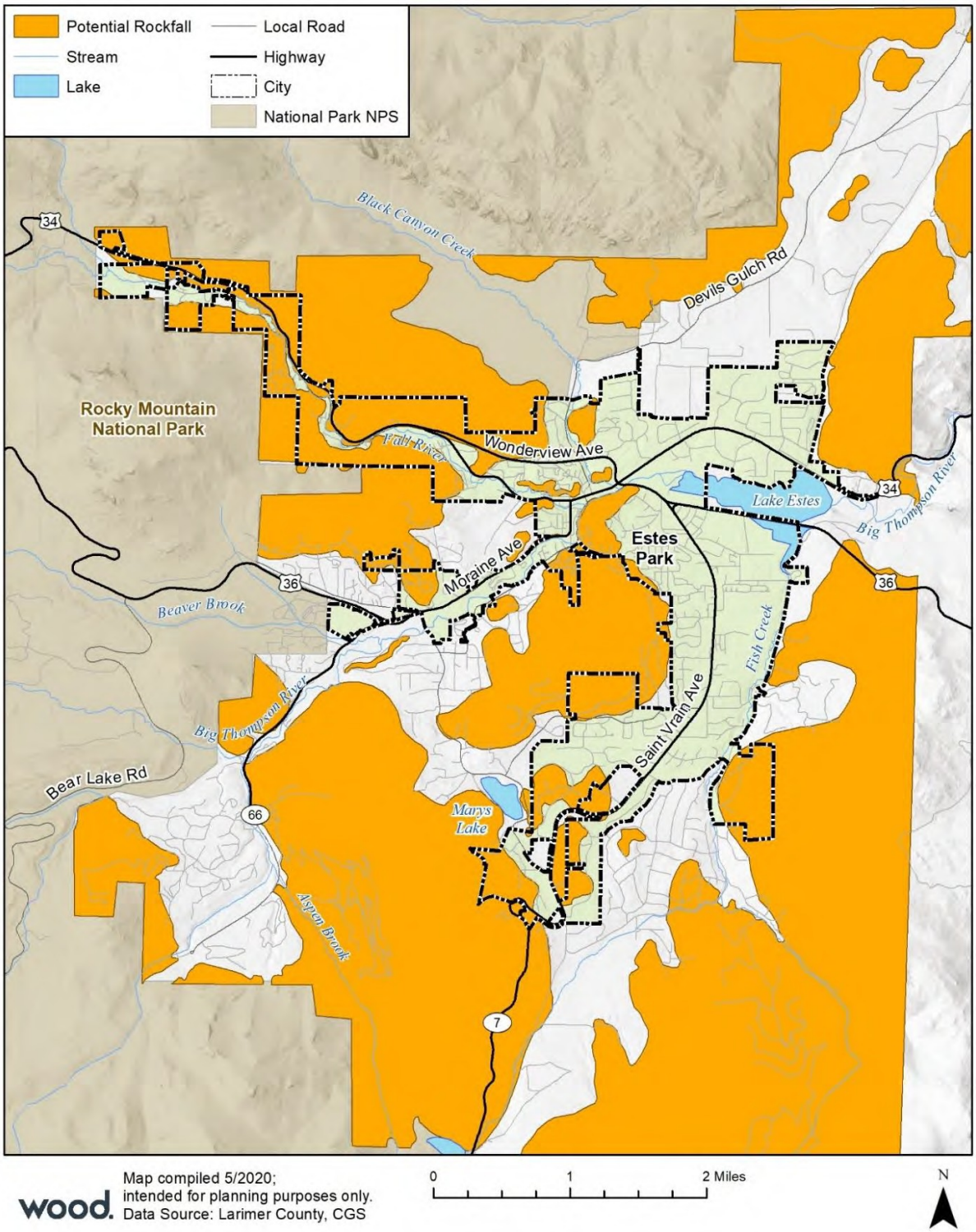
Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Estes Park is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

D.4.7 Landslide/Rockslide

There are no identified areas of landslide in the Town of Estes Park. However, there are a total of 613 improved parcels at risk of rockslide in Estes Park. These parcels have a population of 1,164 residents, and

a total value of $431,937,951. There are no critical facilities with potential of landslides or rockslides within the Town of Estes Park. Figure D-7 shows the potential rockfall for Estes Park. The overall significance of this hazard for the Town is Medium.

Figure D-7 Potential Rockfall for the Town of Estes Park



D.4.8 Soil Hazards

There are no identified areas of risk from collapsible or expansive soils or land subsidence in the Town of Estes Park. The overall significance of this hazard for the Town is Low.

D.4.9 Tornado

Due to its mountain setting, the Town of Estes Park is at a much lower risk of experiencing a tornado compared to the other municipalities in Larimer County. The overall significance of this hazard for the Town is Low.

D.4.10 Wildfire

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town has 693 parcels and 785 buildings at moderate, high, or highest risk of wildfire, with a total value of $534,432,248. An estimated 1,321 residents live in these at-risk areas. The Town has 4 critical facilities identified being at risk of wildfires, as shown in Table D-10.

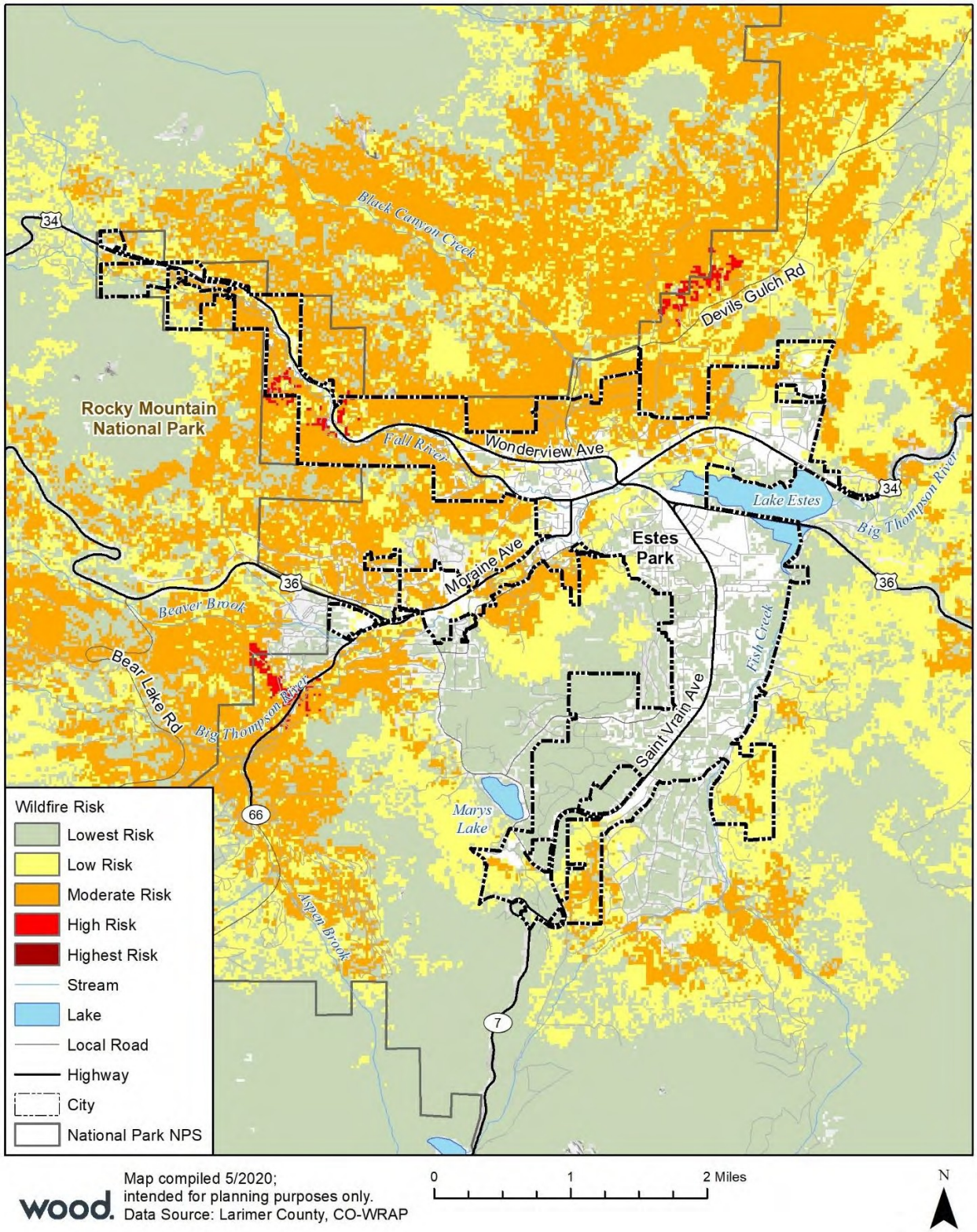
Table D-10 Estes Park Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Food, Water, Shelter	2					**2**
Miscellaneous			1			**1**
Safety and Security		1				**1**
Total	**2**	**1**	**1**	**0**	**0**	**4**

Source: Cascarta, CO-WRAP

Based on the historic data showing hazardous impacts on Estes Park, there is a great potential for wildfire events to occur at any given time. Areas in and around the Town of Estes Park at risk of wildfire, based on CO-WRAP assessment, are shown in Figure D-8. The overall significance of this hazard for the Town is High.

Figure D-8 Town of Estes Park Wildfire Risk



D.5 Capabilities Assessment

The capability assessment examines the ability of the Town of Estes Park to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

D.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table D-11 Town of Estes Park Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/ No	Comments
Comprehensive plan	Yes	1996 – initiate comp plan & land use code rewrite 2021
Zoning ordinance	Yes	Town Municipal Code
Subdivision ordinance	Yes	
Growth management ordinance	No	
Floodplain ordinance	Yes	https://library.municode.com/co/estes_park/codes/municipal_code?nodeId=TIT18FLDAPR This is Title 18--Flood Damage Prevention
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Wildfire, steep slope, floodplain (no drainage or stormwater)
Building codes	Yes	
Fire department ISO rating	Yes	2 or 3
Erosion or sediment control program	No	Estes Valley Development Code, Chapter 7 General Development Standards, Section 7.6 Wetlands and Stream Corridor Protection: https://www.colorado.gov/pacific/townofestespark/developmentcode Includes setback requirements for buildings/structures to limit damage from stream erosion.
Stormwater management program	Yes	Stormwater Master Plan 2019 – no implementation of this except with construction projects
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	No	Estes Park Economic Development Corporation, 2019
Local emergency operations plan	No	
Other special plans	No	Drought management, 2019. Events Complex Master Plan for emergencies
Flood insurance study or other engineering study for streams	Yes	The Town of Estes Park is regulating to the hydrology studies completed in 2014 and 2017, and floodplain regulations revised in 2019. The Town is actively coordinating with the CWCB and the CHAMP team to obtain a revised FEMA Flood Insurance Study and revised Flood Insurance Rate Maps.
Elevation certificates (for floodplain development)	No	The Elevation Certificate is a FEMA form (updated in late 2019). It must be completed by a licensed engineer, surveyor or architect. This is a service purchased when needed by building owners (including homeowners) to satisfy requirements associated with the National Flood Insurance Program (NFIP). Current form: FEMA Form 086-0-33 (12/19).

Source: Town of Estes Park planning team

Table D-12 Town of Estes Park Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Senior Planner & Director; Public Works Department, Engineering Manager
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Public Works Department Director and Engineering Manager
Planner/engineer/scientist with an understanding of natural hazards	Yes	Only flood hazard
Personnel skilled in GIS	Yes	Community Development, Public Works & contactor
Full time building official	Yes	Contracted position
Floodplain manager	Yes	Public Works Department
Emergency manager	Yes	Police Department
Grant writer	Yes	Public Works Department
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Public Works Dept, Utilities Dept, Community Development Dept, contractor
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Police Department
Other key personnel	Yes	Utilities (power & water), finance, elected officials, administration

Source: Town of Estes Park planning team

Table D-13 Town of Estes Park Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	CDBG-DR 2013 flood
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Unknown	With voter approval
Fees for water, sewer, gas, or electric services	Yes	Yes	Water & Power are enterprise funds
Impact fees for new development	No	No	
Incur debt through general obligation bonds	Yes	No	With a TABOR election
Incur debt through special tax bonds	Yes	No	With a TABOR election
Incur debt through private activities	Yes	No	Private activity bond under state statutes
Withhold spending in hazard prone areas	No	No	

Source: Town of Estes Park planning team

Table D-14 Town of Estes Park Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	In response to the COVID-19 pandemic, the Estes Valley Resiliency Collaborative was established working closely with the Larimer Recovery Collaborative. Current focus is economic recovery. Expect this group to expand to more community-wide resiliency efforts.
Firewise	Yes	Estes Valley Fire Protection District
StormReady	No	
Electric vehicle infrastructure and readiness plan including clean air and environmental components	Yes	

Source: Town of Estes Park planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The following table outlines the town's current capabilities as they relate to land use planning and codes.

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Estes Park has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

D.5.2 Opportunities for Enhancement

Based on the capability assessment, the Town of Estes Park has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Training could be coordinated with emergency response and the After Action Report from the 2020 wildfires, along with education and information of staff (and public) in fire fuel reduction and new FEMA floodplain maps. Additional training opportunities will help to inform Town staff and Town Trustees on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

The Town is also exploring the possibility of joining the CRS, which would require enhancements to the Town's floodplain management program but could provide a discount to flood insurance policy holders; see Section 5.6 of the Base Plan.

Enhancements currently planned or being considered by the Town include:

- Comprehensive Plan update
- Complete rewrite of land use and development codes
- Stormwater utility to support the master plan
- 1-D modeling capabilities for flood flow, and hydrology and hydraulics
- Transportation Master Plan
- Resiliency and sustainability department or division

- Environmental stewardship
- Participate in the Recovery and Resiliency Roadmap Program, Colorado Resiliency Office, Department of Local Affairs. (2 year program
- Lead agency for the Estes Valley Resiliency Collaborative
- After Action Report following the 2020 wildfires.

D.6 Mitigation Strategy

The Town of Estes Park has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had seven mitigation actions in the 2016 Plan, and has completed four of them:

- Jet Culvert Cleaner and Trailer
- MPEC EOC/Town Hall – Backup Site
- 4th Console for Communications Center
- Basement Electrical Raising/Relocation

One other action was deleted due to changing priorities and failure to secure funding:

- Non-structural Flood proofing for Downtown Estes Park.

The remaining two actions have been carried over into the 2021 Plan, along with five new actions.

The local planning team identified and prioritized the following mitigation actions for the Town of Estes Park based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Estes Park will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table D-15 Town of Estes Park 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
D-1	Goals 2,3,4 Objectives 1,2,4,5	Flood, Spring/ Summer Storm, Biological, Hazmat	**Watershed Protection Group.** Avoid duplicating efforts and miscommunication; pool resources and ideas for wiser decision-making. Meet regularly, for collaboration among Town departments and other agencies planning and implementation of projects. Provide a forum to discuss issues/projects involving watershed protection, including but not limited to stormwater management, flood mitigation, floodplain administration, emergency management, public outreach, financial aspects, watershed coalition, and utility providers.	**Estes Valley Watershed Coalition,** Public Works Department, Larimer County	Staff time	Grants, volunteer support and donations	High	Ongoing	In Progress
D-2	Goals 1,2,5 Objectives 3,5	Flood	**Replacement of Undersized Bridges and Widening of River Channels.** Most bridges and river channels within Town have inadequate capacity for flood flows. Replacement of bridges and widening of river channels to accommodate flood flows is a long-term project due to costs and development in these areas. To accomplish this, the Town would have to acquire funding from grants.	**Public Works**, FHWA, FEMA, DHSEM, CDOT, CWCB, Larimer County, other Town Departments	Millions	FEMA, FHWA, CDOT, other state and federal agencies	Mediu m	2050	In Progress. Ivy St Bridge will be replaced in the FHWA CFLHD Downtown Estes Loop project. The Town applied for DOT BUILD grant funds & was not awarded. Researching other funding opportunities including FEMA FMA and BRIC to widen Big Thompson River between Riverside & US 36 bridges & bridge replacement. This is a long term ongoing project.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
D-3	Goals 1,2,3 Objectives 2,3,5	Dam Failure, Floods, Hazmat, Landslide/ Rockslide, Wildfires, Spring/ Summer Storm, Winter Storm	**Emergency Response,** including Evacuation Planning. Collaborate with partner agencies; Larimer County Sheriff's Office, Rocky Mountain National Park, Colorado State Patrol (CSP), Estes Valley Fire Protection District, Estes Park Emergency Medical Service, Park R3 School District, NGOs and other to continually improve emergency response and evacuation planning. Draft an After Action Report from the 2020 wildfires for response and evacuation improvements. Present to the Town Board of Trustees and use this for police officer and emergency response providers; Town employee training and public information and education.	**Estes Park Police,** Larimer County Sheriff's Office, Rocky Mountain National Park, CSP, Estes Valley Fire District, Estes Park Emergency Medical Service, Park R3 School District, and NGO's	Minimal	Town of Estes Park budget allocation	High	2021–2022, ongoing	New in 2021
D-4	Goals 1,2,3,5 Objectives 2,3,5	Wildfires, Flood, Spring/ Summer Storm, Winter Storm	**Design Review Standards Improvements**. The Town of Estes Park 2021 Strategic Plan adopted by the Board of Trustees includes the following: Evaluation and improve the Development Review Process (multi-year goal) and evaluation the development review process and identify opportunities for improvement (1 year objective).	**Public Works and Community Development Departments**	Staff time & effort, included	General Funds	Medium	2021 to meet objective	New in 2021
D-5	Goals 1,2,3,4 Objectives 1,2,3,4,5	Wildfires	**Forest Fire Fuel Reduction**. Homes located in the Wildland-Urban Interface (WUI) are at greater risk of wildfire. As development continues to encroach into these areas, we need to find ways to protect people and properties. Estes Valley Fire Protection District participates in the FireWise program and with the 2020 record-breaking wildfires in this area, this program reaches new levels of need and interest. This will be coordinated with public information and education.	**Estes Valley Fire Protection District,** Town Emergency Management, others	Time & effort for agency staff to plan	Various	Medium	Planning 2021-2022	New in 2021
D-6	Goals 1,2,3,4,5 Objectives 1,2,3,4,5	Floods, Spring/ Summer Storm, Wildfires, Winter Storm	**Public Education and Outreach Programs.** In anticipation of presenting to the Town Administration and Board of Trustees the After Action Report from the East Troublesome and Cameron Peak Fires, we expect to provide information and education to property owners, business owners, and tenants on fire safety coordinating with EVFPD and their FireWise Program. In anticipation of new FEMA floodplain maps for the Estes Park area presented in 2021, public information will be necessary for educating property owners and business owners of risks as the floodplain area changes.	**PIO,** Police, Public Works, Community Development, EVFPD, Watershed Coalition	Staff & volunteer time	Variety	Medium	2021 – 2023, ongoing	New in 2021

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
D-7	Goals 1,2,3,4,5 Objectives 1,2,3,4,5	Drought, Wildfire	**Revise Landscaping Requirements in Development Code.** Revising the Town's landscaping requirements to better align with NFPA FireWise guidelines and requirements would help encouraging the creation of cleared defensible space around buildings. Additionally, the current landscaping requirements do not acknowledge that the Town is in a semi-arid climate and basically requires irrigation to fulfill Code. That is contrary to preserving the water resource, and could make a drought worse, as experience shows that requiring a lot of expensive landscaping (as we do) leads owners to want to water it, even if watering restrictions prohibit it.	**Community Development**	Unknown	Unknown	High	TBD	New in 2021. This is referenced as a high priority because the Town is planning a complete rewrite its land use codes starting in 2022.

D.7 Plan Maintenance and Implementation

The Town of Estes Park has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

D.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Estes Park's implementation strategy included:

- Our Emergency Manager working close closely with the Executive Leadership Team (Department Directors) will manage the mitigation actions scheduling and progress by reviewing the plan annually.
  - This was accomplished with the Town's Emergency Manager taking the lead in reviewing the plan, sharing relevant information with the Town's leadership team and providing education through emergency scenarios. Appropriate members of the leadership team reviewed the FEMA portal.
- Our PIO will manage and distribute informational releases to the public regarding mitigation actions, progress, and opportunities for public involvement.
  - This was accomplished by the Town's PIO, who manages communication during disasters.
- Our mitigation actions will be incorporated in our capital improvement planning.
  - This was accomplished. The CIP is for all capital projects, including any that are related to mitigation. Departments identified projects, enter these into the GIS database, enter their estimates and then complete other required/ requested data. Mitigation projects are included as identified by departments.
- We have created a floodplain management team comprising of citizens, Town staff and consultants. Additional mitigation actions will form from this team and incorporate into future planning.
  - Rather than establish a specific floodplain management team, the Town established a broader more inclusive team that includes representatives addressing additional hazards (not just those created by the floodplain). This includes Town Planning, Building and Engineering Divisions, as well as the community individuals and organizations as appropriate and relevant including but not limited to the Estes Valley Watershed Coalition.

Additional ways in which the Town incorporated information from the 2016 HMP into other plans and processes include:

- The Town completed the Brodie Avenue Safe Routes to School construction project in 2019, which included stormwater drainage work and curb and gutter.
- The Town was successful in being awarded another Safe Routes to School grant through CDOT for Graves Avenue. Construction could occur as early as 2021 and will include stormwater drainage work and curb and gutter work.

D.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Town's emergency manager, administration and the executive leadership team will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Emergency Manager or designee will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Board of Trustees.

Integration Into Other Planning Mechanisms

The Town of Estes Park will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the Town will:

- Through the Executive Leadership Team, the Emergency Manager, or designee which could include members of the Estes Valley Resiliency Collaborative, will present this Mitigation Plan annually to discuss items that need to be updated and look at progress of action items.
- Through the Executive Leadership Team which consists of the Town Administrator, Assistant Town Administrator, department directors and the PIO, when plans and studies are conducted, they will be reminded to incorporate information from the HMP into their plans. Departments will include mitigation as part of the public education and outreach effort with appropriate projects.
- Mitigation actions will be incorporated in capital improvement planning on appropriate projects.
- Incorporate information from the HMP into the next update of the Town's comprehensive plan which is planned for 2021 and in the new land use codes.
- Integrate mitigation information and education with the Estes Valley Resiliency Collaborative.
- Include mitigation and resiliency efforts as appropriate in procurement of professional services such as engineering and design, and construction projects; requests for proposals and invitation to bid.

Continued Public Involvement

The Town of Estes Park will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

D.8 Letter of Intent to Participate

TOWN OF ESTES PARK
TOWN ADMINISTRATOR

Frank Lancaster
Town Administrator
970.577.3705
flancaster@estes.org

November 21, 2018

RECEIVED NOV 27 2018

Lori Hodges
Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins, CO 80522

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Estes Park is submitting this letter of intent to confirm that the Town of Estes Park has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

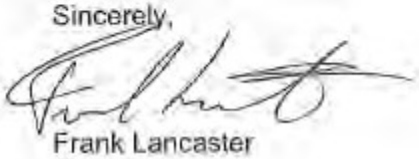
Further, as a condition to participating in the mitigation planning, the Town of Estes Park agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The Town of Estes Park understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Frank Lancaster, Town Administrator, commit the Town of Estes Park to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Sincerely,



Frank Lancaster

E. ESTES PARK HEALTH

"To make a positive difference in the health and wellbeing of all we serve."

– Estes Park Health Mission Statement

E.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. Estes Park Health participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section E.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the hospital on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

E.2 Community Profile

Estes Park Health (EPH) – formerly known as Estes Park Medical Center – is a 23-bed critical access hospital with a 24-hour emergency department, 24-hour Advanced Life Support Ambulance Service, medical/surgical services, obstetrics, and home health and hospice services. Their service area includes Estes Park, Allenspark, Glen Haven, Drake, and Pinewood Springs; EPH's ambulance service also provides some support in mountainous areas in Boulder County under an intergovernmental agreement. Emergency air transport services are available from their healthcare associates in a number of Colorado Front Range communities. EPH's physicians are board-certified in many different areas and specialties. EPH has served the Estes Valley and surrounding areas since 1975, and is designated as a Level IV Trauma Center.

Note that when evaluating the potential spatial extent of a hazard, this annex considers not only the hospital itself, but EPH's service district.

E.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table E-1 Hazard Identification and Risk Assessment Summary for the Estes Park Health

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Critical	High
Civil Disturbance	Unlikely	Significant	Negligible	Low
Dam Inundation	Unlikely	Limited	Negligible	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Extensive	Critical	Medium
Flood	Likely	Significant	Critical	Medium
Hazardous Materials	Occasional	Limited	Significant	Low
Landslide/Rockslide	Occasional	Significant	Significant	Medium
Soil Hazards	Unlikely	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Negligible	Low
Tornado	Unlikely	Limited	Critical	Low
Utility Disruption	Highly Likely	Extensive	Critical	Medium
Wildfire	Highly Likely	Significant	Catastrophic	High
Winter Storm	Highly Likely	Extensive	Significant	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

E.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for Estes Park Health, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the hospital's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

E.4.1 Dam Inundation

Estes Park Health is not located in a potential dam inundation area. The overall significance of this hazard for EPH is Low.

E.4.2 Flood

Estes Park Health is not located in a mapped floodplain. While localized flash flooding in the EPH service area is possible, the flood risk is lower than the County as a whole. The overall significance of this hazard for EPH is Medium.

E.4.3 Landslide / Rockslide

Figure D-7 in Annex D (Town of Estes Park) shows significant rockfall potential in the EPH service area, to include the hospital itself. The overall significance of this hazard for EPH is Medium.

E.4.4 Soil Hazards

There are no identified areas of risk from collapsible or expansive soils or land subsidence in the Town of Estes Park. The overall significance of this hazard for EPH is Low.

E.4.5 Wildfire

Figure D-8 in Annex D (Town of Estes Park) shows significant wildfire risk in the EPH service area, to include the area near hospital itself. The overall significance of this hazard for EPH is High.

E.5 Capabilities Assessment

This section profiles the programs and policies currently in use by Estes Park Health to reduce hazard impacts or that could be used to implement hazard mitigation activities.

E.5.1 Existing Capabilities

The following tables summarize the hospital's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table E-2 Estes Park Health Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	NA	
Zoning ordinance	NA	Town of Estes Park
Subdivision ordinance	NA	Town of Estes Park
Growth management ordinance	NA	Town of Estes Park
Floodplain ordinance	NA	Town of Estes Park/Larimer County
Other special purpose ordinance (stormwater, steep slope, wildfire)	NA	Town of Estes Park
Building codes	NA	Town of Estes Park
Fire department ISO rating	NA	Estes Valley Fire Protection District
Erosion or sediment control program	NA	
Stormwater management program	NA	

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Site plan review requirements	NA	
Capital improvements plan	Yes	
Economic development plan	NA	Town of Estes Park
Local emergency operations plan	Yes	
Other special plans	No	
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	NA	Town of Estes Park/Larimer County

Source: Estes Park Health planning team

Table E-3 Estes Park Health Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	NA	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	NA	
Planner/engineer/scientist with an understanding of natural hazards	NA	
Personnel skilled in GIS	NA	
Full time building official	NA	
Floodplain manager	NA	
Emergency manager	Yes	Gary Hall, Chairman Emergency Preparedness Committee
Grant writer	Yes	Kaci Yoh, Estes Park Health Foundation Grant Writer
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	NA	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	NA	Managed by Town of Estes Park
Other key personnel	Yes	Catherine Cornell, Emergency Preparedness Liaison

Source: Estes Park Health planning team

Table E-4 Estes Park Health Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	No	No	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	No	No	
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	

Withhold spending in hazard prone areas	No	No	
Other	Yes	Yes	EPH foundation supports projects at the hospital

Source: Estes Park Health planning team

Table E-5 Estes Park Health Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	Handled by Town & Fire District
Firewise	No	
StormReady	No	

Source: Estes Park Health planning team

E.5.2 Opportunities for Enhancement

Based on the capability assessment, EPH has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for EPH to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the Town, County, and DHSEM. Additional training opportunities will help to inform EPH staff on how best to integrate hazard information and mitigation projects into the EPH policies and ongoing duties of the hospital. Continuing to train EPH staff on mitigation and the hazards that pose a risk to the hospital will lead to more informed staff members who can better communicate this information to the public.

E.6 Mitigation Strategy

Estes Park Health has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The hospital had two mitigation actions in the 2016 Plan, and has completed one of them:

- Water supply for Medical Center during loss of domestic water.

The remaining action has been carried over into the 2021 Plan, along with one new action.

The EPH planning team identified and prioritized the following mitigation actions for Estes Park Health based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table E-6 Estes Park Health 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
E-1	Goals 1,2,4,5 Objectives 2,3,5	Flood	**Medical Center Flood Mitigation.** The 2013 Flood in Estes Park illustrated the need to ensure critical facilities, such as the Estes Park Medical Center and associated properties, are protected against flooding. Follow techniques outlined in the FEMA resource guide, "Mitigation Ideas, A Resource for Reducing Risk to Natural Hazards," to protect critical facilities from flood events. Upgrade facilities to mitigate against future flood impacts, including 1) implementation of a stormwater management plan and 2) design and construction of a rain gauge system to provide early warning lead time to implement flood protection measures throughout the facility.	**Estes Park Health**, Loveland and Larimer Offices of Emergency Management	$300,000	Town of Estes Park Resources, EPH resources, grant funding	High	2022	In Progress. The Town of Estes Park has worked extensively on flood control and mitigation. While EPH is not in a flood plain nor at risk of flooding, any issues would arise from damage to the Town's infrastructure (power, water, sewer, broadband, etc.) EPH continues to be highly vulnerable if any of the Town's infrastructure was to be damaged, but the risk has dropped some due to the Town's, County's, and State's mitigation efforts to date.
E-2	Goals 1,2,4,5 Objectives 2,3,5	Biological, Earthquake, Spring/ Summer Storm, Utility Disruption, Wildfire, Winter Storm	**Increase Generator Capacity:** Appropriate capital in 2021, if possible, to upgrade so that all three fixed emergency generators have 96 hours capacity without a refill. Benefits: Patient safety, avoidance of evacuation of much of the building, retention of services and income.	Estes Park Health Our contractors who provide generator work and fuel (Cummins, primarily)	$140,000	Internal capital from hospital cash stores, no external sources	High	2021 3Q	New in 2021

E.7 Plan Maintenance and Implementation

EPH has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how EPH will continue public participation in the plan maintenance process.

E.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. EPH's implementation strategy included:

- We will attend group meetings and will participate in the annual evaluation of the plan.
  - EPH re-formed its emergency preparedness team in 2017 and has maintained regular meetings of that team since that time. The EPH emergency operations manual was updated and reworked to provide for easy annual updating. An emergency administration plan was written in 2018 as part of our DNV accreditation efforts, and both the e ops and e admin plans are required to be reviewed annually by the appropriate EPH authorities, and updated as appropriate. EPH understands that for broad disasters impacting the entire Estes area, management of the broader emergency response will fall to the Town of EP, Larimer County, the State of CO, and the federal government as appropriate to the crisis and the resource needs. So, EPH's emergency plans are geared toward how the EPH resources will be managed, when to set up our internal IC, when and how to shelter in place, when and how to evacuate, and so on. In years where events don't force real disasters, EPH maintains the proper cycle of drills and tabletop exercises to ensure readiness for a crisis. EPH used the Larimer County HMP from 2016 as the launching point for all of these localized efforts. This documentation and team effort lo fed our work to become accredited through DNV (in which we were successful in our first year in 2018).
- Post information on facility web page and leverage social media.
  - EPH maintains the eph.org site, a Facebook page, a stakeholders email list, an employee Everbridge account, relationships with the two town papers, and other methods of information dissemination as needed. For example, EPH created a broad and helpful COVID page at the start of the pandemic with links and information about EPH's COVID hotline, etc. With the small size of Estes Park, our methods of local communication via various online tools gets the word out quickly as needed.
- We will include hazard mitigation in our emergency planning, including updating out hazard assessment.
  - As part of EPH's regular emergency preparedness team's work, issues are identified regarding how we will deal with emergency events that impact the hospital, and actions are assigned and taken to address those. However, we rely on the Town and County to perform most hazard mitigation that would involve infrastructure (dams, redundancy of resources, fire prevention work, etc.).

Additionally, EPH's overall e prep efforts (above) include much more detail in regard to being ready for all and any hazards.

E.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the hospital to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Chief Operating Officer (who also serves as the Emergency Preparedness Committee Chair) will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Chief Operating Officer will also be responsible for representing the hospital on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates, although this may be supplemented by other members of the EPH staff as needed. The hospital, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the hospital's Board of Directors.

Integration Into Other Planning Mechanisms

EPH will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the hospital will:

- Continue to manage the Emergency Preparedness Committee on at least a quarterly basis (including all drills and exercises needed when real events don't take precedence);
- Perform annual review of the EPH E Ops and E Admin plans and update as appropriate;
- Maintain appropriate contact with Town and county resources to ensure good liaison and communication paths;
- Study the Larimer County 2021 HMP in draft and final publication to advise any additional efforts needed by EPH.

Continued Public Involvement

EPH will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

E.8 Letter of Intent to Participate

Estes Park Medical Center

555 Prospect Avenue
PO Box 240
Estes Park, Colorado 80517
(970) 586-2317

LETTER OF INTENT TO PARTICIPATE

November 4, 2015

Lori R. Hodges
Larimer County Emergency Management
200 West Oak Street
Fort Collins, CO 80526

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Estes Park Medical Center (EPMC) is submitting this letter of intent to confirm that Estes Park medical Center has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, EPMC agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County OEM to complete the plan in conformance with FEMA requirements.

EPMC understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Mark Gregson, interim Chief Executive Officer, commit Estes Park medical Center to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 4th day of November:

Member of American Hospital Association • Member of Colorado Hospital Association • Member of Voluntary Hospitals of America, Inc.

F. ESTES VALLEY FIRE PROTECTION DISTRICT

"The Mission of the Estes Valley Fire Protection District is to provide the citizens of and visitors to the Estes Valley with superior fire prevention, fire protection and emergency services in a safe and efficient manner."

—Mission, Estes Valley Fire Protection District

F.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Estes Valley Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section F.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

F.2 Community Profile

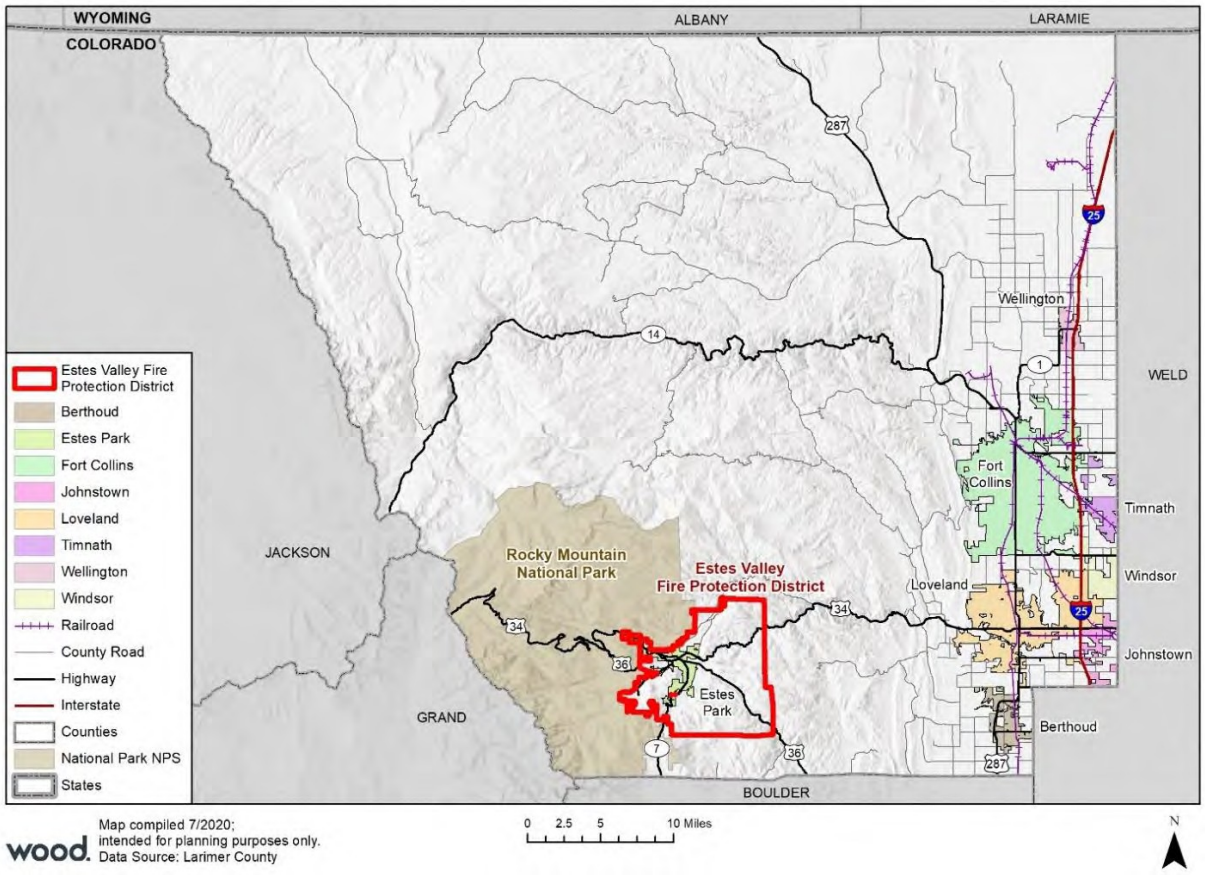
The Estes Valley Fire Protection District (EVFPD) was established in 2009 and became autonomous on January 1, 2010. The EVFPD is comprised of 5 District Board Members, volunteer firefighting membership, the Fire Chief, Operations Division Chief, Prevention Division Chief-Fire Marshal, Fire Inspector II, Tranining Lieutenant, and an Office Manager.

The Estes Valley Fire Protection District is located in southwestern Larimer County and is composed of a portion of unincorporated Larimer County and the Town of Estes Park, encompassing a 66.3 square mile area. There are 2 Fire Stations and a regional training center that serve the Estes Valley community:

- Station 71 - Dannels Fire Station at 901 N. St. Vrain Ave.
- Station 72 - 1600 Mills Drive.
- Regional Training Center – 640 Elm Road

Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall, the District's social vulnerability varies from above average in Town to below average in the rural areas. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

Figure F-1 Map of the Estes Valley Fire Protection District



F.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table F-1 Hazard Identification and Risk Assessment Summary for the Estes Valley Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Critical	High
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Occasional	Limited	Significant	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Critical	Medium
Flood	Likely	Significant	Significant	Medium
Hazardous Materials	Unlikely	Limited	Significant	Medium
Landslide/Rockslide	Likely	Limited	Significant	Low
Soil Hazards	Unlikely	Limited	Significant	Low
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Unlikely	Limited	Critical	Low
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Limited: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

F.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Estes Valley Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials
- Spring/Summer Storm
- Tornado
- Utility Disruption

- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

F.4.1 Dam Inundation

Figure D-5 in Annex D (Town of Estes Park) shows potential dam inundation areas in the Estes Valley Fire Protection District. The overall significance of this hazard for the District is Medium.

F.4.2 Flood

Figure D-6 in Annex D (Town of Estes Park) shows mapped flood hazard areas in the Estes Valley Fire Protection District. The overall significance of this hazard for the District is Medium.

F.4.3 Landslide / Rockslide

Figure D-7 in Annex D (Town of Estes Park) shows significant rockfall potential in the Estes Valley Fire Protection District. The overall significance of this hazard for the District is Medium.

F.4.4 Soil Hazards

There are no identified areas of risk from collapsible or expansive soils or land subsidence in the Estes Valley Fire Protection District. The overall significance of this hazard for the District is Low.

F.4.5 Wildfire

Figure D-8 in Annex D (Town of Estes Park) shows significant wildfire risk in the Estes Valley Fire Protection District. The overall significance of this hazard for the District is High.

F.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Estes Valley Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

F.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table F-2 Estes Valley Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Town & County Planning & Building
Zoning ordinance	Yes	Town & County Planning & Building
Subdivision ordinance	Yes	Town & County Planning & Building
Growth management ordinance	No	
Floodplain ordinance	Yes	Larimer County
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Larimer County
Building codes	Yes	Town & County Planning & Building
Fire District ISO rating	Yes	ISO Rating 3/10
Erosion or sediment control program	No	
Stormwater management program	Yes	Larimer County Public Works

Site plan review requirements	Yes	Town & County Planning & Building
Capital improvements plan	Yes	Agency Level / Every Budget Year
Economic development plan	Yes	Agency Level / Every Budget Year
Local emergency operations plan	No	
Other special plans	Yes	District Fire Code Adoption / Burning Regulations
Flood insurance study or other engineering study for streams	Yes	Larimer County Flood Control District
Elevation certificates (for floodplain development)	Yes	Larimer County Planning & Building

Source: Estes Valley Fire Protection District planning team

Table F-3 Estes Valley Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Town & County Planning & Building
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Town & County Planning & Building
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	Larimer Emergency Telephone Authority
Full time building official	Yes	Town & County Planning & Building
Floodplain manager	Yes	Town & County Planning & Building
Emergency manager	Yes	Town & County
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Larimer Emergency Telephone Authority
Other key personnel	Yes	District has a full time Fire Inspector II whose responsibilities include FireWise inspections to reduce risk to homeowners from wildfires.

Source: Estes Valley Fire Protection District planning team

Table F-4 Estes Valley Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	Agency Level
Authority to levy taxes for specific purposes	Yes	Yes	Agency Level
Fees for water, sewer, gas, or electric services	Yes	Yes	Town & County
Impact fees for new development	Yes	Yes	Agency Level
Incur debt through general obligation bonds	Yes	No	Agency Level
Incur debt through special tax bonds	Yes	No	Agency Level
Incur debt through private activities	Yes	No	Agency Level
Withhold spending in hazard prone areas	No	No	

Source: Estes Valley Fire Protection District planning team

Table F-5 Estes Valley Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Estes Valley Watershed Coalition
Firewise	No	Firewise Communities Assessor Certification
StormReady	No	
Community wildfire preparedness and prevention programs.	Yes	Recent grant recipient for the Ready Set Go! Wildfire preparedness and prevention campaign.

Source: Estes Valley Fire Protection District planning team

F.5.2 Opportunities for Enhancement

Based on the capability assessment, Estes Valley has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

The Estes Valley Fire Protection District will continue to expand wildfire-specific educational outreach platforms and materials, and continue to build stakeholder partnerships and coalitions for community action. Additionally, the District will work to improve internal staffing capabilities to address these identified hazards and challenges.

F.6 Mitigation Strategy

The Estes Valley Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had one mitigation action in the 2016 Plan, which was completed. Additionally, the District has completed several past wildfire mitigation fuel reduction projects. Two new actions have been added for the 2021 Plan.

The District planning team identified and prioritized the following mitigation actions for the Estes Valley Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table F-6 Estes Valley Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
F-1	Goals 1,2,3,4,5 Objectives 3,4,5	Wildfire	**Wildland Urban Interface (WUI) Fuels Reduction Project.** A grant recipient of the 2020-2021 Ready-Set-Go wildfire prevention and preparedness program, the Estes Valley Fire Protection District will be coordinating the following: (1) Development of wildfire education materials. This project entails guidance from nationally recognized subject matter experts to develop printed and digitally delivered action guides for residents at the personal residence and subdivision levels. (2) Wildfire education kiosks will be developed and placed within the Town of Estes Park. (3) Conducting an evacuation tabletop exercise in partnership with local and regional stakeholders.	**Estes Valley Fire Protection District.** Town of Estes Park; International Association of Fire Chiefs; Ready-Set-Go national wildfire campaign partners.	$15,000	Ready-Set-Go Grant	High	2021	New in 2021
F-2	Goals 2,3,5 Objectives 3,4,5	Wildfire, Flood	**Cameron Peak Fire Recovery.** Coordinate with Larimer County, LCSO, USFS, and other partners to identify and implement post-fire recovery and post-fire flooding mitigation projects as a result of the Cameron Peak & East Troublesome Wildfires	Larimer County	Unknown	HMGP, BRIC	Low	2020-2021	New in 2021

F.7 Plan Maintenance and Implementation

The Estes Valley Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

F.7.1 Implementation and Maintenance of the 2016 Plan

The fuels reduction project noted in the 2016 Plan was not completed, nor is it continued for the 2021 Plan. The impact relative to cost was determined to be low and unsustainable.

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our mitigation efforts will be directed and maintained through the Fire Chief and/or the Fire Marshal of the District.
  - This was accomplished.
- The District's website provides information and announcements of our mitigation efforts and plans. Any changes will be provided through our website and in the local newspapers.
  - This was accomplished.
- The District will integrate the hazard mitigation actions into the Community Wildfire Preparedness Plan (CWPP) and also see how it interfaces with the adopted fire codes and our emergency operations plan. Any hazard mitigation actions should coincide with our adopted CWPP and its identified high risk areas.
  - This is proposed to be accomplished in 2021. The District is currently working with the Estes Valley Watershed Coalition and other partners and stakeholders to update the CWPP.

F.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Fire District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Fire Chief or their designee will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Fire Chief or their designee will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Estes Valley Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The Fire District will meet annually to discuss items that need to be updated and to look at progress of action items with the Town of Estes Park and with local and regional emergency management partners.

- The Fire District will Incorporate information from the HMP into existing public education & outreach programs, such as their 2021 Community Risk Reduction (CRR) Plan.
- The Fire District will post and distribute information on their website to get information to citizens and businesses through Community Information Guides.
- Staffing and other resources necessary for mitigation will be incorporated in capital improvement planning and budgeting.
- The Fire District will advocate for and utilize information from the HMP when adopting the Fire Code.

The Estes Valley Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

F.8 Letter of Intent to Participate

ESTES VALLEY
FIRE PROTECTION DISTRICT

LETTER OF INTENT TO PARTICIPATE

August 22, 2014

Larimer County Government
200 W. Oak St.
Fort Collins, CO 80522

Re: "Statement of Intent to Participate" as a participating jurisdiction in Larimer County's Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Lori Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Estes Valley Fire Protection District (EVFPD) is submitting this letter of intent to confirm that EVFPD has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, EVFPD agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The EVFPD understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Larimer County and the Participating Jurisdiction, I Scott Dorman, Fire Chief, commit the Estes Valley Fire Protection District to the Larimer County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 22nd day of August

[Signature of Chief Elected Official or Authorized Agent]

901 N. Saint Vrain Avenue • Estes Park, CO 80517 • P-970-577-0900 • F-970-577-0923

G. ESTES VALLEY RECREATION AND PARK DISTRICT

"The mission of the Estes Valley Recreation and Park District is to plan, direct, organize, and implement recreational programs, manage facilities, and provide public park and recreation opportunities for residents of the District and visitors to the community. The District will implement programs that offer a wide variety of recreational opportunities for all age groups, including both active and passive experiences. The District will provide recreational services and facilities within the financial limitations and scope of the District."

-- Mission Statement, Estes Valley Recreation and Park District

G.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Estes Valley Recreation & Park District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section G.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

G.2 Community Profile

Estes Valley Recreation & Park District (EVRPD) is a public agency providing parks and recreation programs for members of the community and visitors to Estes Park. The District provides golf, marina, boat rentals, fishing, tennis, swimming, softball, baseball, playgrounds, picnicking, youth center, and many more recreational programs.

The District encompasses approximately 320 square miles in southwestern Larimer County and northern Boulder County, and includes within its boundaries primarily unincorporated land and the Town of Estes Park. The permanent population of the Recreation District varies between 10,800 and 11,600 in any given year. The District's boundaries have remained unchanged since its organization.

G.3 Hazard Identification and Risk Assessment

Estes Valley Recreation & Park District covers parts of both Larimer and Boulder Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the District that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table G-1 Hazard Identification and Risk Assessment Summary for the Estes Valley Recreation & Park District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Critical	High
Civil Disturbance	Occasional	Limited	Negligible	Low
Dam Inundation	Occasional	Limited	Significant	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Limited	Critical	Low
Flood	Likely	Significant	Significant	Medium
Hazardous Materials	Occasional	Limited	Significant	Low
Landslide/Rockslide	Likely	Limited	Significant	Low
Soil Hazards	Occasional	Limited	Significant	Low
Spring/Summer Storm	Highly Likely	Extensive	Significant	Low
Tornado	Occasional	Limited	Significant	Low
Utility Disruption	Likely	Limited	Negligible	Low
Wildfire	Likely	Significant	Significant	Medium
Winter Storm	Highly Likely	Extensive	Significant	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

G.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Estes Valley Recreation & Park District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials Incident
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For the purpose of this plan, only the parts of the District that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

G.4.1 Dam Inundation

Figure D-5 in Annex D (Town of Estes Park) and Figure 4-5 in Section 4.3.3 of the Base Plan show potential dam inundation areas in the Estes Valley Recreation & Park District. The overall significance of this hazard for the District is Medium.

G.4.2 Flood

Figure D-6 in Annex D (Town of Estes Park) and Figure 4-5 in Section 4.3.6 of the Base Plan show mapped flood hazard areas in the Estes Valley Recreation & Park District. The overall significance of this hazard for the District is Medium.

G.4.3 Landslide / Rockslide

Figure D-7 in Annex D (Town of Estes Park) and Figures 4-26 and 4-27 in Section 4.3.6 of the Base Plan show landslide and rockfall potential in the Estes Valley Recreation & Park District. The overall significance of this hazard for the District is Medium.

G.4.4 Soil Hazards

There are no identified areas of risk from collapsible or expansive soils or land subsidence in the Estes Valley Recreation & Park District. The overall significance of this hazard for the District is Low.

G.4.5 Wildfire

Figure D-8 in Annex D (Town of Estes Park) and Figure 4-43 in Section 4.3.6 of the Base Plan show significant wildfire risk in the Estes Valley Recreation & Park District. The overall significance of this hazard for the District is High.

G.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Estes Valley Recreation and Park District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

G.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table G-2 Estes Valley Recreation and Park District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	No	Town/County
Zoning ordinance	No	Town/County
Subdivision ordinance	No	Town/County
Growth management ordinance	No	Town/County
Floodplain ordinance	No	Town/County
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	Town/County

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Building codes	No	Town/County
Fire department ISO rating	NA	Town/County
Erosion or sediment control program	No	Town/County
Stormwater management program	No	Town/County
Site plan review requirements	No	Town/County
Capital improvements plan	Yes	Town/County
Economic development plan	No	Town/County
Local emergency operations plan	No	Town/County
Other special plans	Yes	Regional Trails Master Plan, Stanley Park Master Plan
Flood insurance study or other engineering study for streams	No	Town/County
Elevation certificates (for floodplain development)	No	Town/County

Source: Estes Valley Recreation and Park District planning team

Table G-3 Estes Valley Recreation and Park District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	Town/County
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	Town/County
Planner/engineer/scientist with an understanding of natural hazards	No	Town/County
Personnel skilled in GIS	No	Town/County
Full time building official	No	Town/County
Floodplain manager	No	Town/County
Emergency manager	No	Town/County
Grant writer	Yes	Admin./Executive Director
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	Town/County
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	Town/County
Other key personnel	Yes	Admin./Community Engagement Manager

Source: Estes Valley Recreation and Park District planning team

Table G-4 Estes Valley Recreation and Park District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	Yes	Yes	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	
Other: Federal, state and regional grants aimed at Parks and Recreation Development	Yes	Yes	

Source: Estes Valley Recreation and Park District planning team

Table G-5 Estes Valley Recreation and Park District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	The Estes Valley Trails Committee is an advisory committee which provides feedback on trail network and adjacent area conditions on a regular basis. Estes Valley Community Center occasionally serves as a forum for other entities to administer seminars, training sessions and other programming related to education and mitigation. Annual Safety Fair covers a variety or preparedness measures
Firewise	Yes	Big Elk Meadows, which lies within the EVRPD boundary, received Firewise certification in 2017.
StormReady	No	

Source: Estes Valley Recreation and Park District planning team

G.5.2 Opportunities for Enhancement

Based on the capability assessment, the Estes Valley Recreation and Park District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

Due to the current COVIFD-19 pandemic, the District's primary focus is re-evaluation of current policies, operations and programming, as well as new policy/operation and program development to offset future losses due to future contagions.

G.6 Mitigation Strategy

The Estes Valley Recreation and Park District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had one mitigation action in the 2016 Plan, which was completed.

- Fish Creek Trail rebuilding

Additional flood-mitigation measures such as drainage, bank stabilization, and retention pond improvements at the Lake Estes Golf Course were also completed in 2016. Two new actions have been added for the 2021 Plan.

The District planning team identified and prioritized the following mitigation actions for the Estes Valley Recreation and Park District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table G-6 Estes Valley Recreation and Park District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
G-1	Goals 2,3,4,5 Objectives 1,3,5	Flood, Wildfire	**Evacuation Shelter.** Develop protocols to enable the Estes Valley Community Center to serve as an evacuation shelter. The Estes Valley Community Center is a 70,000 square foot facility equipped for recreation/sports programming, but also offers several thousand square feet (15,000+) of flex space, a commercial-grade kitchen, several restroom and shower facilities, as well as high-speed Internet/Wi-Fi. Due to its location above the floodplain/zone and its location - which poses a nominal risk factor during a wildfire - it will be able to serve as an evacuation center for at-risk citizens during the next flood or fire event.	Estes Valley Recreation and Park District, Town of Estes Park, Estes Valley Fire Protection District, Estes Park Hospital District	Nominal - primarily staff time to coordinate with other agencies and put basic protocols in place; $5,000.	General Fund and/or matching funds through the pursuit of relevant grant opportunities.	Medium	2022	New in 2021
G-2	Goals 1,2,3,5 Objectives 1,3,4,5	Wildfire	**East Portal Campground Reclamation.** East Portal Campground is immediately adjacent to Rocky Mountain National Park and was threatened by the recent East Troublesome Fire. We are partnering with the Bureau of Reclamation to perform thinning operations at the campground and the surrounding land.	Estes Valley Recreation and Park District, U.S. Bureau of Reclamation	TBD	BOR	High	2023	New in 2021

G.7 Plan Maintenance and Implementation

The Estes Valley Recreation and Park District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

G.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our Board of Directors will review our mitigation plan on an annual basis.
  - This was accomplished by the Board of Directors during budget review/planning each year and in concert with guidance from the U.S. Bureau of Reclamation (specifically for federal properties managed by the District).
- We will post our updates on the EVRPD website.
  - Updates were occasionally posted on social media if/when there were any temporary or permanent changes to the status of elements in the plan which could affect public safety (trail closures, river conditions, etc.).
- We will base the priority of projects on the actions in our hazard mitigation plan.
  - This process is ongoing on an annual basis.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include using the plan as a reference tool for large capital projects such as trail planning/construction and the development of master plans for parks and other public facilities.

G.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Executive Director will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Executive Director will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors and be subject to annual appropriations.

Integration Into Other Planning Mechanisms

The Estes Valley Recreation and Park District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The District will meet annually with other interested agencies to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.

- Post information on the District's website and other social/digital media platforms to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning.

Continued Public Involvement

The Estes Valley Recreation and Park District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

G.8 Letter of Intent to Participate

ESTES VALLEY RECREATION and PARK DISTRICT

LETTER OF INTENT TO PARTICIPATE

July 21, 2015

Lori R. Hodges
Larimer County Emergency Management
200 West Oak Street
Fort Collins, CO 80526

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,
In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Estes Valley Recreation and Park District (EVRPD) is submitting this letter of intent to confirm that EVRPD has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, EVRPD agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County OEM to complete the plan in conformance with FEMA requirements.

EVRPD understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Kathy Asche, commit EVRPD to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 21st day of July

Kathy Asche, Board President

P.O. Box 1379, 890 Big Thompson Avenue
Estes Park, CO 80517

info@evrpd.com
http://www.evrpd.com

970-586-3191 Phone
970-586-8193 Fax

H. CITY OF FORT COLLINS

"Three major themes of Plan Fort Collins provide direction for the vision for the next 25 years and beyond: Innovate, Sustain, and Connect."

– Plan Fort Collins, 2011

H.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The City of Fort Collins participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section A.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the City on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

H.2 Community Profile

The City of Fort Collins is located in northern Colorado at the base of the foothills to the Rocky Mountains at approximately 5,000 feet above sea level. The City experiences on average 300 days of sunshine and approximately 14.5 inches of precipitation per year. Fort Collins was founded as a military fort in 1864 and was referred to "Camp Collins." The city is home to Colorado State University with an enrollment in 2019 of approximately 34,166 students.

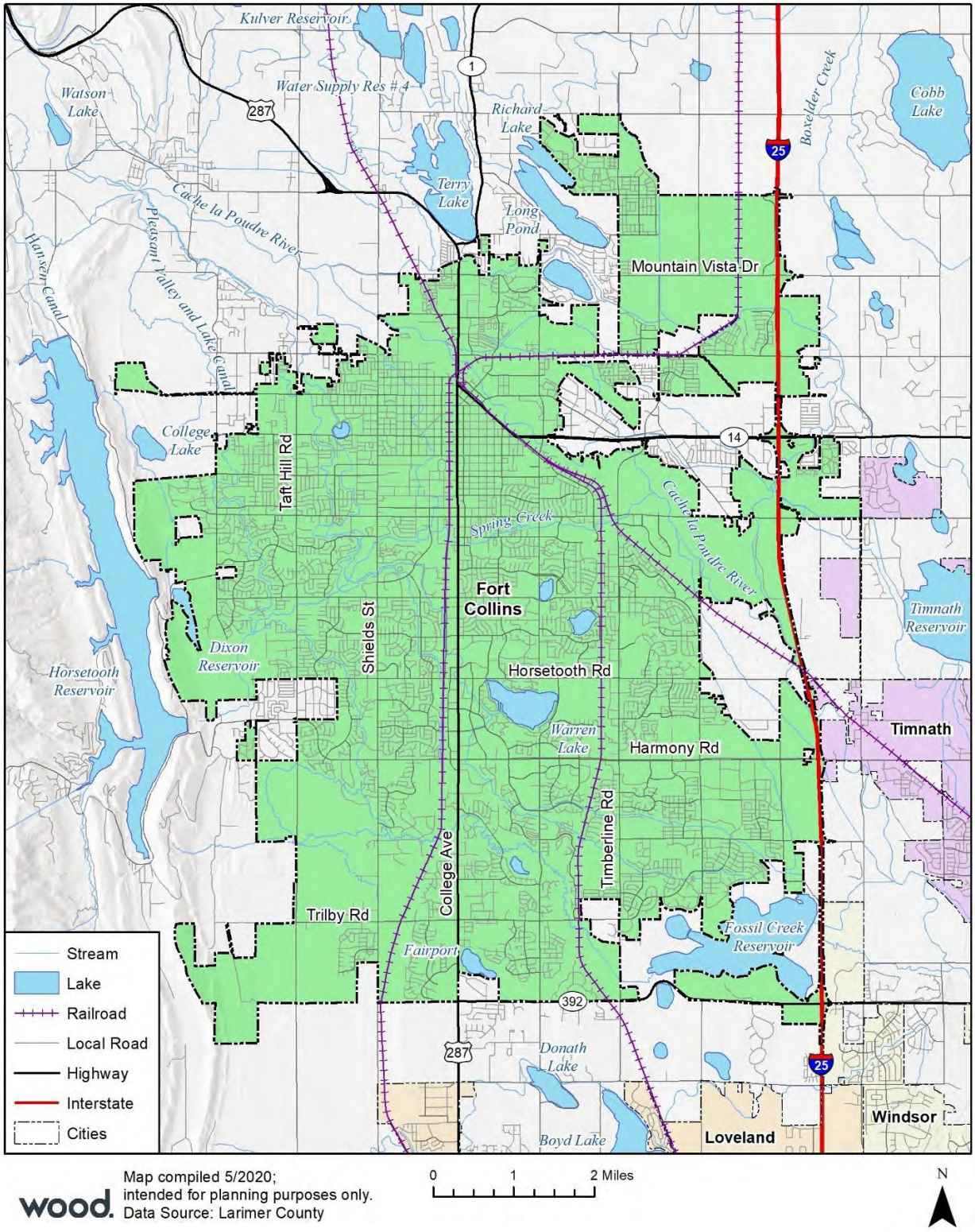
There are approximately 1,600 faculty members and 4,800 additional employees at CSU, making it the largest employer in Fort Collins. The CSU campuses include the main campus in the center of Fort Collins, the Foothills Campus on the west side of town and the CSU Veterinary Teaching Hospital just south of the main campus.

Fort Collins has a mix of manufacturing and service-related businesses. Many high-tech businesses have relocated to Fort Collins because of the resources of Colorado State University and its research facilities. In addition, Fort Collins is home to many small business and entrepreneurial ventures. The brewery industry is significant in Fort Collins, ranging from small craft breweries to large national breweries, such as Anheuser Busch.

Fort Collins was incorporated in 1873. Not long ago Fort Collins was a small community, centered on Old Town and its neighborhoods. In the last 58 years the city has grown from 25,000 people in 1960 to over 162,511 people in 2018.

Figure H-1 shows a map of the City of Fort Collins.

Figure H-1 Map of the City of Fort Collins



H.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the City of Fort Collins.

Table H-1 City of Fort Collins Demographic and Social Characteristics, 2014-2018

City of Fort Collins	2014	2018	% Change
Population	149,627	162,511	8.61%
Median Age	29.3	29.1	-0.7%
Total Housing Units	59,518	65,874	10.7%
Housing Occupancy Rate	96.0%	95.3%	-0.7%
% of Housing Units with no Vehicles Available	5.30%	5.00%	-5.7%
Median Home Value	$253,200	$338,100	33.5%
Unemployment Rate	7.9%	5.9%	-25.3%
Mean Travel Time to Work (minutes)	19.5	20.1	3.1%
Median Household Income	$53,775	$62,132	15.5%
Per Capita Income	$28,921	$32,440	12.2%
% of Individuals Below Poverty Level	18.4%	16.8%	-8.7%
% Without Health Insurance	10.2%	6.2%	-39.2%
# of Households	57,146	62,796	9.9%
Average Household Size	2.5	2.5	-0.8%
% of Population Over 25 with High School Diploma	95.8%	96.5%	0.7%
% of Population Over 25 with bachelor's degree or Higher	51.6%	54.5%	5.6%
% with Disability	7.4%	8.3%	12.2%
% Speak English less than "Very Well"	2.3%	2.9%	26.1%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table H-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Fort Collins	County	Colorado
Median Age	29.1	35.9	36.6
Housing Occupancy Rate	95.3%	91.7%	89.8%
% of Housing Units with no Vehicles Available	5.0%	4.1%	5.2%
Median Home Value	$338,100	$336,200	$313,600
Unemployment	5.9%	5.0%	4.7%
Mean Travel Time to Work (minutes)	20.1	23.2	25.5
Median Household Income	$62,132	$67,664	$68,811
Per Capita Income	$32,440	$35,390	$36,415
% of Individuals Below Poverty Level	16.8%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Fort Collins	County	Colorado
% Without Health Insurance	6.2%	6.3%	8.1%
Average Household Size	2.5	2.5	2.6
% of Population Over 25 with High School Diploma	96.5%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	54.5%	46.3%	40.1%
% with Disability	8.3%	9.8%	10.6%
% Speak English less than "Very Well"	2.9%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table H-3 Demographics by Race and Sex

Fort Collins	Population	%
Total Population	162,511	100%
Male	81,575	50.2%
Female	80,936	49.8%
White, not Hispanic	129,931	80.0%
Hispanic or Latino	19,736	12.1%
Black	2579	1.6%
Asian	5578	3.4%
American Indian and Alaska Native	1383	0.9%
Native Hawaiian and Other Pacific Islander	167	0.1%
Some other race	2572	1.6%
Two or more races	5699	3.5%

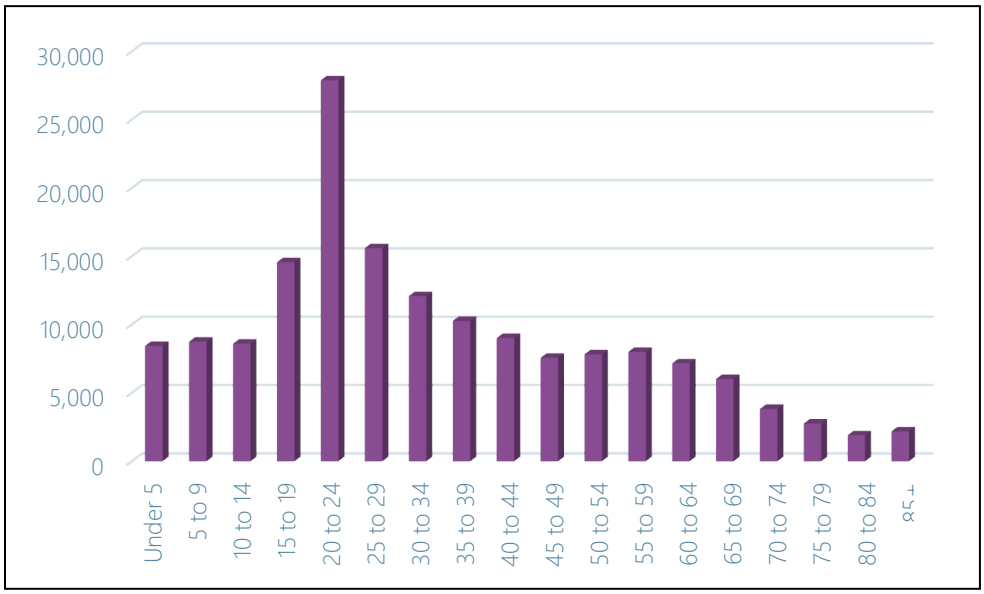
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table H-4 Types and Total Amounts of Housing Units in Fort Collins

Type of Housing Units	Total	%
Total housing units	65,874	100%
1-unit detached	37,053	56.2%
1-unit attached	5,262	8.0%
2 units	1,505	2.3%
3 or 4 units	3,640	5.5%
5 to 9 units	5,030	7.6%
10 to 19 units	5,273	8.0%
20 or more units	6,579	10.0%
Mobile home	1,532	2.3%
Boat, RV, van, etc.	0	0.0%

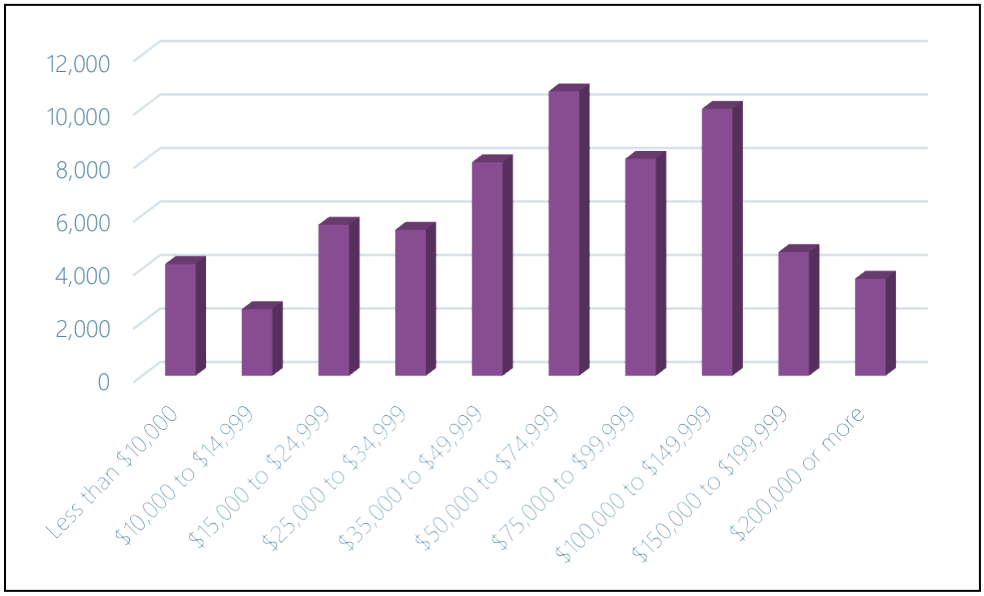
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure H-2 City of Fort Collins Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure H-3 City of Fort Collins Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

H.2.2 Social Vulnerability

Social vulnerability scores for the City of Fort Collins can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. The City of Fort Collins is characterized by a mix of low (bottom 20% in the county) to high (top 20% in the county) levels of social vulnerability. The highly socially vulnerable areas are clustered in the northern part of the community. Resources and measures to reduce the social determinates of disasters may be most effectively allocated to these areas. Moreover, it is critical that the city analyze the individual social vulnerability indicators that make the northern part of the community stand out. Through ongoing evaluation, the City of Fort Collins will be able to more effectively reduce local social vulnerability and increase their resilience to hazard events.

H.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table H-5 Hazard Identification and Risk Assessment Summary for the City of Ford Collins

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Occasional	Extensive	Catastrophic	Medium
Civil Disturbance	Occasional	Limited	Significant	Medium
Dam Inundation	Occasional	Extensive	Catastrophic	High
Drought	Likely	Extensive	Significant	Medium
Earthquake	Unlikely	Significant	Critical	Low
Flood	Likely	Significant	Significant	High
Hazardous Materials	Highly Likely	Significant	Significant	Medium
Landslide/Rockslide	Unlikely	Limited	Negligible	Low
Soil Hazards	Unlikely	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Negligible	Medium
Tornado	Unlikely	Significant	Catastrophic	Low
Utility Disruption	Likely	Limited	Negligible	Low
Wildfire	Likely	Limited	Negligible	Medium
Winter Storm	Highly Likely	Extensive	Significant	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

H.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Fort Collins, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the City's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

H.4.1 Community Asset Inventory

Table H-6 shows the total number of improved parcels, properties, and their improvement and content values for the City of Fort Collins. See Section 4.2.2 of the Base Plan for details and methodology.

Table H-6 Total Exposure of Improved Properties within the City of Fort Collins

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	29	36	$9,864,419	$9,864,419	$19,728,838
Commercial	2,107	4,414	$2,077,934,347	$2,077,934,347	$4,155,868,694
Exempt	626	4,809	$1,825,194,938	$1,825,194,938	$3,650,389,876
Industrial	30	55	$266,330,618	$399,495,927	$665,826,545
Mobile Home	21	1,413	$111,062,467	$55,531,233	$166,593,700
Multiple Unit	982	9,821	$2,074,214,734	$2,074,214,734	$4,148,429,468
Residential	48,211	49,858	$17,300,749,856	$8,650,375,056	$25,951,124,912
Total	**52,006**	**70,406**	**$23,665,351,379**	**$15,092,610,654**	**$38,757,962,033**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

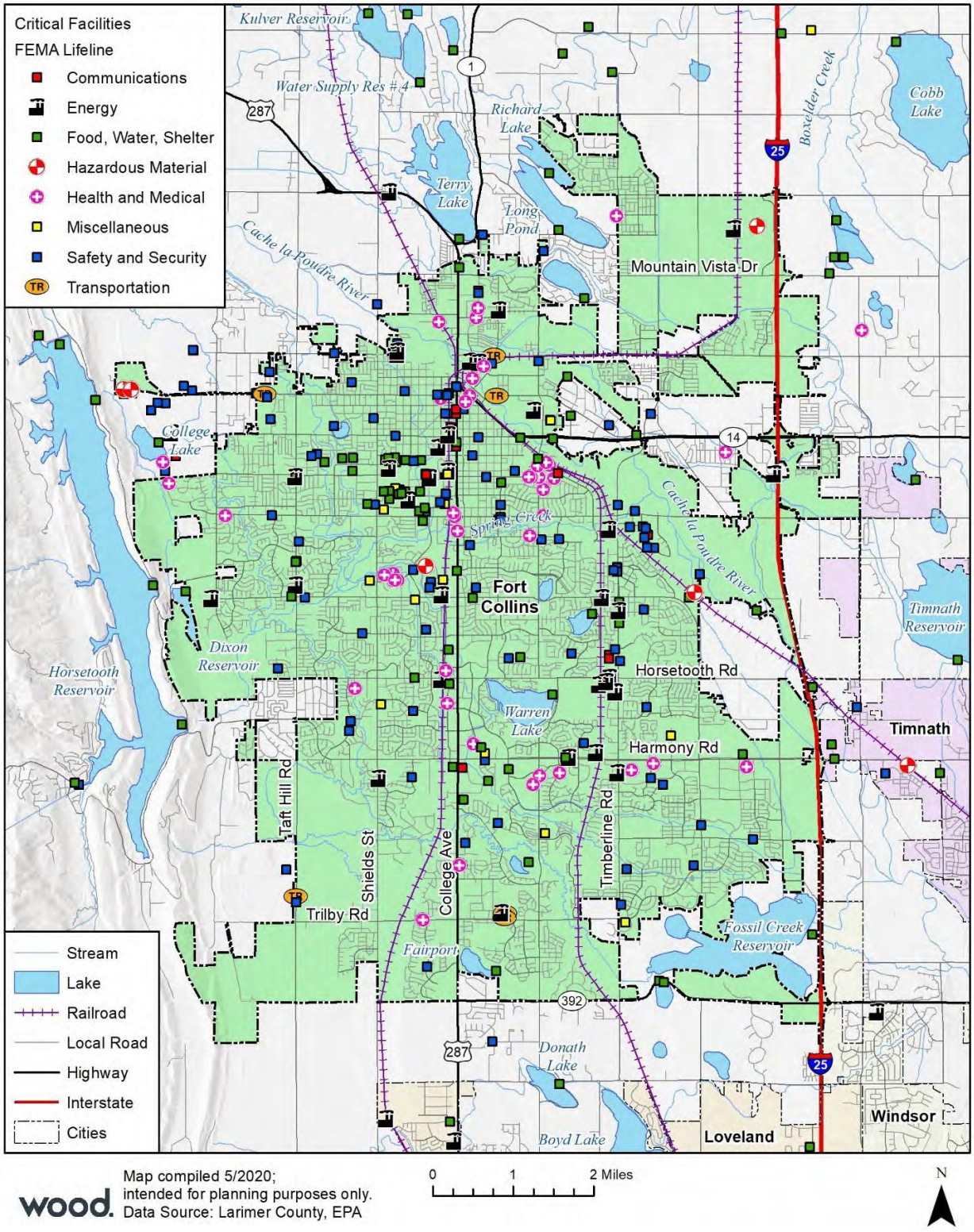
Table H-7 lists summary information about the 268 critical facilities and other community assets identified by the City as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure H-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table H-7 City of Fort Collins Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Communications	16
Energy	31
Food, Water, Shelter	57
Hazardous Material	5
Health and Medical	46
Miscellaneous	13
Safety and Security	94
Transportation	6
Total	**268**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure H-4 City of Fort Collins Critical Facilities and Infrastructure



H.4.2 Dam Inundation

Potential dam inundation areas from multiple dams near the City of Fort Collins are shown in Figure H-5.

Figure H-5 Dam Inundation Areas for the City of Fort Collins

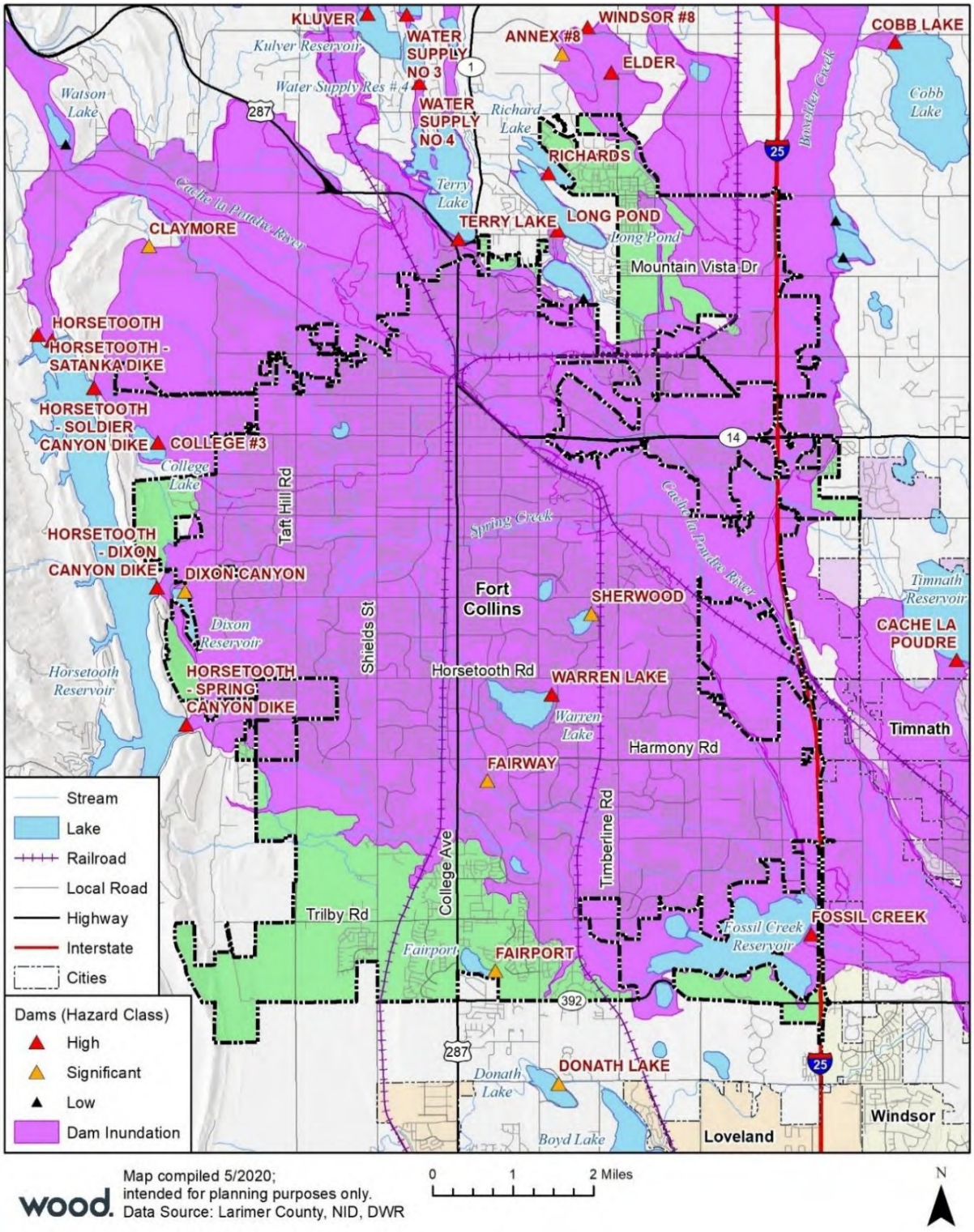


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. Dams upstream of the City of Fort Collins are shown in Table H-8.

Table H-8 Dams Upstream of the City of Fort Collins

Dams Upstream of the City of Fort Collins		
High Hazard Dams		**Significant Hazard Dams**
Barnes Meadow	Long Pond	Annex #8
Chambers Lake	Milton Seaman	Claymore
College #3	North Poudre #2	Curtis Lake
Comanche	North Poudre #3	Dixon Canyon
Douglas	North Poudre #5	Dowdy Lake
Elder	North Poudre #6	Fairport
Flood Control Basin No. 1	North Poudre #15	Fairway
Floodwater Ret. B-2	Panhandle	Floodwater Ret. B-5
Floodwater Ret. B-3	Park Creek	Floodwater Ret. B-6
Halligan	Peterson Lake	Hiawatha
Horsetooth	Rawhide	North Poudre #1
Horsetooth - Dixon Canyon Dike	Richards	North Poudre #4
Horsetooth - Satanka Dike	Rocky Ridge	Parvin
Horsetooth - Soldier Canyon Dike	Terry Lake	Sherwood
Horsetooth - Spring Canyon Dike	Warren Lake	Twin Lakes Reservoir
Hourglass	Water Supply No 3	Worster
Kluver	Water Supply No 4	
Long Draw	Windsor #8	

Source: NID

Table H-9 shows that Fort Collins has 46,938 parcels potentially at risk of dam inundation, valued at $35.7B; an estimated 113,266 residents live in those parcels.

Table H-9 City of Fort Collins Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Agricultural	23	29	$7,982,102	$7,982,102	$15,964,204	
Commercial	2,018	4,283	$2,023,208,735	$2,023,208,735	$4,046,417,470	
Exempt	599	4,465	$1,771,843,455	$1,771,843,455	$3,543,686,910	
Industrial	28	53	$265,607,514	$398,411,271	$664,018,785	
Mobile Home	18	1,292	$102,155,358	$51,077,679	$153,233,037	3,178
Multiple Unit	981	9,817	$2,073,934,644	$2,073,934,644	$4,147,869,288	
Residential	43,271	44,751	$15,462,841,171	$7,731,420,739	$23,194,261,910	110,087
Total	**46,938**	**64,690**	**$21,707,572,979**	**$14,057,878,625**	**$35,765,451,604**	**113,266**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

There are 25 critical facilities identified in areas at risk of dam inundation in the City of Loveland, shown in Table H-10.

Table H-10 City of Fort Collins Critical Facilities Potentially at Risk of Dam Inundation

FEMA Lifeline	Count
Communications	16
Energy	30
Food, Water, Shelter	56
Hazardous Material	5
Health and Medical	40
Miscellaneous	14
Safety and Security	92
Transportation	3
Total	**256**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Cascarta, Larimer County GIS, U.S. Census Bureau, Wood analysis

Based on the above analysis, the spatial extent and severity of dam inundation in the City of Fort Collins is higher than that of Larimer County as a whole. The overall significance of this hazard for the City is High.

H.4.3 Flood

FEMA mapped floodplains in and around the City of Fort Collins are shown in Figure H-6.

As shown in Table 4-34 in Section 4.3.6 of the Base Plan, the City of Fort Collins has 120 improved parcels, 164 buildings, and an estimated 216 residents in areas at 1% annual chance of flooding, with estimated losses of $25,963,779. There are an additional 208 parcels, 292 buildings, and 499 residents located in the 0.2% annual chance flood hazard area, with estimated losses of $66,207,086. The City also has 430 parcels, 665 buildings, and 585 residents in areas protected by levees, with a potential loss estimate of $92,948,412.

There are three levees located along the Poudre River in Fort Collins:

Oxbow Levee - Located between Lincoln and Linden Street. This levee protects the Buckingham Neighborhood and businesses along the north side of Lincoln Avenue. RPATH Levee – This levee keeps water in the main channel and protects business along Timberline Road near Prospect Road.

Drake Water Reclamation Facility Levee – Protects the City's Drake Water Reclamation Facility and is located along the north and west side of the facility.

The City has twelve critical facility identified in FEMA mapped floodplains, as shown in Table 4-75. The Mulberry Water Reclamation Facility is located in parts of the mapped 0.2% annual flood risk area.

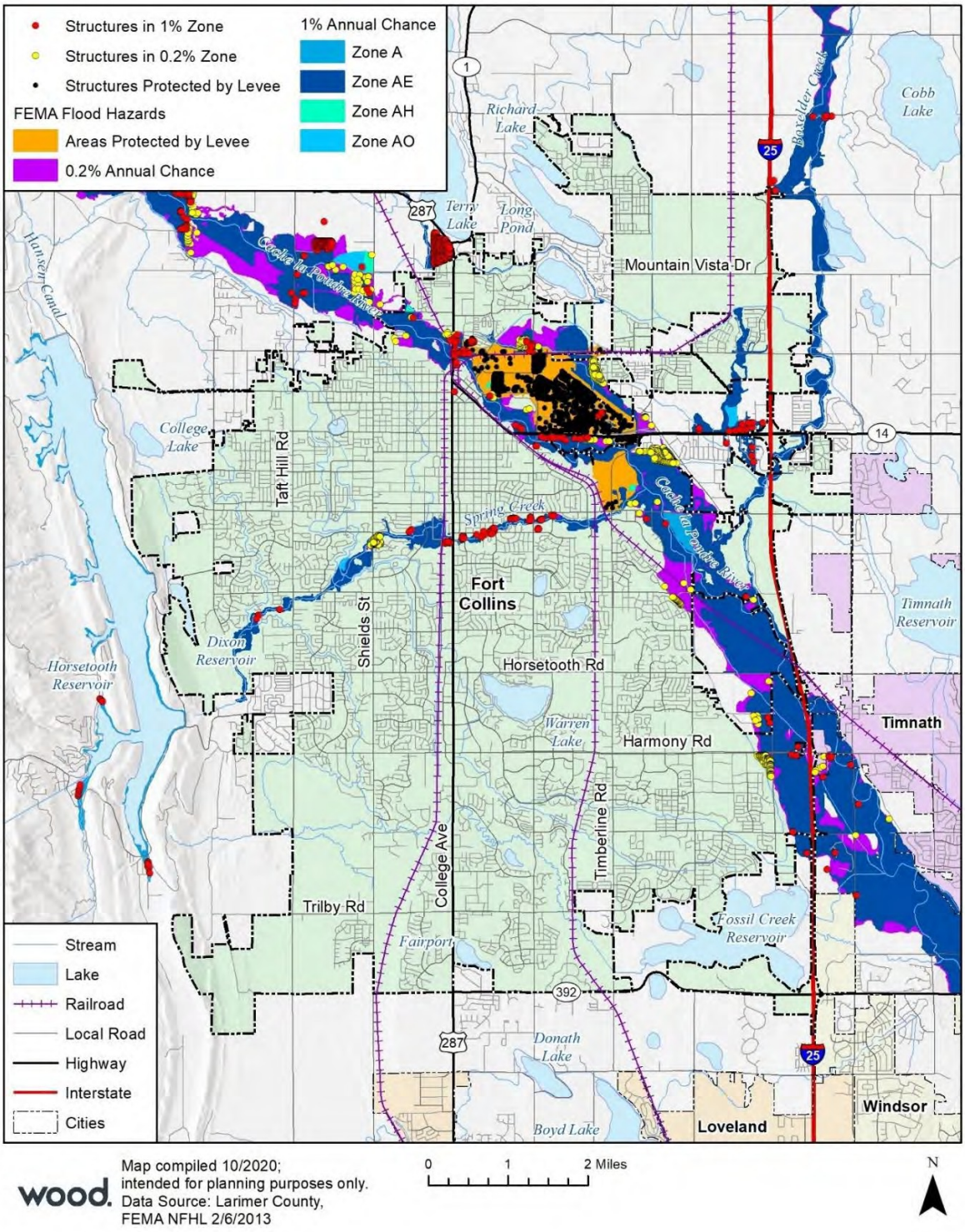
Table H-11 Fort Collins Critical Facilities Exposed to Risk of Flooding

FEMA Lifeline	1% Annual Flood Risk	0.2% Annual Flood Risk	Protected by Levee	Total
Energy	1			1
Food, Water, Shelter		2	1	3
Hazardous Material		1		1
Health and Medical	1		1	2
Miscellaneous			1	1
Safety and Security		1	3	4
Transportation			1	1

FEMA Lifeline	1% Annual Flood Risk	0.2% Annual Flood Risk	Protected by Levee	Total
Total	**2**	**4**	**7**	**12**

Source: Cascarta

Figure H-6 FEMA Special Flood Hazard Areas for the City of Fort Collins



Drainage Basin Master Plan

The City of Fort Collins has 12 drainage basins: the Cache la Poudre, Dry Creek, Cooper Slough/Boxelder, West Vine, Old Town, Canal Importation, Spring Creek, Foothills, Mail Creek, Fox Meadows, McClellands and Fossil Creek. All have flooded in the past for various reasons. Each basin is characterized by unique features that must be taken into account when considering hazard mitigation and flood safety. The Drainage Basin Master Plan, approved by City Council in June 2004, describes the flooding history of each basin, identifies potential problem areas and recommends improvements. The Master Plan is updated regularly to reflect changes.

Flood Warning and Response System

The City of Fort Collins operates an advanced flood warning and response system comprising 82 gage locations within the City and upstream parts of Larimer County, which are monitored 24/7 from April through September. Low, medium, and high thresholds have been established with individual emergency action plans for each gage used to monitor flooding risk. Because of the nature of flash flooding, there is little time for flood warning, and evacuation is often not the recommended or even feasible option. Notifications can be sent via an auto-dialer system (LETA911.org). The City also uses social media, a local cable TV channel, and the website to provide information to the public either directly, or by partnering with Larimer County via the Integrated Public Alert and Warning System (IPAWS). The City has a focused public outreach effort to help residents and businesses know in advance the steps that need to be taken when a flood happens.

Natural and Beneficial Functions of the Floodplain

The City of Fort Collins recognizes the natural and beneficial functions of the floodplain. For example, 66% of the Poudre River 100-year floodplain has been preserved as open space. Much of that area is managed by the City's Natural Areas program to provide beneficial habitat. These large open areas were extremely helpful in the September 2013 flood where flood water could spread out, slow down and not cause damage. The City continues to acquire new open space properties and rehabilitate areas to further augment low-impact flood water storage in the basin floodplains.

National Flood Insurance Program Policy Analysis

The City of Fort Collins has participated in the National Flood Insurance Program (NFIP) since 1979. NFIP insurance data shows that as of September 2020 there are 353 flood insurance policies in force in the City providing $108,494,500 of coverage; the majority of these are Preferred Risk policies. There have been 64 historical claims for flood losses, totaling $687,909. There are two repetitive loss structures and no severe repetitive loss structures as defined by the NFIP. The City's participation in the Community Rating System (CRS) program is described in H.5.2 below.

Summary

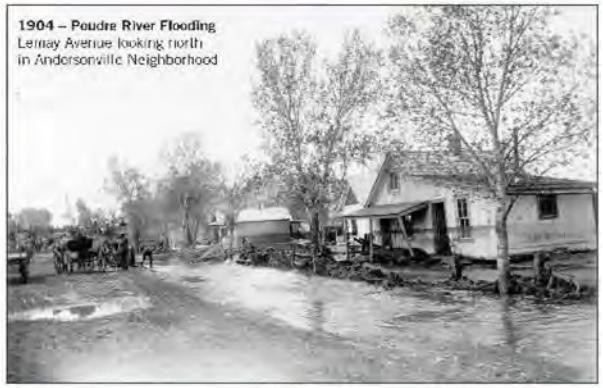
Elements of the "Flood Mitigation Appendix" of the Fort Collins Stormwater Master Plan is included in Appendix E of this plan as a supplement to the risk assessment. Figure H-7 illustrates the history of flooding events in the City of Fort Collins. The flood history information was shared with the public at the Hazard Mitigation Plan Open House in July, 2015.

Based on the above analysis, Fort Collins experiences lower frequency and a reduced spatial extent of flooding than Larimer County as a whole, largely as a result of the extensive mitigation work that has been done to date. The overall significance of this hazard for the City is Moderate.

Figure H-7 Fort Collins Flood History Information

Drainage Basins	Dates	Descriptions
Cache la Poudre River	1844, 1864, 1891, 1904, 1923, 1930, 1976, 1983, 1999, 2010, 2011, 2013 and 2014	The three largest floods occurred in 1864, 1891 and 1904, with peaks of approximately 21,000 cubic feet per second (cfs). For comparison, the discharge of the Poudre River at "flood stage" is about 4,000 cfs. Flooding on the Poudre is primarily from snowmelt in late May and June. However, flash flooding can occur at any time. A severe flood has not occurred in more than 100 years.
Spring Creek	1902, 1904, 1938, 1949, 1951, 1961, 1977, 1983 and 1997	The 1997 flood resulted in five deaths, destruction of 120 mobile homes and damage to 2,000 homes and businesses. This flood was considered to be greater than a 500-year event.
Dry Creek	No serious flooding since about 1950	The absence of even minor flooding is generally attributed to the network of irrigation canals that have some capacity for intercepting small to moderate Dry Creek flows.
Fossil Creek	1902, 1938, 1965, 1977, 1979, 1997, 1999 and 2007	Fossil Creek is relatively undeveloped and past floods have gone unnoticed. In addition to flooding hazards, Fossil Creek also is susceptible to bank erosion.
Boxelder Creek/ Cooper Slough	1909, 1922, 1930, 1937, 1947, 1963, 1967, 1969 and 2007	Boxelder Creek has a drainage area of 251 square miles and 176 square miles now are controlled by Soil Conservation Service flood control dams near Wellington.
Old Town Basin	1904, 1933, 1938, 1951, 1977, 1983, 1988, 1992, 1997, 2009 and 2018	Street flooding is the primary problem in this basin.
Canal Importation Basin	1938, 1951, 1975, 1992, 1997, 1999 and 2009	There are several small drainage areas in this basin. Development prior to drainage criteria encroached on the channels, reduced the flow capacity and caused flooding. The irrigation canals also overflow their banks and cause flooding.
West Vine Basin	1980, 1997 and 1999 (Past floods were not well documented.)	Localized flooding occurs due to encroachment on drainages and from irrigation ditch spills.


1992 – Old Town Flooding
Shields and Elizabeth Street looking toward Moby Arena


1904 – Poudre River Flooding
Lemay Avenue looking north in Andersonville Neighborhood


1997 – Spring Creek
Creekside Park along College Avenue

H.4.4 Hazardous Materials Incident

Designated hazardous materials routes passing through the City of Fort Collins include I-25 and several rail lines. Five of the County's 10 Risk Management Plan (RMP) facilities are located within the City limits.

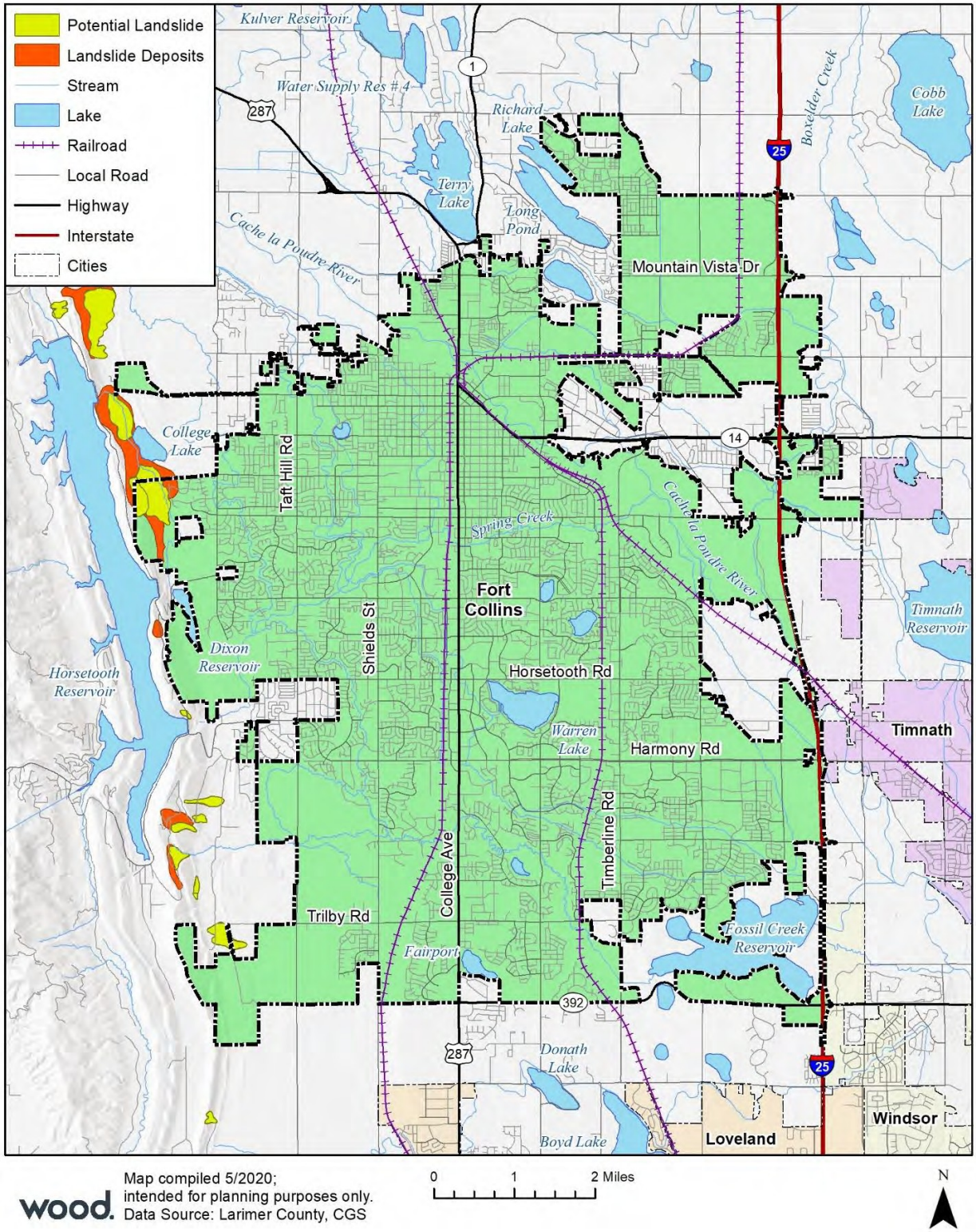
The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes 155 hazardous materials incidents in or near the City of Fort Collins from 1987 through 2019. This represents 54% of all reported incidents in the County, and an average of four to five hazardous materials incidents per year. Seven evacuations are associated with these incidents, along with three deaths and eighteen injuries. As noted in the Base Plan, it is likely, however, that the majority of those injuries came from the physical impacts of the accident that caused the release, rather from exposure to hazardous materials themselves.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the City of Fort Collins is higher than that of Larimer County as a whole. The overall significance of this hazard for the City is Medium.

H.4.5 Landslide/Rockslide

There are 26 parcels and 30 buildings at risk of landslide in the City of Fort Collins. The total value of these buildings is $20,768,607, and an estimated 74 residents would be affected. There are no parcels or buildings at risk of rockslide. There is one Health and Medical critical facility at risk of landslide. Figure H-8 shows the potential landslide hazards for the City of Fort Collins. Based on the analysis above, the overall significance of this hazard for the City is Low.

Figure H-8 City of Fort Collins Landslide Hazards



H.4.6 Soil Hazards

No historically undermined areas or areas at risk of land subsidence have been identified in the City of Fort Collins. However significant portions of the City are at risk of collapsible or expansive soils, as shown in Figure H-9 and Figure H-10.

Table 4-49 in Section 4.3.9 of the Base Plan shows 23,067 parcels and 29,502 buildings potentially exposed to collapsible soils, with a total value of $18,678,848,247. This represents more than 81% of all parcels in the Town.

Similarly, Table 4-50 in Section 4.3.9 of the Base Plan shows 32,320 parcels and 44,773 buildings at risk to expansive soils, with a total value of $25,798,882,438. An estimated 78,329 residents are also at risk.

The overall significance of this hazard for the City is Medium.

Figure H-9 Potential Collapsible Soils Areas – City of Fort Collins

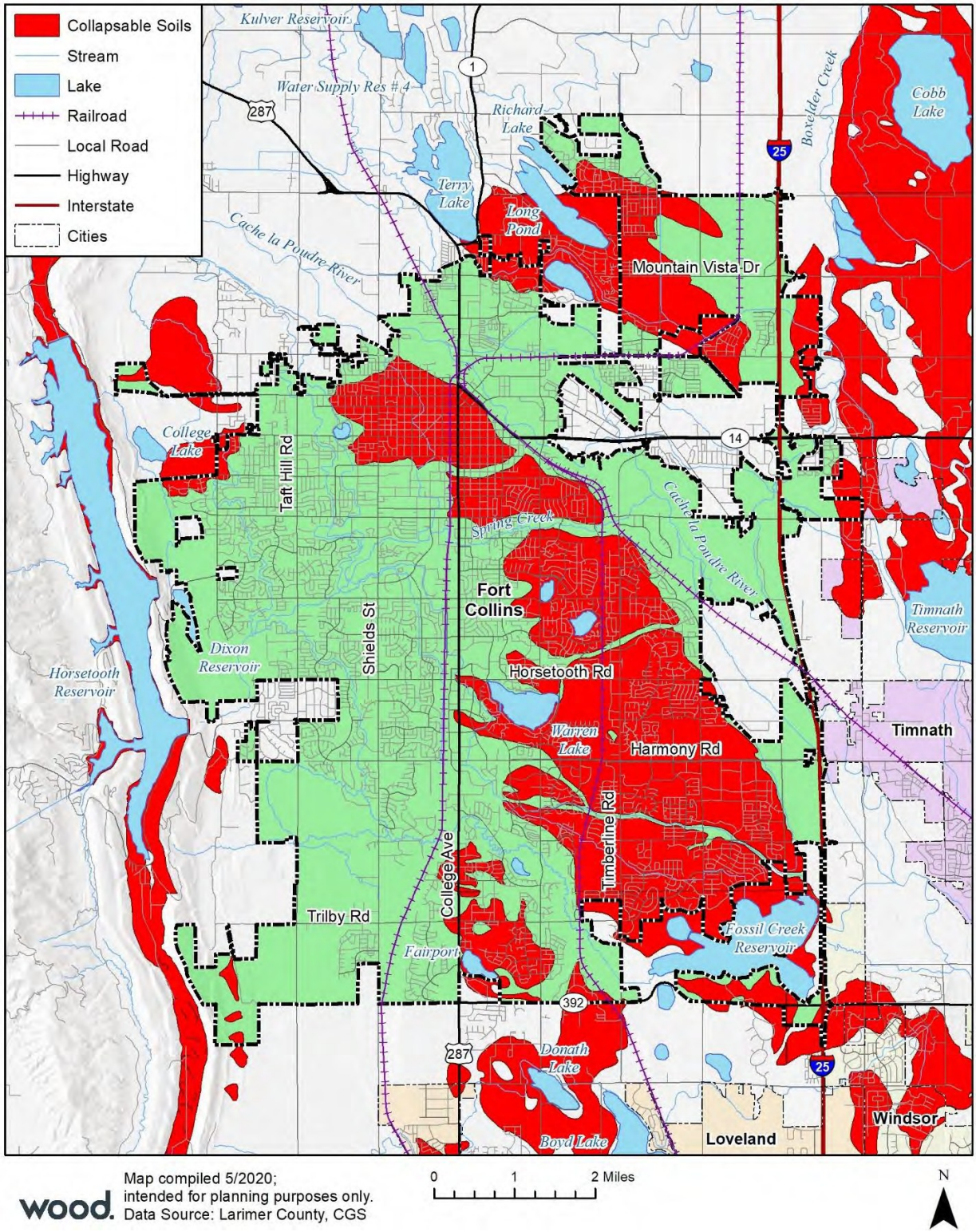
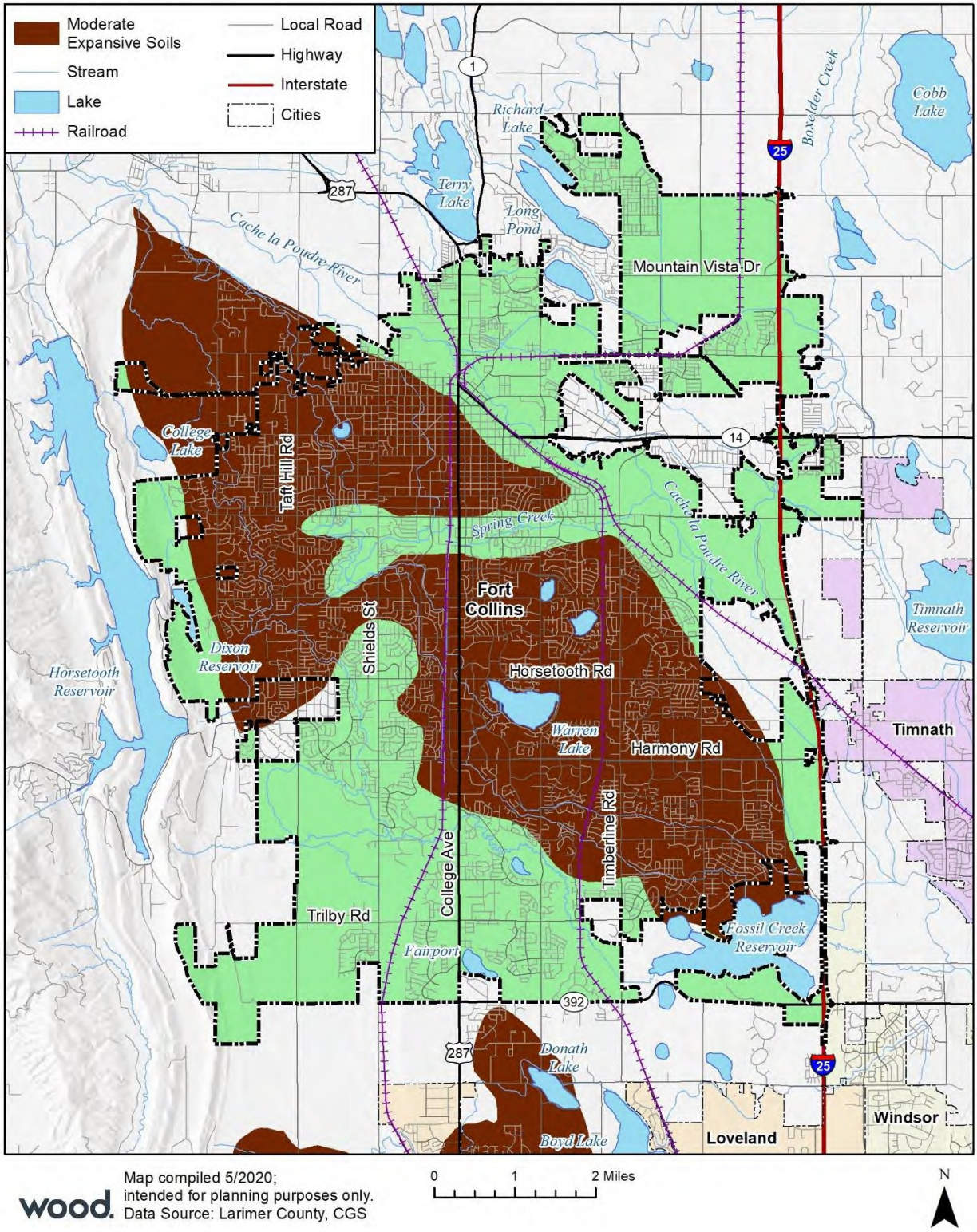


Figure H-10 Potential Expansive Soils Areas – City of Fort Collins



The critical facility exposure analysis shows 99 critical facilities in Fort Collins exposed to potentially collapsible soils and 171 at risk of expansive soils, as shown in the following table.

Table H-12 Fort Collins Critical Facilities with Potential Collapsible Soil Hazards

FEMA Lifeline	Collapsible Soil	Expansive Soil	Total
Communications	9	11	20
Energy	12	20	32
Food, Water, Shelter	13	46	59
Hazardous Materials	0	1	1
Health and Medical	20	23	43
Miscellaneous	3	9	12
Safety and Security	41	59	100
Transportation	1	1	2
Total	**99**	**171**	**270**

Source: Cascarta

While the Town is at low risk of land subsidence or undermined areas, significant portions of the Town are exposed to expansive or collapsible soils compared to Larimer County as a whole. The overall significance of this hazard for the Town is High.

H.4.7 Wildfire

The City of Fort Collins has a history of wildfire activity in and adjacent to the City. Areas in and around the City of Fort Collins at risk of wildfire, based on CO-WRAP assessment, are shown in Figure H-11.

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the City has 298 parcels and 305 buildings at moderate or high risk of wildfire, with a total value of $211,669,903. An estimated 736 residents live in these at-risk areas.

The City has 16 critical facilities identified at being at risk of wildfires, as shown in Table H-13.

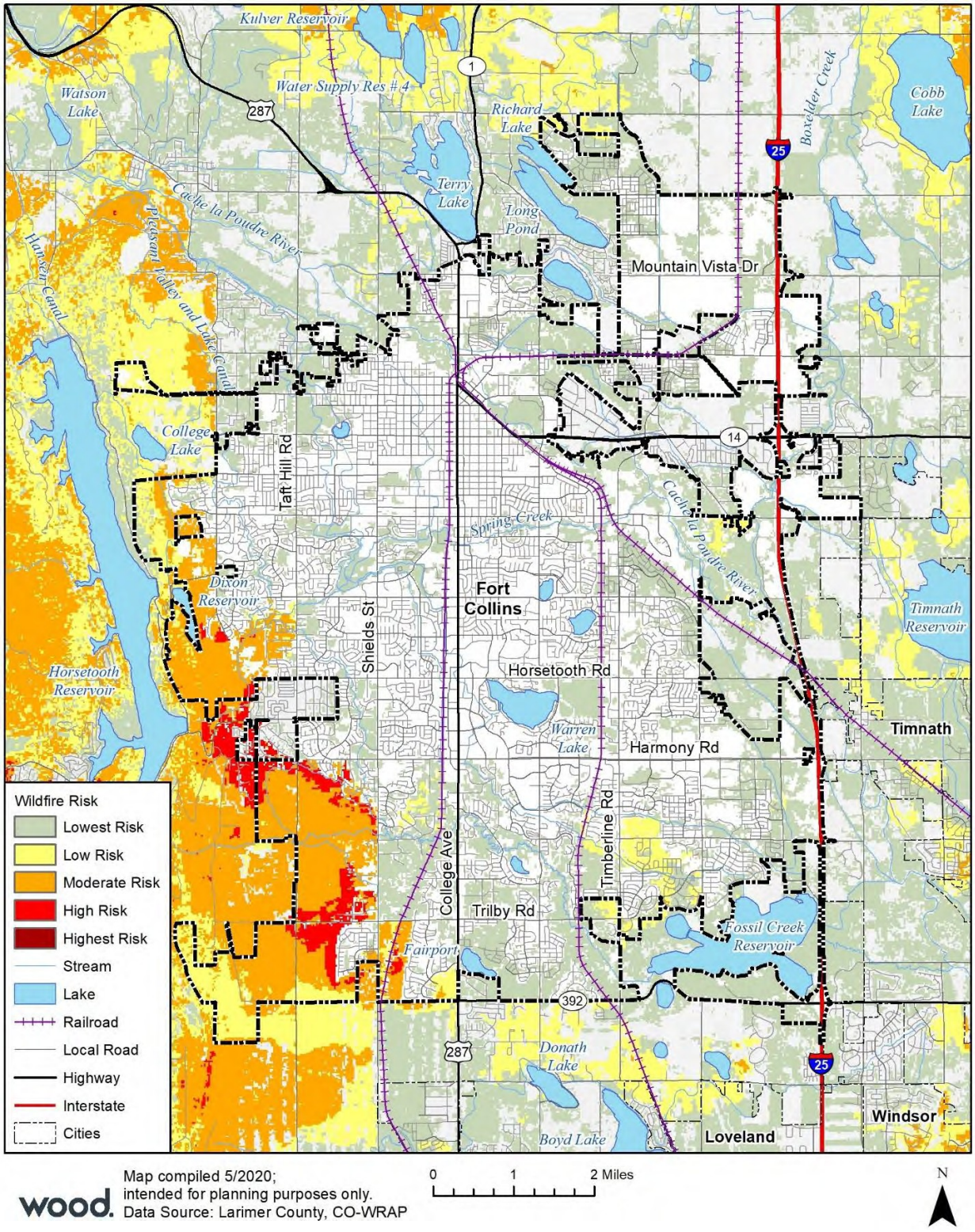
Table H-13 Fort Collins Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Energy	4					4
Food, Water, Shelter	4	1				5
Hazardous Materials		1				1
Miscellaneous	1					1
Safety and Security	3		1			4
Transportation			1			1
Total	**12**	**2**	**2**	**0**	**0**	**16**

Source: Cascarta, CO-WRAP

While a relatively low percentage of the City's total parcels and structures is at direct risk of wildfire, a look at Figure H-11 shows a significant portion of the land immediately west of the City are at moderate or high wildfire risk. The overall significance of this hazard for the City is Medium.

Figure H-11 Fort Collins Wildfire Risk



H.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the City of Fort Collins to reduce hazard impacts or that could be used to implement hazard mitigation activities.

H.5.1 Existing Capabilities

The following tables summarize the City's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table H-14 City of Fort Collins Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	https://www.fcgov.com/cityplan/
Zoning ordinance	Yes	City of Fort Collins Land Use Code https://library.municode.com/co/fort_collins/codes/land_use?nodeId=CITY_FORT_COLLINS_LAND_USE_CODE
Subdivision ordinance	Yes	https://www.fcgov.com/developmentreview/applications
Growth management ordinance	Yes	https://library.municode.com/co/fort_collins/codes/land_use?nodeId=ART3GEDEST_DIV3.7COURGRST_3.7.1GE
Floodplain ordinance	Yes	City Code, Chapter 10, Article II https://library.municode.com/co/fort_collins/codes/municipal_code?nodeId=CH10FLPRPR_ARTIIFLHAAR
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Chapter 26 of City Code; Fort Collins Stormwater Criteria Manual https://www.fcgov.com/utilities/img/site_specific/uploads/Fort_Collins_Stormwater_Criteria_Manual_-_DRAFT_for_Council.pdf
Building codes	Yes	2018 International Building Code and 2018 International Residential Code
Fire department ISO rating	Yes	https://www.poudre-fire.org/online-services/iso-resources
Erosion or sediment control program	Yes	Fort Collins Municipal Code and Charter - Chapter 10, Division 7 - Erosion Buffer Zones, Sec. 10-201 https://library.municode.com/co/fort_collins/codes/municipal_code?nodeId=CH10FLPRPR_ARTIIFLHAAR_DIV7ERBUZO Fort Collins Stormwater Criteria Manual https://www.fcgov.com/utilities/img/site_specific/uploads/Fort_Collins_Stormwater_Criteria_Manual_-_DRAFT_for_Council.pdf
Stormwater management program	Yes	https://www.fcgov.com/utilities/what-we-do/stormwater
Site plan review requirements	Yes	https://www.fcgov.com/developmentreview/applications.php
Capital improvements plan	Yes	https://www.fcgov.com/planfortcollins/pdf/cip-doc-2012.pdf?1415894773
Economic development plan	Yes	https://www.fcgov.com/cityplan/
Local emergency operations plan	Yes	Furnished upon request
Other special plans	No	
Flood insurance study or other engineering study for streams	Yes	https://www.fcgov.com/utilities/what-we-do/stormwater/flooding/floodplain-maps-documents

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Elevation certificates (for floodplain development)	Yes	https://www.fcgov.com/utilities//img/site_specific/uploads/ff086033_elevcert_re_11feb2020.pdf?1586365905 https://library.municode.com/co/fort_collins/codes/municipal_code?nodeId=CH10FLPRPR_ARTIIFLHAAR_DIV3GESTFLHAANRE_S10-37GEPRREELST
Other?	Yes	Sourcewater Spill Response Plan Harmful Algae Bloom Monitoring and Treatment Plans

Source: City of Fort Collins planning team

Table H-15 City of Fort Collins Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	CDNS – City Planning
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	CDNS – Building Services
Planner/engineer/scientist with an understanding of natural hazards	Yes	CDNS - City Planning
Personnel skilled in GIS	Yes	Information Technology – GIS Department
Full time building official	Yes	CDNS - Building Services
Floodplain manager	Yes	Utilities – Water Engineering Field Services
Emergency manager	Yes	Emergency Preparedness and Security
Grant writer	No	Finds grants, does not develop
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Information Technology – GIS Department
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	FCTV (cable override), and LETA911/FC911 (reverse 911)

Source: City of Fort Collins planning team

Table H-16 City of Fort Collins Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Unknown	May require a project update to Housing and Urban Development
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	No	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	Yes	No	Requires a vote from Residents
Incur debt through special tax bonds	Yes	Unknown	Requires a vote from Residents
Incur debt through private activities	Yes	Yes	
Withhold spending in hazard prone areas	Yes	No	

Source: City of Fort Collins planning team

Table H-17 Education and Outreach Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	See below
Firewise	No	
StormReady	Yes	

Source: City of Fort Collins planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

The Fort Collins Municipal Code and Charter were established in 1986 and includes provisions for erosion setbacks under Chapter 10 Flood Protection and Prevention, Article II Flood Hazard Areas, Division 7 Erosion Buffer Zones. The erosion buffer zones for the Fossil Creek, Boxelder Creek, Mail Creek and McClellands Creek basins have been mapped and are available in GIS form from the City. The total erosion buffer zone acreage for these four basins is 243.4 acres. There are specific development standards outlined in the code associated with the erosion buffer zones to limit damage from stream erosion.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Fort Collins has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Past or ongoing public education or information programs include:

- EPS hosted CERT Classes, which is currently on hold due to re-evaluation of the program.
- Utilities offers educational sessions of a variety of topics. Can be found at https://www.fcgov.com/utilities/community-outreach and https://www.fcgov.com/utilities/education-programs.
- Environmental Services offers regular educational programs on reducing climate footprint and sustainability efforts.
- The Fort Collins Floodplain Management Public Information Committee has been in place since 2014 and produces an annual report.

H.5.2 Participation in the Community Rating System

The Community Rating System (CRS) is a voluntary national program developed by FEMA that provides flood insurance premium reductions based on a participating community's implementation of floodplain management programs that exceed the minimum requirements established by the National Flood Insurance Program (NFIP). Credit points for the CRS floodplain management activities determine a community's CRS Class.

Fort Collins is currently a Class 2 CRS community and works hard to implement policies and education campaigns that help reduce flood risk in and around the community. Appendix E contains additional information on the City's CRS participation and its floodplain management program.

H.5.3 Opportunities for Enhancement

Based on the capability assessment, Fort Collins has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the City to expand or improve on these policies

and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training will help to inform City staff and City Council on how to optimize integrating hazard information with mitigation projects, so City policies and duties continue to improve. Increasing City staff awareness of hazards and mitigation strategies will result in a better-informed cadre of professionals that can better communicate this information to the public.

H.6 Mitigation Strategy

The City of Fort Collins has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The City had 32 mitigation actions in the 2016 Plan. Ten of these actions have been completed.

- Boxelder Basin Regional Stormwater Improvements
- Flood Warning System (FWS) Enhancements
- East Vine Drive Property Acquisition.
- Water Reclamation and Biosolids- Improvement in Processes and Infrastructure
- Water Reclamation and Biosolids- Improvement in Technology
- Downtown River District Storm Sewer Improvements
- Comprehensive Plan (City Plan) Update
- Mulberry-Riverside Stormwater Project
- North East College Corridor Outfall
- Training in Disaster Management Large Scale Incidents

The remaining 22 actions have been carried over into the 2021 Plan, along with 13 new actions.

The local planning team identified and prioritized the following mitigation actions for the City of Fort Collins based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the City of Fort Collins will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the City has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table H-18 City of Fort Collins 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
H1*	1, 4	Flooding	**Green Infrastructure policies and outreach.** Issue: Reduce Flooding by widening the policies that require green infrastructure, improving technologies used, increasing alternatives that can be used, improving available incentives, increasing awareness and mitigation by City agencies and the public. Recommendation: Improved specifications, better technical details, easier access. Action: Enhancement of Green Infrastructure policies through incentives, outreach, and technical support for implementation.	**City of Fort Collins - Stormwater Utility** City of Fort Collins Customer Connections Department	$300,000/yr.	Fort Collins Utilities, EPA, Grants	Medium	Ongoing	Annual Implementation. Policies have been updated and a new Green Infrastructure Implementation Manual has been adopted by the Fort Collins Council. Green Infrastructure policies will continue to be updated as need arises as part of the City's continual improvement process.
H2	1, 2	Flooding	**Low Impact Development Retrofits.** Issue: Improve water quality, Reduce Urban Flooding and Enhance community resiliency by retrofitting green infrastructure into existing City regional drainage facilities. Recommendation: Incorporated into Drainage Master Plan Updates approved by Water Board and City Council. Action: Retrofitting of Green Infrastructure facilities into existing regional facilities pub.	**City of Fort Collins - Stormwater Utility** City of Fort Collins Parks, City of Fort Collins Natural Areas	Varies from project to project can range from S25K to $200K	Fort Collins Utilities, City of Fort Collins Parks and Recreation, Fort Collins Sustainability Services, Grants	Low	Ongoing	In Progress. We continue to implement retrofits to existing infrastructure as the City builds Capital projects where Green Infrastructure is incorporated into project design and construction.
H3	1,2,3	All	**Training in Disaster Management Large Scale Incidents.** Issue: City Emergency Management and Security has assumed responsibility for disaster management training (outside of fire and wildland which remains with PFA) for community hazard response. As an emergency response organization, expanding their scope in areas other than response will increase the community's capability to be more resilient. Recommendation: Increase training and knowledge in disaster management. Action: Additional training in ICS (Command Staff Positions), Additional training in EOC Operations G775, Additional training in	**PFA Training Division Fire and Wildland Fire and Rescue** City Emergency Preparedness and Security – Non-Fire Hazards	$5,000	Annual Budget, EMPG	Medium	Ongoing	In Progress. On track with education and outreach for drought, flood, severe storm, severe winter weather, and wildfire. More coordination on extreme temperatures is needed due to staff turnover.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			Disaster Management Operations MGT 317, 343, 345, Command and Control of Major Emergency Operations.						
H4	1, 3, 4	Drought, Extreme Temperatures, Flood, Severe Storm, Severe Winter Weather, Wildfire	**Public Education and Awareness**. Issue: To enhance our overall preparedness, City staff and the residential and business community members need access to ongoing education through awareness campaigns, events, public outreach, website, social media, and education workshops. Recommendation: Continue to identify, promote, and present education workshops, awareness campaigns and training opportunities for City staff, residents, non-profit organizations, and business owners. Promote web programmable thermostats for remote control of heat to prevent frozen pipes See Action Worksheet for additional details.	**City of Fort Collins.** Larimer County, Poudre Fire Authority, Fort Collins Police, LETA, United Way, American Red Cross, FEMA and other identified stakeholders and community response agencies as required to enhance overall knowledge and preparedness.	Most costs will be absorbed within existing annual budgeted line items, which currently supports 24 x 7 on-call communications support.	Annual budgets and mitigation grant opportunities.	Medium	Ongoing	In Progress. On track with education and outreach for drought, flood, severe storm, severe winter weather, and wildfire. More coordination on extreme temperatures is needed due to staff turnover.
H5	1, 2	Flood	**Magnolia Storm Sewer.** Location: Old Town Fort Collins area along Magnolia Street to the Cache la Poudre River. Issue: This area of Fort Collins has old undersized storm sewers that do not meet current drainage standards nor have a proper outfall to the River. Recommendation: Install a new storm sewer system to improve the drainage and reduce flooding for storms up to and including the 100-year event and improve water quality for smaller more frequent storm events (2-year a d below). Action: Design and construct new storm sewer.	**City of Fort Collins – Stormwater Utility.** CDOT, CWCB, FEMA	$22M	Stormwater Utility Fee, Grants	Medium	5-10 years	In Progress. Magnolia Street Stormwater Outfall was the City's highest priority project, but now it is the fifth priority based on the 2019 Old Town Optimized Plan.
H6	1, 2, 5	Flood	**Stormwater Master Planning.** Issue: The majority of the City's Master Plans were modeled using MODSWM software. This software is outdated and does provide robust dynamic hydrologic modeling. Recommendation: The City is updating the	**City of Fort Collins – Stormwater Utility.** Larimer County	$1M over a 5 year period	Stormwater Utility Fee	High	Ongoing	In Progress. Updated the plan to update two stormwater master plans per year for the next 10 years.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			hydrology in all the Master Plans to be converted to EPA SWM. Action: Update master plans to EPA SWM.						
H7	1, 2, 3, 4, 5	Utility Disruption, Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Electric Supply.** Issue: Communication and Information shared with citizens within the area. Recommendation: Utilize banners hanging in cities and surrounding area to spread the information of potential risks. Also utilize vehicles such as buses and work trucks to spread the word. Information could contain things such as where to go to get information on suggested items for a "Go Bag", (banners are hung in Fort Collins yearly for reminders such as "Flood Awareness Week", "Mosquitos", other potential risks could be advertised to make people aware. Action: Coordination of hanging of banners in different areas and/or making of signs for use on vehicles.	**Larimer County.** City of Loveland, City of Estes Park, City of Fort Collins, Wellington, Timnath, Red Feather	$50,000	Grants, future budgets.	Medium	Ongoing	In Progress. Will be updating in 2021.
H8	1, 2	Utility Disruption, Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Electric Distribution.** Issue: Enhanced coverage of infrastructure maintenance of the City of Fort Collins L&P. (Add another full-time maintenance crew). Recommendation: Fully staff another full-time maintenance crew within L&P to perform maintenance and follow up to resolve issues encountered. Action: Request through BFO within the city another crew and equipment to perform maintenance of the electric infrastructure.	City of Fort Collins L&P	$200,000	Within L&P budget	High	Unknown	In Progress. Will be updating in 2021.
H9	1	Flood, Severe Storm	**Drainage System Maintenance.** Issue: Ongoing maintenance of the City drainage system to prevent failures. Recommendation: Annual assessment and maintenance plan with projects prioritized by need and funding availability. Action: Replacing and repairing sections of the City drainage system as necessary.	City of Fort Collins – Stormwater Utility	$1.45M/yr.	Residential and Business Stormwater Rates	High	Ongoing	Annual Implementation. Stormwater maintenance continues to be funded for $1.5M per year to construct small capital stormwater improvement projects.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
H 10	1, 2	Flood	**Open Space Preservation.** Issue: Ideal use of the floodplain allows for natural flooding while limiting development to protect people and property. Recommendation: Protect as much of the floodplain as possible by preserving it as open space. Work to protect and maintain the quality of streams, rivers and other vital water resources. Action: Floodplain parcels owned and acquired by the City will be permanently preserved as riparian open space to reduce the flood hazard in the City.	**City of Fort Collins - Natural Areas** City of Fort Collins-Stormwater Utility	$4M over 5 years	Natural Areas Budget; Grants	Medium	Ongoing	In Progress. Since 2016, Natural Areas acquired a 70+/- acre conservation easement in the floodplain next to Shields. Natural Areas is currently under contract to acquire a 5.4 acre parcel adjacent to the Poudre River and Kingfisher Point NA. In the same time period, Parks acquired four properties on East Vine along the Poudre River. Both departments are still actively seeking additional lands along the river from willing sellers.
H 11	1, 3, 4	Flood, Severe Storm	**Public Outreach.** Issue: Lack of public awareness concerning flood hazards. Recommendation: A comprehensive public outreach program outlined by the City's Program for Public Information (PPI) Committee to provide targeted outreach for flood hazards in the community. Action: Utilizing the eleven Community Message Topics developed by the PPI committee the City will continue implementing numerous public information and education projects to increase the community's awareness of flood hazards and safety.	**City of Fort Collins – Stormwater Utility** FEMA, Red Cross, LETA911. OEM	$15,000/yr.	Commercial and Residential Stormwater Rates, OEM Budget, Grants	Medium	Ongoing	Annual Implementation. The City will continue implementing numerous public information and education projects to increase the community's awareness of flood hazards and safety. In 2020 the City redid their Program for Public Information (PPI) plan with the cooperation of stakeholders and other departments. Meetings will continue to be held annually.
H 12	1, 3, 5	Flood	**Regulatory Programs.** Issue: Unregulated development in the floodplain is unsafe for people and structures. Recommendation: Develop and enforce safe development in the floodplain. Action: Enforce current regulations for development in the floodplain and update regulations, as necessary.	**City of Fort Collins – Stormwater Utility** FEMA, CWCB	$300,000/ yr.	Utilities – Stormwater Budget	High	Ongoing	Annual Implementation. The City continues to enforce development regulations in the 100-year floodplain.
H 13	1, 2	Flood	**Myrtle Street Stormwater Outfall.** Issue: Properties and structures are flooded in the vicinity of Myrtle Street. Recommendation: This project involves the enlargement of the existing storm sewer along Myrtle Street from Remington Street west to Sherwood Street, and directing this storm sewer into	**City of Fort Collins – Stormwater Utility** CDOT	$15M	Stormwater Utility Fee, Grants	High	TBD	In Progress. Magnolia Street Stormwater Outfall was the City's highest priority project, but now it is the fifth priority based on the 2019 Old Town Optimized Plan.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			the proposed Magnolia Street Outfall at Remington and Magnolia. Action: This project will reduce flood flows along Myrtle Street east of Sherwood Street, including overtopping of College Avenue. This reduction in flows along Myrtle Street will also serve to reduce surface flow diversions that direct runoff north to Mulberry Street along Peterson Street.						
H 14	1, 2	Flood, Severe Storm	**Stream Rehabilitation and Enhancement Program.** Issue: In 2012, The City of Fort Collins' Stormwater Master Plan was updated to include stormwater quality and stream restoration projects. The Master Plan update utilized results and information obtained from the Stormwater Utility Repurposing program in conjunction with basin- and stream- specific recommendations obtained from the following two program efforts: A.Basin-Specific Stormwater Quality Best Management Practices (BMP) Selected Plans; and, B.Stream Restoration and Stability Study and Prioritization with the Multi Criteria Decision Analysis (MCDA) Tool. Recommendation: Stream restoration projects were identified in an extensive study by Colorado State University (CSU). The study indicated that many of the City's streams suffer from severe bank erosion, impediments to fish passage, and have poor aquatic habitat. A Multi Criteria Decision Analysis (MCDA) Tool was utilized to prioritize the identified stream reaches for future restoration. The results of the MCDA Tool analysis are presented below for the 2nd through the 6th ranked stream reaches. The 1st ranked stream reach, Fossil Creek at Lemay Avenue is currently under construction. Action: Install WQ BMPs and construction stream enhancements throughout the City.	**City of Fort Collins – Stormwater Utility** Larimer County	$9M over a 5-year period	Stormwater Utility Fee, Grants	High	Ongoing	In Progress. Updated the action plan.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
H 15	1, 2	Flood	**West Vine – Forney Pond.** Issue: This area of Fort Collins was the historic flow path of Solider Creek that has been covered up or redirected by development over the years. Recommendation: This detention pond we capture runoff from upstream contributing area and detain it so reduced flooding downstream. Action: Flooding in downstream properties and homes.	**City of Fort Collins – Stormwater Utility** Larimer County	$4M	Stormwater Utility Fee, Grants	Medium	5-10years	The City purchased this property, and it is on the 5-year master plan priority list
H 16	1	Drought, Flood, Fire, Public Health	**Water Treatment Utilities-Water Treatment Process Improvements.** Issue: Additional treated water storage is required to serve the citizens of Fort Collins in case of drought, flood, fires, or public health emergencies. Recommendation: Improvements to the water treatment process. Action: Construct a new 10-million-gallon treated water storage tank at the Water Treatment Facility.	**City of Fort Collins: Water Treatment Utilities** CDPHE	$14M	Utilities reserves, State DWRF	Medium	2030	Continue - Not completed. This is a long-term Capital Project that will be implemented within the next 10 years, depending upon funding.
H 17	1, 2	Drought, Public Health, Hazmat	**Water Treatment Utilities-Water Treatment Process Improvements.** Issue: The Water Treatment Facility currently provides secondary disinfection to the City's water supply through the addition of chlorine. The chlorine is delivered to the Water Treatment Facility via truck on a weekly basis. The chlorine supply is extremely hazardous and is a threat to public safety in the event of an accident during transportation or in the case of a leak at the Water Treatment Facility. The City's water supply is also vulnerable to contamination due to an interruption in the delivery of chlorine. A mitigation strategy is to construct a sodium hypochlorite generation facility at the Water Treatment Facility in lieu of chlorine gas. This will ensure a safe and reliable supply of bleach with which to disinfect the City's drinking water supply. Recommendation: Improvements to the reliability and safety of the water treatment	**City of Fort Collins: Water Treatment Utilities.** CDPHE	$12M	Utilities reserves, State DWRF	Medium	2024	Continue - Not completed. This is a long-term Capital Project that will be implemented within the next 10 years, depending upon funding.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			process. Action: Replacement of Chlorine gas with on-site generation of Sodium hypochlorite						
H 18	1, 2	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Water Treatment Utilities-Water Treatment Process Improvements.** Issue: Rehabilitation of the existing Poudre River 24" Pipeline. This pipeline serves the City of Fort Collins with the majority of its drinking water. The line is almost 100 years old is a potential weakness in the City's supply system. The line is susceptible to failure from forest fires, land subsidence, and hazmat spills in the river. Recommendation: Improvements to the drinking water supply process. Action: Rehabilitate the Poudre River 24" water supply line.	**City of Fort Collins: Water Treatment Utilities.** CDPHE	$12M	Utilities reserves, State DWRF	Medium	2024	Continue - Not completed. This is a long-term Capital Project that will be implemented within the next 10 years, depending upon funding.
H 19	1	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Water Treatment Utilities-Water Treatment Process Improvements.** Issue: Water Quality in the Cache la Poudre River watershed and the Colorado-Big Thompson water system can be degraded due to Fires (drought and extreme high temperatures create a potential for fire hazards) and Pine Beetle deforestation. Recommendation: Improvements to the water treatment process. Action: Installation of a UV Disinfection system, Installation of Granular Activated Carbon filters, Installation of Biologically Active Carbon filtration.	**City of Fort Collins: Water Treatment Utilities** CDPHE	$27 million-$100 million depending on the severity of the degradation in source water quality	Utilities Reserves, State DWRF	Medium	2030	Continue - Not completed. This is a long-term Capital Project that will be implemented within the next 10 years, depending upon funding.
H 20	1	Drought, Extreme Temperatures, Flood, Fire, Public Health	**Water Treatment Utilities: Redundant Second Outlet Installation.** Issue: A second outlet from Horsetooth Reservoir to the Water Treatment Facility would provide an alternate drinking water supply to the City of Fort Collins in the case of a wildfire or a flood in the Colorado-Big Thompson watershed. The City currently has an outlet from the Reservoir at a single depth. The new outlet would allow for diversion for a different location and at multiple depths to mitigate the water quality effects of a fire in	**City of Fort Collins: Water Treatment Utilities** Bureau of Reclamation, Northern Colorado Water Conservancy District	The City of Fort Collin's Cost share would be ~$5 million	State of Colorado Drinking Water Revolving Fund, Fort Collins Utilities Reserves	Medium	2025	Continue - Not completed. This is a long-term Capital Project that will be implemented within the next 10 years, depending upon funding.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			the watershed. Recommendation: Redundant second outlet form Horsetooth Reservoir to the Water Treatment Facility. Action: Installing a new outlet and pipeline (redundant second outlet) from Horsetooth Reservoir to the Water Treatment Facility. This would need to be a joint project working with Bureau of Reclamation and the Northern Colorado Water Conservancy District.						
H 21	1	Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat	**Wastewater Collection, Sewer By-Pass Pumping.** Issue: A second outlet from Horsetooth Reservoir to the Water Treatment Facility would provide an alternate drinking water supply to the City of Fort Collins in the case of a wildfire or a flood in the Colorado-Big Thompson watershed. The City currently has an outlet from the Reservoir at a single depth. The new outlet would allow for diversion for a different location and at multiple depths to mitigate the water quality effects of a fire in the watershed. Recommendation: Redundant second outlet form Horsetooth Reservoir to the Water Treatment Facility. Action: Installing a new outlet and pipeline (redundant second outlet) from Horsetooth Reservoir to the Water Treatment Facility. This would need to be a joint project working with Bureau of Reclamation and the Northern Colorado Water Conservancy District.	City of Fort Collins: Wastewater Collection City of Fort Collins Traffic Operations; Other Wastewater Districts (Boxelder and South Fort Collins)	The City of Fort Collin's Cost share would be ~$100,000	Potential Federal Grants.	Medium	TBD	This project is on track from the standpoint that in an emergency we are prepared to rent/hire the assembly or placement of emergency bypass.
H 22	1, 2	Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind &	**Water Distribution: Temporary Water System.** Issue: Loss of a portion of the water distribution system. Recommendation: Temporary water system. Action: Construct up to a mile of temporary water main with services until permanent service is restored. Temporary system would be constructed on the surface and connected to a fire hydrant located outside of the damaged zone.	City of Fort Collins: Water Distribution City of Fort Collins Traffic Operations; Other Water Districts (ELCO,	The City of Fort Collin's Cost share would be ~$100,000	Potential Federal Grants.	Low	TBD	Temporary water distribution line can be constructed in the event of an emergency.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
		Tornado, Fire, Public Health, Hazmat		North Weld, FCLWD)					
H 23	1,2,3	Dam Failure/Incident	**Boxelder Creek Watershed Dams.** A series of flood control dams were built in the 1970s and 1980s to protect agricultural lands from flooding and erosion damage. At the time, the North Poudre Irrigation Company (NPIC) acted as the local partner with the Soil Conservation Service (SCS), now the Natural Resources Conservation Service (NRCS), and with the United States Department of Agricultural (USDA) to build the dams. NPIC currently operates and maintains the dams. In 2014, the State Engineer's Office (SEO) completed a routine review of the dams for certification. The land use changes downstream of Dams B-2, B-3 and B-4 from agricultural use to suburban and urban development required a change in the dam classification from "moderate" to "high hazard". This change in classification of the dams could require expensive rehabilitation and/or reconstruction of the dam emergency spillways and embankments. The SEO Division of Dam Safety recently updated its regulations governing dams of this type to allow for a Risk and Consequence analysis approach. This approach is different than prior prescriptive regulations and introduces the determination of "potential failure modes" and characterizes the "likelihood" of the failure mode within a risk context. This analysis has been completed for the Boxelder Creek Watershed Dams using recently updated technical information. It was concluded that no major reconstruction or rehabilitation of Dams B-2, B-3 and B-4 is needed at this time (given the probability of a major event is exceptionally low) if the following recommended improvements and	**City of Fort Collins, Larimer County, Town of Wellington, Town of Timnath** North Poudre Irrigation Company, State Engineer's Office Division of Dam Safety, Natural Resources Conservation Service	There are no external construction costs associated with updating the EAP's. There would be potential consulting costs (no estimate yet) to develop the updated EAP plans and documents. The conceptual costs for the monitoring systems are expected to range from $225,000 to $325,000.	City of Fort Collins, Larimer County, Town of Wellington, Town of Timnath budgets	High	0-5 years	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			actions are implemented for each of these dams: 1. Update the EAPs for Dams B-2, B-3 and B-4; and, 2. Install water level monitoring and warning systems at Dams B-2, B-3 and B-4. Implementing these recommendations would change the Consequence Levels from Level 4 to Level 3 for each dam. The risk assessment documented damages and the potential for significant loss of life. If this approach is not implemented, potential improvements to the dams could cost between $3 and $25 million.						
H 24	1,2,3,4,5	Flooding	**Flood Walk App.** Launched in June of 2019, the groundbreaking FloodWalk mobile application uses augmented reality (AR) technology and storytelling to bring flood risk to life and demonstrate the benefits of mitigation. In the FloodWalk application, AR casts 3D visualizations of flooding onto the real world. What was once a familiar location is overtaken by dangerously high waters as a narrator recounts the impact of historic flooding and what has been done to make the area safer. Research shows that it's difficult for people to conceptualize future risk. We also know that those who have experienced flooding are far more likely to take action to prepare. The FloodWalk app allows users to see risk in a way that isn't possible from data and maps alone. By bringing the experience of flooding directly to the hands of the public, flood risk becomes something people can see, feel, and become motivated to reduce. The app can also help users visualize risk reduction projects that mitigate the risk of flooding in the community. Through AR, users can see how mitigation has transformed the land	**City of Fort Collins Stormwater Utility,** FEMA	$200,000	City of Fort Collins Stormwater Fund	Medium	End of 2021	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			around them and learn how these critical projects help protect their homes and keep their families safe from disaster. Fort Collins has been selected as the second location to be showcased in the app. Locations along Spring Creek, the Poudre River and on the CSU Campus will be included. Past flood events such as the 1997 Spring Creek flood and the 2013 flood on the Poudre River will demonstrated using the AR technology. Past and future mitigation projects will also be included.						
H 25	1,2,3,4,5	Flooding	**Flood Warning System Enhancement.** The City's Flood Warning System is in the process of replacing 60 of the older ALERT transmitters used in the 82-gage local network. The new transmitters meet the National Hydrologic Warning Council's ALERT2 protocol. Much of the existing system was installed in the early 2000's and the equipment is in need of renewal to ensure the City can continue to meet its public safety mission for early detection and warning of flood-inducing rainfall and stream flooding. Benefits: Loss of Life, Property & Infrastructure Damage.	**City of Fort Collins Stormwater Utility**	$200,000	City of Fort Collins Stormwater Fund	Medium	End 2021	New in 2021.
H 26	1,2	Flooding	**Forney Pond and Central Flow Path.** Issue: This area of Fort Collins was the historic flow path of Solider Creek that has been covered up or redirected by development over the years. Recommendation: This detention pond we capture runoff from upstream contributing area and detain it to reduce flooding downstream. Overall benefits are to protect people, property, and natural resources; Improve capability to reduce disaster losses; Integrate hazard mitigation into other planning mechanisms	**City of Fort Collins - Stormwater Utility** and PDT	$5M	City Stormwater Utility Fees	High	10 years	New in 2021.
H 27	1,2,4	Flooding	**Lincoln-Willow Phase 2 Stormwater Project.** Issue: This area of Fort Collins has old undersized storm sewers that do not	**City of Fort Collins -**	$7M	City Stormwater Utility Fees	Medium	Within the next 20 years	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			meet current drainage standards. The Lincoln-Willow Outfall was completed in 2015 and has not been extend up to Jefferson per the Downtown Stormwater Improvement Plan (DISP). Recommendation: Install a new storm sewer system to improve the drainage and reduce flooding for storms up to and including the 100-year event and improve water quality for smaller more frequent storm events (2-year and below. Overall benefits are to protect people, property, and natural resources; Improve capability to reduce disaster losses; Integrate hazard mitigation into other planning mechanisms	**Stormwater Utility** and PDT					
H 28	1,2,4	Flooding	**Stormwater Master Planning.** The hydrology in most of the City's Stormwater Basin Master Plans were modeled using MODSWMM software. This software is outdated and does provide robust dynamic hydrologic modeling. The City is updating the hydrology in all the Stormwater Basin Master Plans by converting all the MODSWMM model to EPA-SWMM. They are also updating they floodplain modeling using the most current version of HEC-RAS and updating all the costs of recommended improvements. Overall benefits are to protect people, property, and natural resources; Improve capability to reduce disaster losses; Integrate hazard mitigation into other planning mechanisms	**City of Fort Collins - Stormwater Utility** Larimer County	$450,000 per year	City Stormwater Utility Fees	High	Ongoing	New in 2021.
H 29	1,2,5	Flooding	**Oak St Extension Stormwater Project.** This area of Fort Collins has old undersized storm sewers that do not meet current drainage standards. The Oak Street Outfall was completed in 2001 and has not been extend up to Shields per the Downtown Stormwater Improvement Plan (DISP). Install a new storm sewer system to improve the drainage and reduce flooding for storms up to and	**City of Fort Collins Utility** PDT	$20M	City Stormwater Utility Fees	High	Design: 2021-22; Construction: 2023-24	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			including the 100-year event and improve water quality for smaller more frequent storm events (2-year and below.						
H 30	1,2	Flooding, Severe Storm	**Drainage System Maintenance.** Ongoing maintenance of the City drainage system to prevent failures. Annual assessment and maintenance plan with projects prioritized by need and funding availability. Benefits: Reduce the vulnerability of local assets to the impact of hazards	**City of Fort Collins Utility**	$1.45 M/ year	Residential and Business Stormwater Fees	High	Ongoing	New in 2021.
H 31	1,2,3,4,5	Flooding	**Floodplain Regulatory Program.** Enforce current regulations for development in the floodplain and update regulations as necessary to protect people and structures.	**City of Fort Collins Utility**	$300,000/ year	Utilities - Stormwater Budget	High	Ongoing	New in 2021.
H 32	1,2	Flood, Severe Storm	**Low Impact Development Retrofits.** Improve water quality, Reduce Urban Flooding and Enhance community resiliency by retrofitting green infrastructure into existing City regional drainage facilities. Benefits: Reduce the vulnerability of local assets to the impact of hazards	**City of Fort Collins Utility**	$25,000 - $200,000 per project	Stormwater Utility, Parks and Recreation, Sustainability Services, Grants	High	Ongoing	New in 2021.
H 33	1,2,3,4	Flood, Severe Storm	**Stormwater Utility, Parks and Recreation, Sustainability Services, Grants.** A comprehensive public outreach program outlined by the City's Program for Public Information (PPI) Committee to provide targeted outreach for flood hazards in the community. Utilizing the Community Message Topics developed by the PPI committee, the City will continue implementing numerous public information and education projects to increase the community's awareness of flood hazards and safety. Benefits: Public awareness concerning flood hazards	**City of Fort Collins Utility**	$15,000/ year	Commercial and Residential Stormwater Fees, OEM Budget, Grants	Medium	Ongoing	New in 2021.
H 34	1,2,5	Flooding	**Magnolia Outfall Project.** This area of Fort Collins has old undersized storm sewers that do not meet current drainage standards. Install a new storm sewer system to improve the drainage and reduce flooding for storms up to and including the 100-year event and	**City of Fort Collins Utility** PDT	$70 M	City Stormwater Utility Fees	High	Next 15 years	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			improve water quality for smaller more frequent storm events (2-year and below. Overall benefits are to protect people, property, and natural resources; Improve capability to reduce disaster losses; Integrate hazard mitigation into other planning mechanisms						
H 35		Drought	**Drought Planning.** • Develop and use water budgets to manage indoor and outdoor water use. • Update the Fort Collins Utilities Water Shortage Action Plan in 2025. • Develop a regional water shortage approach • Update Fort Collins Utilities Water Supply and Demand Management Policy and Water Efficiency Plan to incorporate drought mitigation efforts, as applicable. • Acquire additional storage (e.g., Halligan) or agreements for short-term water supply (raw water users who can transfer Horsetooth water rights for municipal use). • Code review and amendments to reduce water use year-round and into the future by keeping reservoirs full (e.g. update the land use code, building/plumbing codes, and others that can improve water use efficiency and reduce waste). • Incorporate risk reduction principles into code, policy documents and initiatives; Reduce the vulnerability of local assets to the impact of hazards; Reduce the severity and duration of drought and associated impacts.	**City of Fort Collins – Utilities/Water Conservation**	$0 to >$1million per project	Utilities – Water Fund Colorado Water Conservation Board grant funding Bureau of Reclamation – WaterSmart grant funding Norther Water grant funding	High	Ongoing	New in 2021.

H.7 Plan Implementation and Maintenance

Fort Collins has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the City will continue public participation in the plan maintenance process.

H.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The City of Fort Collins' implementation strategy included:

- The plan will have an annual report that is made public and presented to the City Council.
  - This was accomplished.
- As part of the City's Budgeting for Outcomes process, priorities will be reviewed and any new mitigation strategies will be incorporated.
  - This was accomplished.
- Annual review of the HMP as part of Utilities Director Work Plan. Partnership with Office of Emergency Management for presentment to City Council
  - This was accomplished.
- Any changes to the Plan will include public meetings and postings on various websites to keep the public informed and to allow for public review and comment.
  - This was accomplished.
- The City of Fort Collins continually produces reports on many of the programs that occur within our jurisdiction. These annual reports, workshops and other meetings allow for the opportunity to educate the public on the plans and actions; as well as allow the opportunity for public input.
  - This was accomplished. An annual report for the PPI was prepared each year and the 5-year update report was prepared in 2020.
- As part of any mitigation project there is an extensive public outreach process including public open houses, newsletters, web pages, etc. Public awareness outreach related to flooding is an ongoing project that provides an opportunity for the public to be more informed on the risks, property protection measures, life-safety issues, etc.
  - This was accomplished. Flood Awareness Week was held annually. Numerous outreach events such as Earth Day, Poudre River Fest, CSU Housing Fair, etc. were held and there was a booth related to Flooding in Fort Collins. Some of these were held virtually in 2020 and 2021.
- The City of Fort Collins has a variety of plans that overlap with the HMP. This includes the Social Sustainability Strategic Plan, Economic Health Strategic Plan, Debris Management Plans, Evacuation Plans and other emergency operation plans to name a few. When the HMP is approved by Colorado, FEMA and the City of Fort Collins, these action items will be cross referenced with the other appropriate plans and incorporated into them.
  - This was accomplished.
- We will continue to review our mitigation actions as part of the Budgeting for Outcomes process that prioritized projects. Public outreach related to flooding is reviewed annually as part do the City's

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Program for Public Information. Hazard mitigation is the key focus of any Stormwater Master Plan updates that will take place during the next 5 years.
- This was accomplished. An annual report for the PPI was prepared each year and the 5-year update report was prepared in 2020.

Additional ways in which the City incorporated information from the 2016 HMP into other plans and processes include:

H.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

Fort Collins Emergency Preparedness and Security will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. Fort Collins Emergency Preparedness and Security will also be responsible for representing the City on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The City, Fire District and Police Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by City Council.

Integration Into Other Planning Mechanisms

The City of Fort Collins will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the City will:

- The plan will have an annual report that is made public and presented to the City Council.
- Any changes to the Plan will include public meetings and postings on various websites to keep the public informed and to allow for public review and comment.
- The City of Fort Collins will continue to produce reports on the programs within our jurisdiction, to educate the public on the plans and actions and allow opportunity for public input.
- As part of any mitigation project there is an extensive public outreach process including public open houses, newsletters, web pages, etc. Public awareness outreach related to flooding is an ongoing project that provides an opportunity for the public to be more informed on the risks, property protection measures, life-safety issues, etc.
- The City of Fort Collins has a variety of plans that overlap with the HMP. This includes the Social Sustainability Strategic Plan, Economic Health Strategic Plan, Debris Management Plans, Evacuation Plans and other emergency operation plans to name a few. When the HMP is approved by Colorado, FEMA and the City of Fort Collins, these action items will be cross referenced with the other appropriate plans and incorporated into them.
- We will continue to review our mitigation actions as part of the Budgeting for Outcomes process that prioritized projects. Public outreach related to flooding is reviewed annually as part do the City's Program for Public Information. Hazard mitigation is the key focus of any Stormwater Master Plan updates that will take place during the next 5 years.

Continued Public Involvement

The City of Fort Collins will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize marketing and communications to get information to citizens and businesses.

H.8 Letter of Intent to Participate

City of Fort Collins

Office of Emergency Management
City Hall West, 300 LaPorte Ave
PO Box 580
Fort Collins, 80522

November 30, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Fort Collins is submitting this letter of intent to confirm that the City of Fort Collins has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the City of Fort Collins agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The City of Fort Collins understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Darin Atteberry, City Manager of the City of Fort Collins, commit the City of Fort Collins to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 30th day of November, 2018

Darin Atteberry, City Manager

11/30/18
Date

I. GLACIER VIEW FIRE PROTECTION DISTRICT

I.1 Background and Planning Process

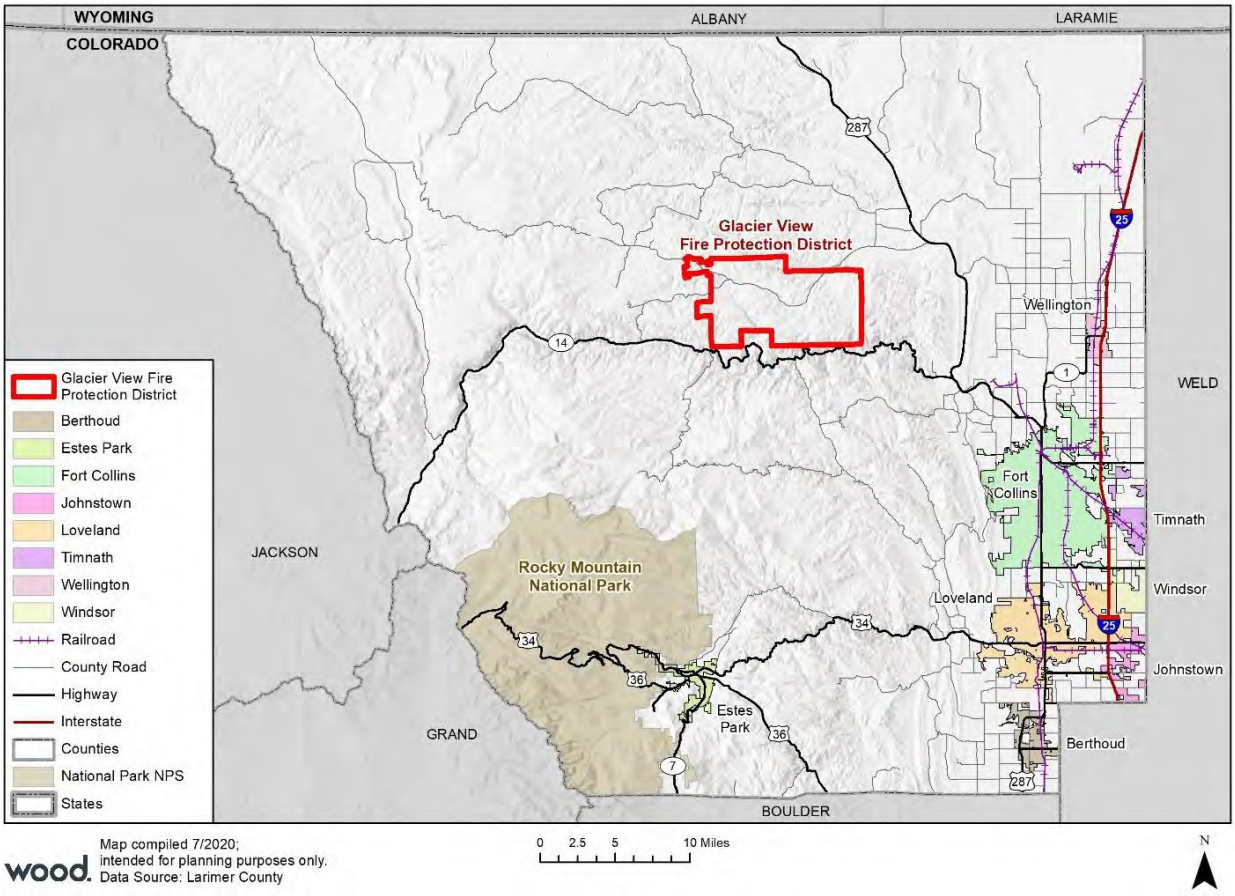
This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Glacier View Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section I.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

I.2 Community Profile

Glacier View Fire Protection District (GVFPD) is a volunteer department with over 20 firefighters, covering approximately 56 miles. GVFPD responds to all emergencies within the district, except for strictly law enforcement calls. GVFPD is located in central portion of Larimer County in the mountains northwest of Fort Collins.

Figure I-1 Map of the Glacier View Fire Protection District



Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall, the District is characterized by medium-low levels of social vulnerability, however it does

rank high in housing and transportation vulnerability. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

I.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table I-1 Hazard Identification and Risk Assessment Summary for the Glacier View Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Significant	High
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Occasional	Limited	Negligible	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Limited	Significant	Low
Flood	Occasional	Limited	Significant	Low
Hazardous Materials	Occasional	Limited	Significant	Low
Landslide/Rockslide	Unlikely	Significant	Significant	Medium
Soil Hazards	Occasional	Limited	Negligible	Low
Spring/Summer Storm	Likely	Extensive	Significant	Medium
Tornado	Unlikely	Limited	Significant	Low
Utility Disruption	Highly Likely	Extensive	Significant	Medium
Wildfire	Highly Likely	Extensive	Catastrophic	High
Winter Storm	Highly Likely	Extensive	Significant	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

I.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Glacier View Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Earthquake
- Spring/Summer Storm
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

I.4.1 Civil Disturbance

There is no significant history of civil disturbance risk in the Glacier View Fire Protection District. The overall significance of this hazard for the District is Low.

I.4.2 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows potential dam inundation areas in the Glacier View Fire Protection District, primarily along Lone Pine Creek. While there are a number of dams upstream of the District, none of them are ranked as High Hazard. The overall significance of this hazard for the District is Low.

I.4.3 Flood

The Glacier View Fire Protection District has little history of damaging floods, and has no identified buildings or critical facilities located in identified special flood hazard areas. While localized flash flooding is always possible, the District's flood risk is lower than the County as a whole. The overall significance of this hazard for the District is Low.

I.4.4 Hazardous Materials Incident

There is no significant history of hazardous materials incidents in the Glacier View Fire Protection District. The overall significance of this hazard for the District is Low.

I.4.5 Landslide/Rockslide

Figure 4-27 in Section 4.3.8 of the Base Plan shows potential rockslide areas in the Glacier View Fire Protection District. The overall significance of this hazard for the District is Medium.

I.4.6 Soil Hazards

There is no significant history of expansive/collapsible soils or land subsidence in the Glacier View Fire Protection District. The overall significance of this hazard for the District is Low.

I.4.7 Tornado

There is no significant history of tornadoes in the Glacier View Fire Protection District. The overall significance of this hazard for the District is Low.

I.4.8 Wildfire

As seen in Section 4.3.13 of the Base Plan, significant portions of the Glacier View Fire Protection District are classified as being at Moderate or High risk of wildfires. The District was directly impacted by the 2020 Cameron Peak Wildfire. The overall significance of this hazard for the District is High.

I.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Glacier View Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

I.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table I-2 Glacier View Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Larimer County, HOAs
Zoning ordinance	Yes	Larimer County
Subdivision ordinance	Yes	Larimer County
Growth management ordinance	NA	
Floodplain ordinance	Yes	Larimer County
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Wildfire
Building codes	Yes	Larimer County
Fire department ISO rating	Yes	8B
Erosion or sediment control program	NA	
Stormwater management program	NA	
Site plan review requirements	Yes	Larimer County, HOAs
Capital improvements plan	Yes	Fire apparatus replacement plan starting in 2021
Economic development plan	NA	
Local emergency operations plan	No	
Other special plans	No	
Flood insurance study or other engineering study for streams	NA	
Elevation certificates (for floodplain development)	NA	

Source: Glacier View Fire Protection District planning team

Table I-3 Glacier View Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Larimer County
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Larimer County, Limited local
Planner/engineer/scientist with an understanding of natural hazards	Yes	Larimer County, Limited local

Personnel Resources	Yes/No	Department/Position/Comments
Personnel skilled in GIS	Yes	Larimer County
Full time building official	Yes	Larimer County
Floodplain manager	Yes	Larimer County
Emergency manager	Yes	Larimer County, Volunteer position in FD starting 2021
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Larimer County
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Larimer County, LETA
Other key personnel		

Source: Glacier View Fire Protection District planning team

Table I-4 Glacier View Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	No	Major fire apparatus replacement starting in 2021
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	Allowed but not currently used
Incur debt through general obligation bonds	Yes	No	Not currently used
Incur debt through special tax bonds	Yes	No	Not currently used
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Glacier View Fire Protection District planning team

Table I-5 Glacier View Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	
Firewise	Yes	
StormReady	No	
Fuel mitigation grant 2012-2013, cooperation with community groups on slash removal, annual Firewise education program.	Yes	

Source: Glacier View Fire Protection District planning team

I.5.2 Opportunities for Enhancement

Based on the capability assessment, Glacier View has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the

District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

Enhancements currently planned or being considered by the District include:

- New emergency preparedness program in 2021.
- Community wildfire plan.
- Cooperation with North 40 Mountain Alliance.
- Replace emergency generator.
- Installation of emergency call box on fire station.
- Promote NOCO Alert system.

I.6 Mitigation Strategy

The Glacier View Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had three mitigation action in the 2016 Plan, none of which were completed. They have been carried over to the 2021 Plan along with two new actions. Additionally, the District has cooperated with a variety of community groups in fuel mitigation.

The District planning team identified and prioritized the following mitigation actions for the Glacier View Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table I-6 Glacier View Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
I-1	Goals 1,2,3,4,5 Objective 1,2,3,4,5	Wildfire	**Community Wildfire Protection Plan Update.** The Glacier View Fire Protection District has identified the need to update the Districtwide Community Wildfire Plan. To investigate and develop an update of this plan with staff assistance. The purpose of the Community Wildfire Protection Plan is risk analysis, fire behavior analysis and community wildfire hazard rating (WHR). The results of the Community Wildfire Protection Plan is to provide a comprehensive, scientifically-based assessment of the wildfire hazards and risk within our jurisdiction.	**Glacier View Fire Prevention District,** Larimer County Sheriff's Office, Emergency Services	staff hours 40 / staff cost $3,500	District revenues from property taxes (gas/oil revenue included) and specific ownership taxes	High	2021	In Progress. We are continually working on our Community Wildfire Protection Plan best practices. Due to the two 2019 fires in our district we are taking a more detailed look at current fuel loads and the most effective way to mitigate those particular areas for overall improvement of our fire district's risk.
I-2	Goals 2,4 Objective 1,2	Flood, Wildfire	**Community Outreach.** Property owners in the Glacier View Fire Protection district need education in the most effective fire mitigation steps to take, when and how to safely evacuate in case of flood or fire, how to sign up for LETA, and how to ensure that their insurance is sufficient to allow them to recover from a disaster. Hold regular educational meetings covering the subjects of fire mitigation, evacuation, and property insurance. These meetings to take place on multiple occasions during the summer (when more property owners are in the area).	**Glacier View Fire Prevention District,** LETA, possibly LCES	Staffing for each meeting (all volunteer): Cost: funding for copying and purchase of educational handouts and refreshments. $2000	Glacier View Fire Protection District; possible grants for materials costs.	Medium	Ongoing	Annual Implementation. We have expanded our community awareness by having two Firewise events. We will have presentations and speakers to educate citizens on several topics of mitigation and fire prevention. The second event is our Annual Slash & Haul Day for citizens to have someone come pick up slash from their properties.
I-3	Goals 2,4 Objective 1,2,5	Wildfire	**Fire Mitigation Assessments**. Property owners in the Glacier View Fire Protection district need education in the most effective fire mitigation steps to take and assistance in determining if they've done all they can to mitigate their property. Provide fire mitigation assessments to district property owners. At the request of local property owners, teams of two or more members of the fire department will meet with them to tour their property and provide mitigation advice and assessment.	Glacier View Fire Protection District	Staffing (all volunteer). Funding for copying and purchasing educational handouts. $1500	Glacier View Fire Protection District; grants for materials costs.	Medium	2022	In Progress. Due to the two 2019 fires in our district we are taking a more detailed look at current fuel loads and the most effective way to mitigate those particular areas for overall improvement of our fire district's risk.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
I-4	Goals 2,3,4 Objective 1,4	Wildfire	**Implement an emergency preparedness program** with emphasis on cooperation with the North 40 Mountain Alliance.	Glacier VFD North 40 Mountain Alliance	No New Cost	Department Funds	High	2021	New in 2021
I-5	Goals 1,2 Objective 5	Spring/ Sumer Storm, Utility Disruption Winter Storm	**Replace old emergency generator.** Current generator is installed in the VFD equipment yard. However it is old, unreliable, and requires manual operation. Replacing this with a new generator will ensure the GVFD retains emergency power during an outage.	Glacier VFD	$40,000	Grant funding, Homeland Security and local grants	Low	2022	New in 2021

I.7 Plan Maintenance and Implementation

Glacier View Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

I.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Annually, the district will review the plan and determine mitigation action progress.
  - This was accomplished.
- Monthly Board meetings will be open to public where the plan can be discussed. Additionally we have a website that information can be posted for viewing.
  - These were both accomplished.
- We will conduct community outreach program where we advise residents on how to mitigate their own properties. Glacier does have community slash piles. In our annual review of fire codes we'll look for opportunities to integrate and strengthen our fire codes with mitigation actions.
  - This was accomplished and resulted in the implementation of the Firewise program in 2016.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

I.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Fire Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Fire Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Glacier View Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- GVFD Board and members will meet annually to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.
- Post information on the District's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning.

Continued Public Involvement

The Glacier View Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

I.8 Letter of Intent to Participate

GLACIER VIEW FIRE PROTECTION DISTRICT

LETTER OF INTENT TO PARTICIPATE

December 15, 2014

Lori R. Hodges
Larimer County Emergency Management
200 West Oak Street
Fort Collins, CO 80526

Re 'Statement of Intent to Participate' as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Glacier View Fire Protection District is submitting this letter of intent to confirm that Glacier View Fire Protection District has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Glacier View Fire Protection District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County OEM to complete the plan in conformance with FEMA requirements.

Glacier View Fire Protection District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction I David Burk, commit Glacier View Fire Protection District to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 15 day of December 2014

David Burk
Board President

1414 Green Mountain Drive
Livermore, CO 80536

Office 970.493.3353
Fax 970.493.3376

J. TOWN OF JOHNSTOWN

J.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Johnstown participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in Johnstown that plan as described in Section J.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

J.2 Community Profile

The Town of Johnstown is located in both Larimer and Weld Counties along I-25 approximately 41 miles north of Denver. The town was incorporated in 1907, and in 2020 had an area of approximately 13.52 square miles. Johnstown was built along the Great West Railroad.

The 2006 Johnstown Vision states that as Johnstown evolves, the community desires to preserve:

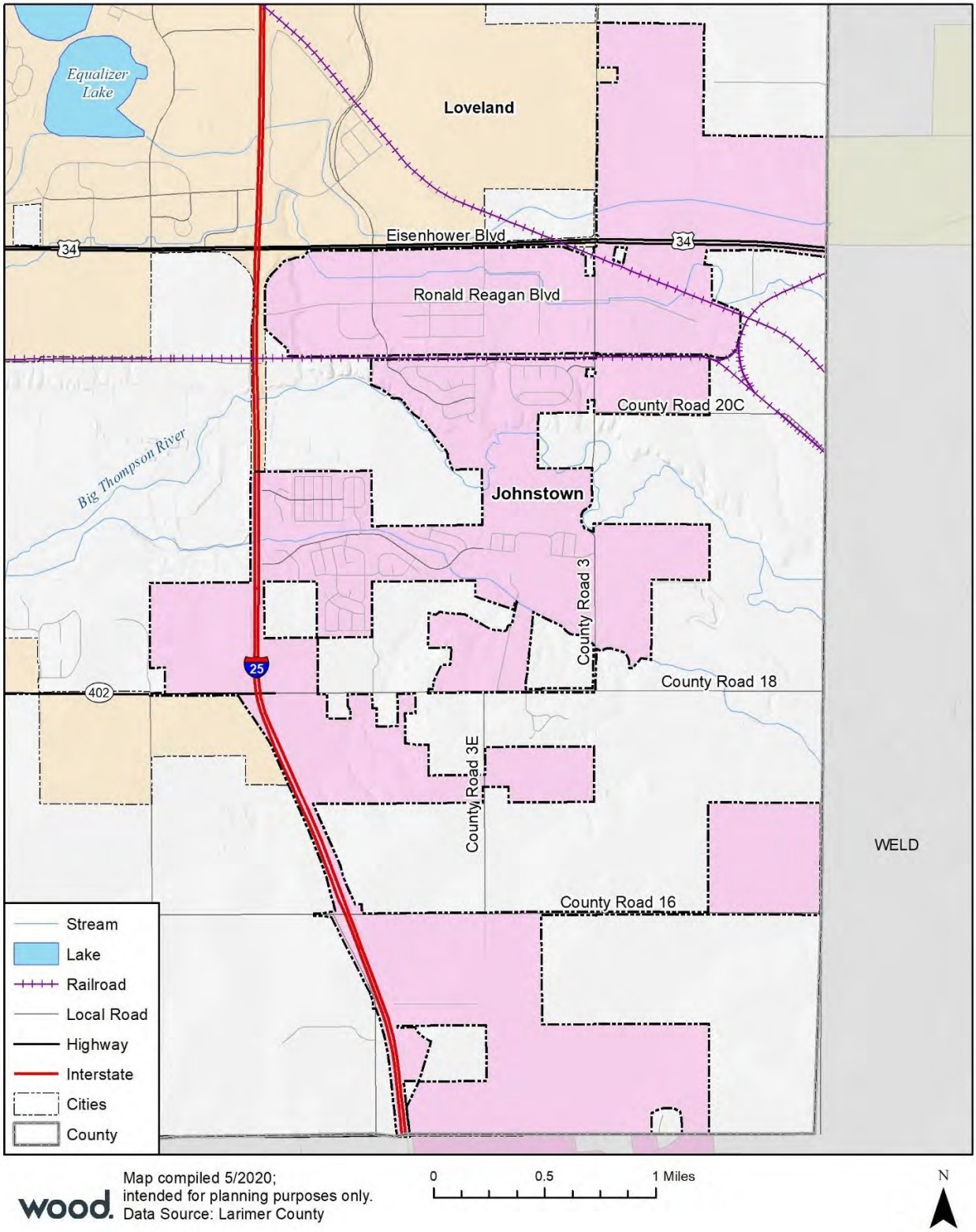
- The qualities of a small town
- Available neighborhoods
- Its open feel, wide streets, parks, agricultural areas, and open space
- The social atmosphere of an inclusive community, and
- The heart of the community – Downtown

This vision "confidently states that the Town of Johnstown will be a community that cherishes its small town roots, its history as a service center for a large agricultural industry and a social center to the area's farm families. The Vision also looks to the future, by visualizing improvements where families of all sizes and types will live and work. The vision for the community is clear." – Johnstown Area Comprehensive Plan (2006)

The Johnstown community has experienced rapid growth in recent years. The growth presents challenges related to infrastructure, services, and community character. It also represents opportunities, as the fiscal resources of the Town have been increasing as well.

Figure J-1 shows a map of the Town of Johnstown.

Figure J-1 Map of the Town of Johnstown



J.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Johnstown.

Table J-1 Town of Johnstown Demographic and Social Characteristics, 2014-2018

Town of Johnstown	2014	2018	% Change
Population	11,639	14,278	22.67%
Median Age	32.8	35.3	7.6%
Total Housing Units	3,996	5,063	26.7%
Housing Occupancy Rate	96.1%	98.4%	2.4%
% of Housing Units with no Vehicles Available	0.90%	3.10%	244.4%
Median Home Value	$229,900	$308,700	34.3%
Unemployment Rate	5.3%	5.0%	-5.7%
Mean Travel Time to Work (minutes)	37	32.6	-11.9%
Median Household Income	$78,298	$90,240	15.3%
Per Capita Income	$31,913	$39,383	23.4%
% of Individuals Below Poverty Level	3.4%	1.3%	-61.8%
% Without Health Insurance	7.0%	3.2%	-54.3%
# of Households	3,842	4,982	29.7%
Average Household Size	3.0	2.9	-5.3%
% of Population Over 25 with High School Diploma	94.3%	95.8%	1.6%
% of Population Over 25 with bachelor's degree or Higher	27.5%	33.0%	20.0%
% with Disability	7.7%	7.4%	-3.9%
% Speak English less than "Very Well"	3.0%	5.4%	80.0%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table J-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Johnstown	County	Colorado
Median Age	35.3	35.9	36.6
Housing Occupancy Rate	98.4%	91.7%	89.8%
% of Housing Units with no Vehicles Available	3.1%	4.1%	5.2%
Median Home Value	$308,700	$336,200	$313,600
Unemployment	5.0%	5.0%	4.7%
Mean Travel Time to Work (minutes)	32.6	23.2	25.5
Median Household Income	$90,240	$67,664	$68,811
Per Capita Income	$39,383	$35,390	$36,415
% of Individuals Below Poverty Level	1.3%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Johnstown	County	Colorado
% Without Health Insurance	3.2%	6.3%	8.1%
Average Household Size	2.9	2.5	2.6
% of Population Over 25 with High School Diploma	95.8%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	33.0%	46.3%	40.1%
% with Disability	7.4%	9.8%	10.6%
% Speak English less than "Very Well"	5.4%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table J-3 Demographics by Race and Sex

Johnstown	Population	%
Total Population	14,278	100%
Male	7,439	52.1%
Female	6,839	47.9%
White, not Hispanic	11,115	77.8%
Hispanic or Latino	2,390	16.7%
Black	83	0.6%
Asian	384	2.7%
American Indian and Alaska Native	42	0.3%
Native Hawaiian and Other Pacific Islander	0	0.0%
Some other race	197	1.4%
Two or more races	375	2.6%

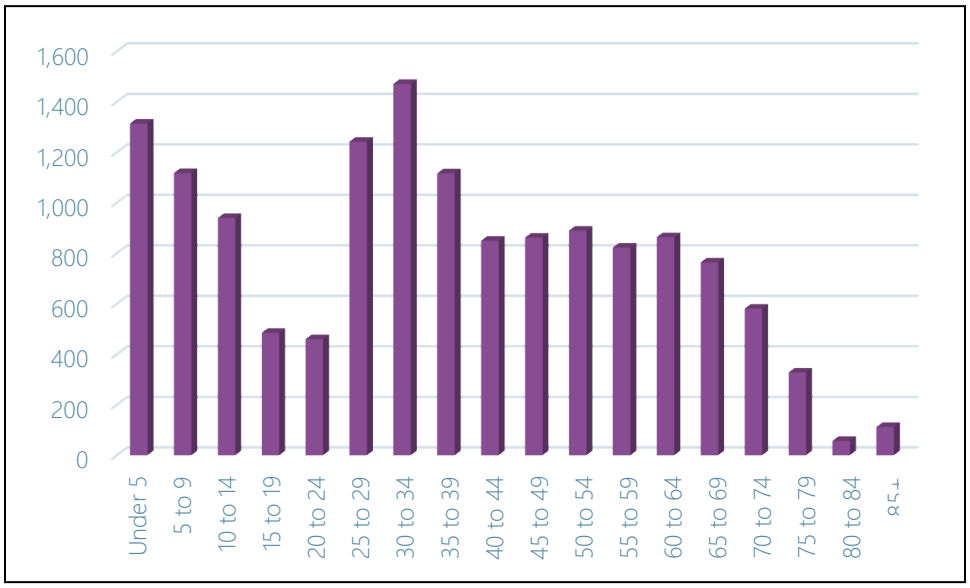
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table J-4 Types and Total Amounts of Housing Units in Johnstown

Type of Housing Units	Total	%
Total housing units	4,557	100%
1-unit detached	177	3.9%
1-unit attached	0	0.0%
2 units	121	2.7%
3 or 4 units	13	0.3%
5 to 9 units	35	0.8%
10 to 19 units	94	2.1%
20 or more units	66	1.4%
Mobile home	0	0.0%
Boat, RV, van, etc.	0	0.0%

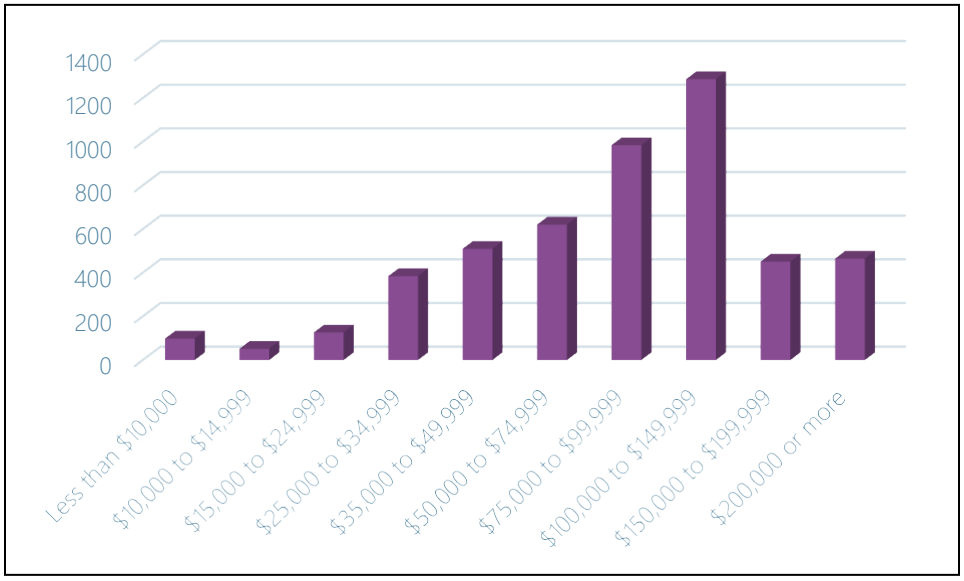
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure J-2 Town of Johnstown Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure J-3 Town of Johnstown Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

J.2.2 Social Vulnerability

Social vulnerability scores for the Town of Johnstown can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Johnstown overall social vulnerability is low, similar to the rest of Larimer County and Colorado as a whole. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in order to reduce vulnerability. Over time, the town should continue to monitor their local social vulnerability as demographic, economic, and housing related conditions change.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

J.3 Hazard Identification and Risk Assessment

The Town of Johnstown is situated in both Larimer and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the town that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table J-5 Hazard Identification and Risk Assessment Summary for the Town of Johnstown

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Critical	High
Civil Disturbance	Unlikely	Limited	Significant	Low
Dam Inundation	Occasional	Limited	Significant	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Limited	Significant	Low
Flood	Occasional	Limited	Significant	Medium
Hazardous Materials	Occasional	Limited	Significant	Medium
Landslide/Rockslide	Unlikely	Limited	Significant	Low
Soil Hazards	Unlikely	Limited	Significant	Low
Spring/Summer Storm	Likely	Limited	Negligible	Low
Tornado	Unlikely	Significant	Significant	Low
Utility Disruption	Unlikely	Limited	Significant	Low
Wildfire	Occasional	Limited	Significant	Low
Winter Storm	Likely	Limited	Significant	Low

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

J.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Johnstown, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For the purpose of this plan, only the parts of the Town that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

J.4.1 Community Asset Inventory

Table J-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Johnstown. See Section 4.2.2 of the Base Plan for details and methodology.

Table J-6 Total Exposure of Improved Properties within the Town of Johnstown

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	8	11	$3,880,055	$3,880,055	$7,760,110
Commercial	1,241	3,016	$1,581,987,128	$1,581,987,128	$3,163,974,256
Exempt	395	3,082	$1,329,824,514	$1,329,824,514	$2,659,649,028
Industrial	14	24	$124,354,664	$186,531,996	$310,886,660
Mobile Home	8	713	$61,804,881	$30,902,441	$92,707,322
Multiple Unit	550	6,799	$1,577,356,935	$1,577,356,935	$3,154,713,870
Residential	30,104	31,128	$10,939,460,732	$5,469,730,460	$16,409,191,192
Total	**32,320**	**44,773**	**$15,618,668,909**	**$10,180,213,529**	**$25,798,882,438**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

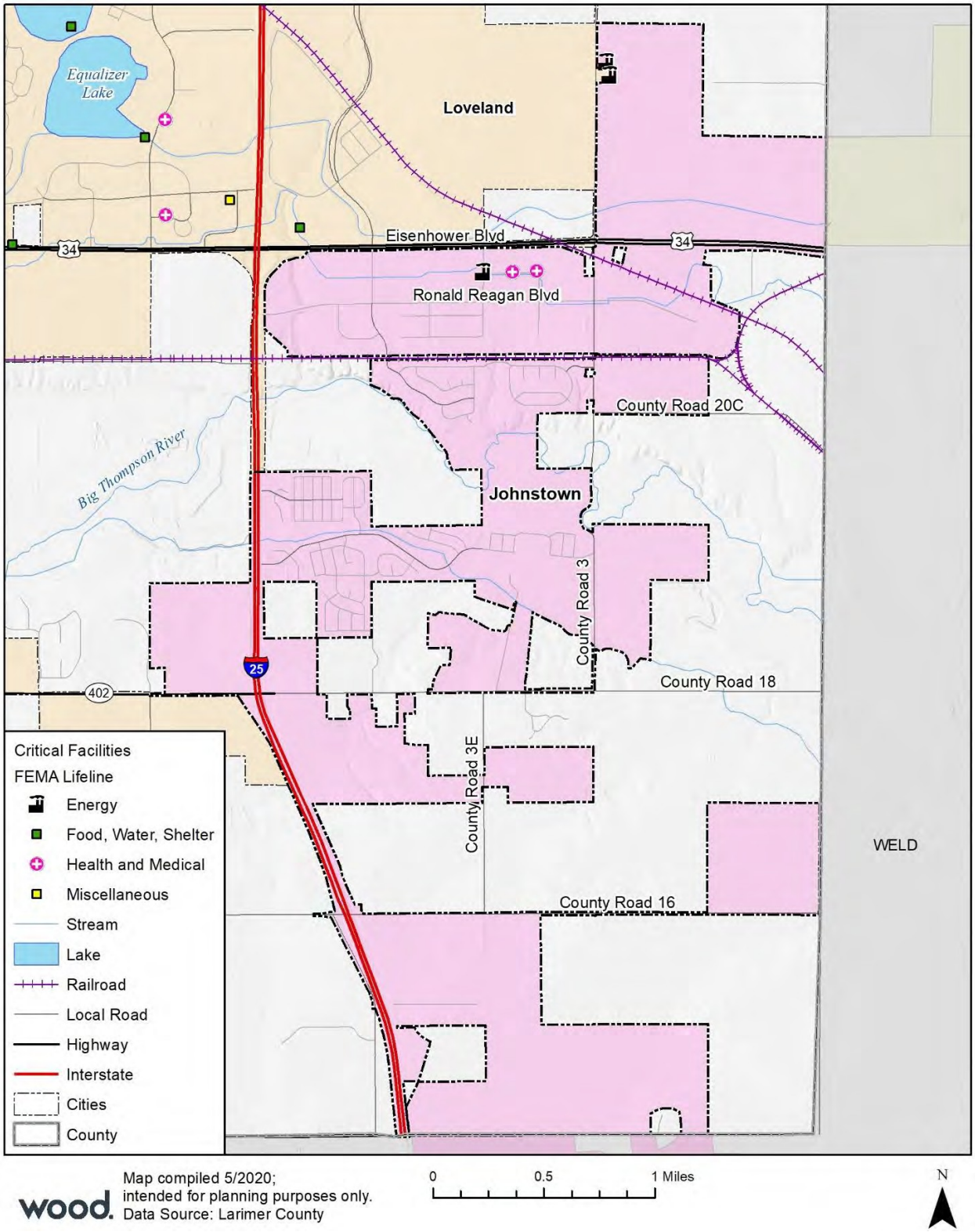
Table J-7 lists summary information about the 4 critical facilities and other community assets identified by the Town as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure J-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table J-7 Town of Johnstown Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Energy	2
Health and Medical	2
Total	**4**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure J-4 Town of Johnstown Critical Facilities and Infrastructure



J.4.2 Dam Inundation

Potential dam inundation areas in and around the Town of Johnstown are shown in Figure J-5.

Figure J-5 Dam Inundation Areas for the Town of Johnstown

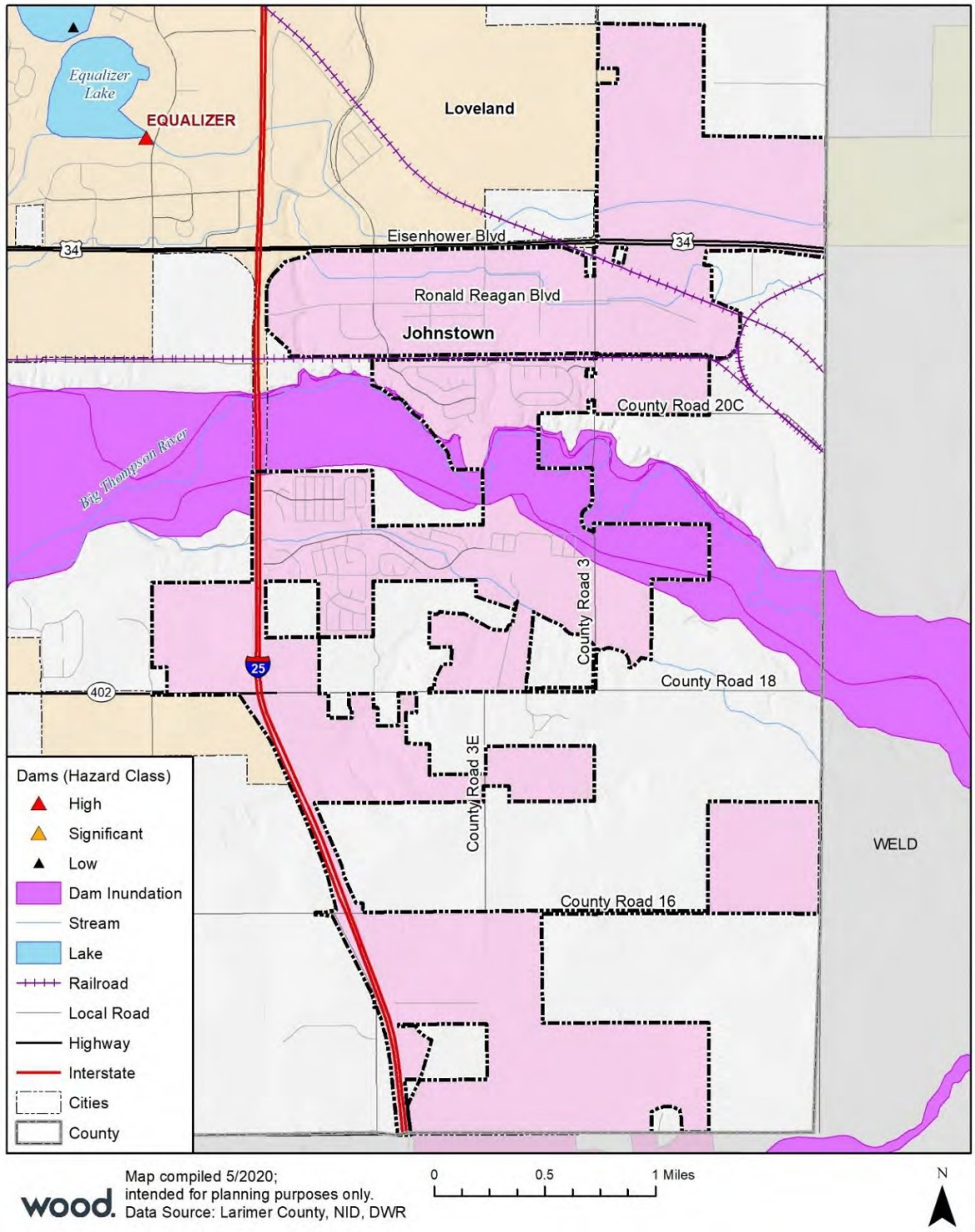


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. The only dam upstream of the Town of Johnstown is Lone Tree Dam.

Table J-8 shows that Johnstown has 21 parcels potentially at risk of dam inundation, valued at $9.8M; an estimated 60 residents live in those parcels.

Table J-8 Town of Johnstown Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Residential	21	21	$6,567,126	$3,283,562	$9,850,688	60
Total	**21**	**21**	**$6,567,126**	**$3,283,562**	**$9,850,688**	**60**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

None of the critical facilities identified in the Town of Johnstown are located in areas at risk of dam inundation.

Based on the above analysis, the spatial extent and severity of the dam inundation hazard in the Town of Johnstown is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Low.

J.4.3 Flood

FEMA mapped floodplains in and around the Town of Johnstown are shown in Figure J-6.

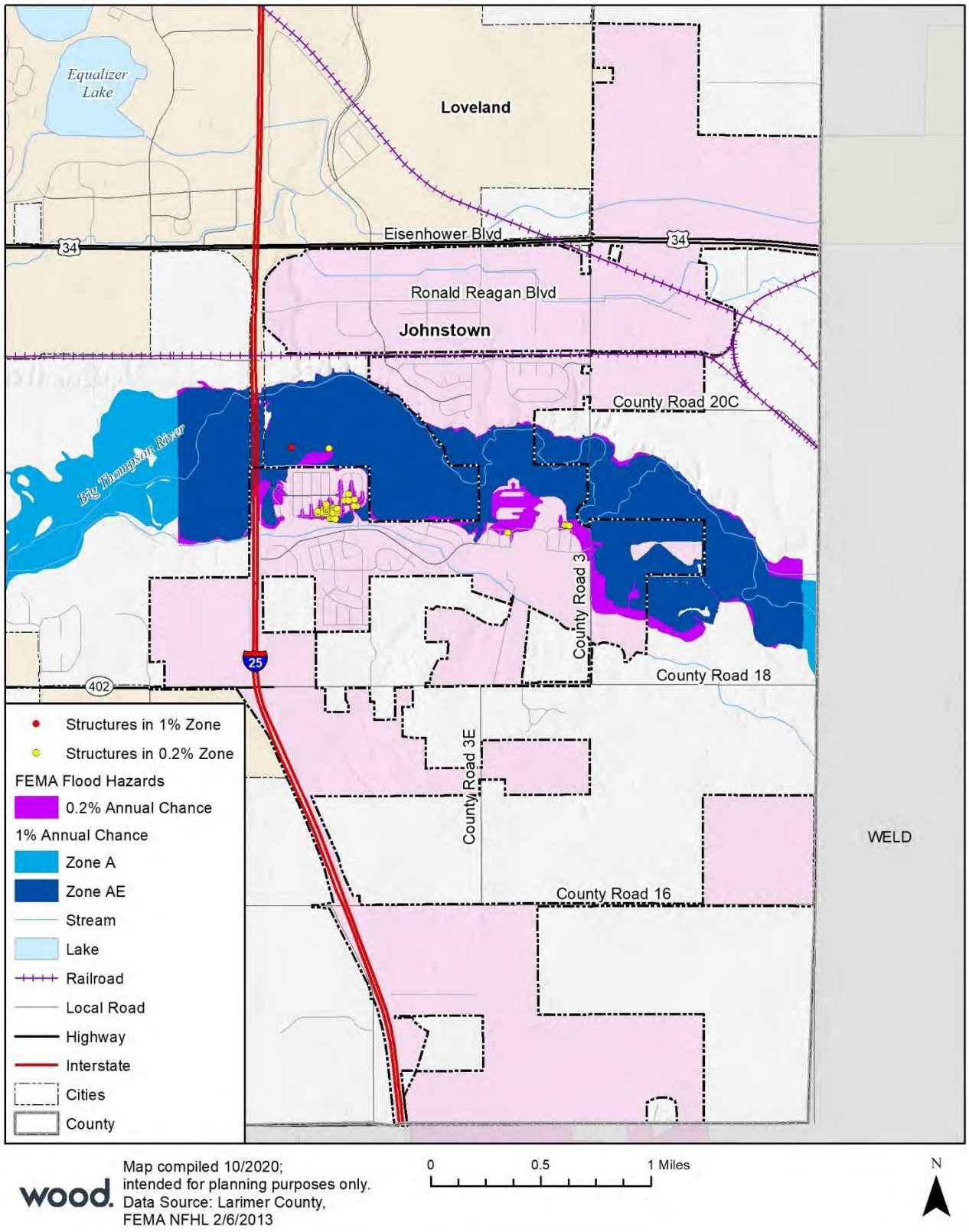
The Town of Johnstown does not have any improved parcels in areas at 1% annual chance of flooding. As shown in Table 4-35 in Section 4.3.6 of the Base Plan, there are an estimated 32 parcels and 92 residents located in the 0.2% annual chance flood hazard area, with a total value of $14,317,163 and estimated losses of $3,579,291. The Town does not have any critical facilities in 1% or the 0.2% annual chance flood hazard areas.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Johnstown is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

National Flood Insurance Program Policy Analysis

The Town of Johnstown has participated in the National Flood Insurance Program (NFIP) since 2006. NFIP insurance data shows that as of January 2021 there are 15 flood insurance policies in force in the Town with $4,411,000 of coverage. There has only been 1 historical claim for flood losses, for $9,971. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The Town of Johnstown does not participate in the Community Rating System (CRS) program.

Figure J-6 FEMA Special Flood Hazard Areas for the Town of Johnstown



J.4.4 Hazardous Materials Incident

Designated hazardous materials routes passing through the Town of Johnstown include I-25 and several rail lines. None of the County's Risk Management Plan (RMP) facilities are located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes 5 hazardous materials incidents in or near the Town of Berthoud from 1987 through 2019. This averages out to one hazardous materials incident every 6-7 years. None of those incidents reported any deaths, injuries, or significant property damage.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Johnstown is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

J.4.5 Landslide/Rockslide

There are no identified areas of landslide or rockslide risk in the Town of Johnstown. The overall significance of this hazard for the Town is Low.

J.4.6 Soil Hazards

No historically undermined areas or areas at risk of land subsidence or collapsible soil have been identified in the Town of Johnstown, as shown in Figure J-7. However, portions of the Town are at risk of expansive soils, as shown in Figure J-8.

Table 4-50 in Section 4.3.9 of the Base Plan shows 72 parcels and 94 buildings potentially at risk to expansive soils, with a total value of $650,959,404. The overall significance of this hazard for the Town is Low.

Figure J-7 Potential Collapsible Soils Areas – Town of Johnstown

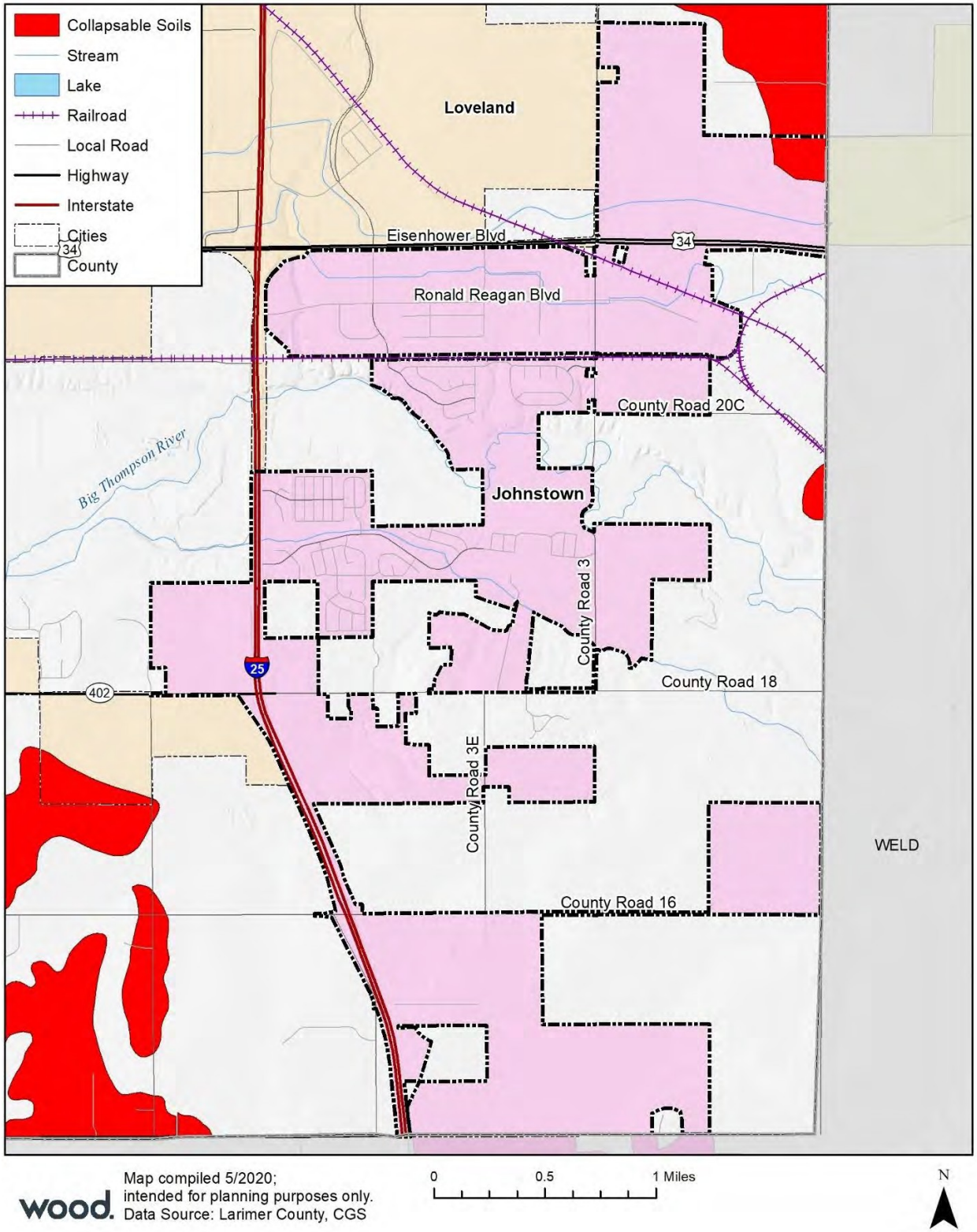
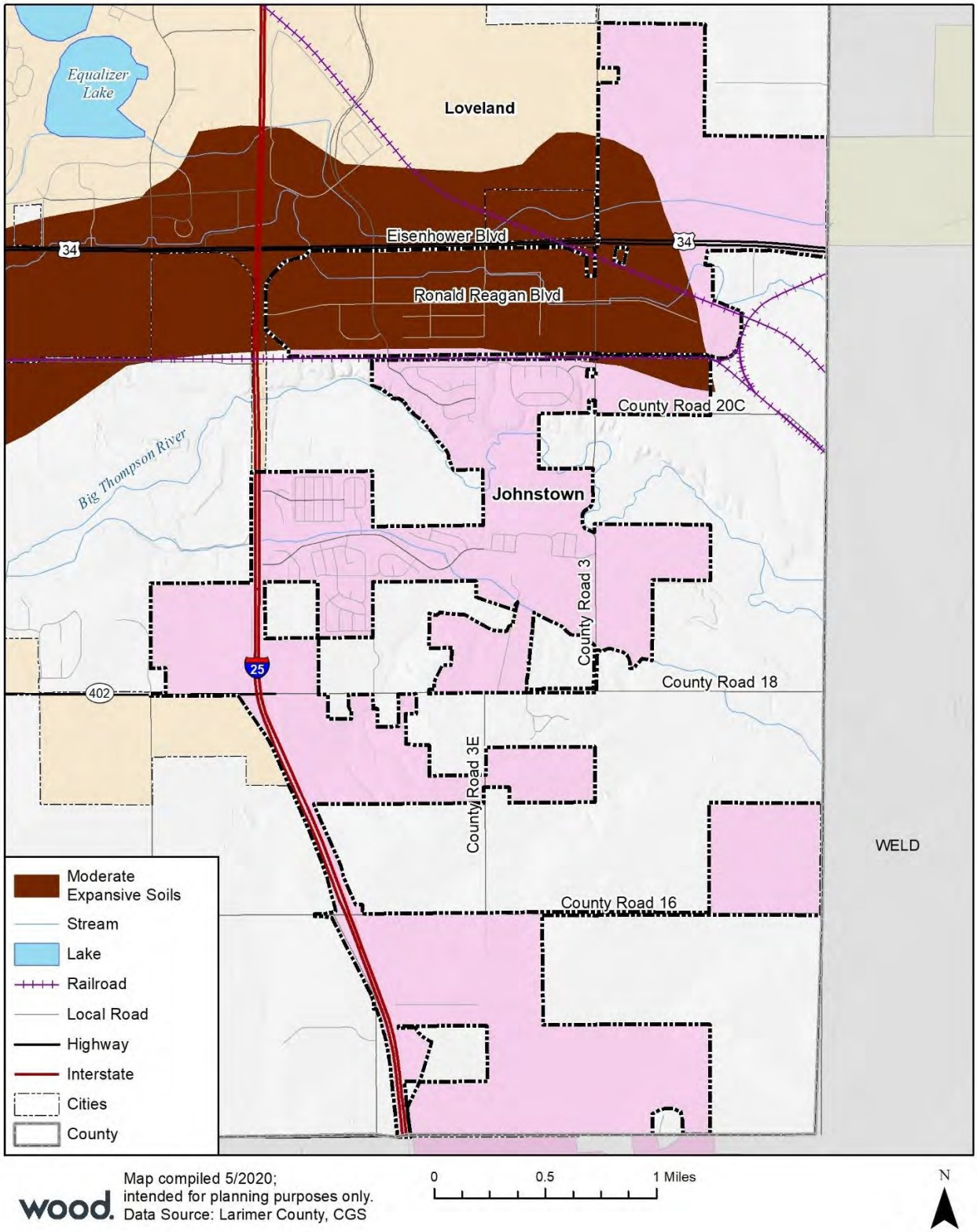


Figure J-8 Potential Expansive Soils Areas – Town of Johnstown



The critical facility exposure analysis shows no critical facilities in Johnstown at risk of collapsible soils, but 3 potentially at risk of expansive soils, as shown in the following table.

Table J-9 Johnstown Critical Facilities with Potential Expansive Soil Hazards

FEMA Lifeline	Count
Energy	1
Health and Medical	2
Total	**3**

Source: Cascarta

While the Town is at low risk of land subsidence and collapsible soils, portions of the Town are exposed to expansive soils. The overall significance of this hazard for the Town is Low.

J.4.7 Wildfire

The Town of Johnstown has not had a significant history of wildfire activity in or adjacent to the Town. Areas in and around the Town of Johnstown at risk of wildfire, based on CO-WRAP assessment, are shown in Figure J-9.

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town has no parcels or buildings at moderate, high, or highest risk of wildfire.

The Town has one critical facility identified at being at risk of wildfires, as shown in Table J-10.

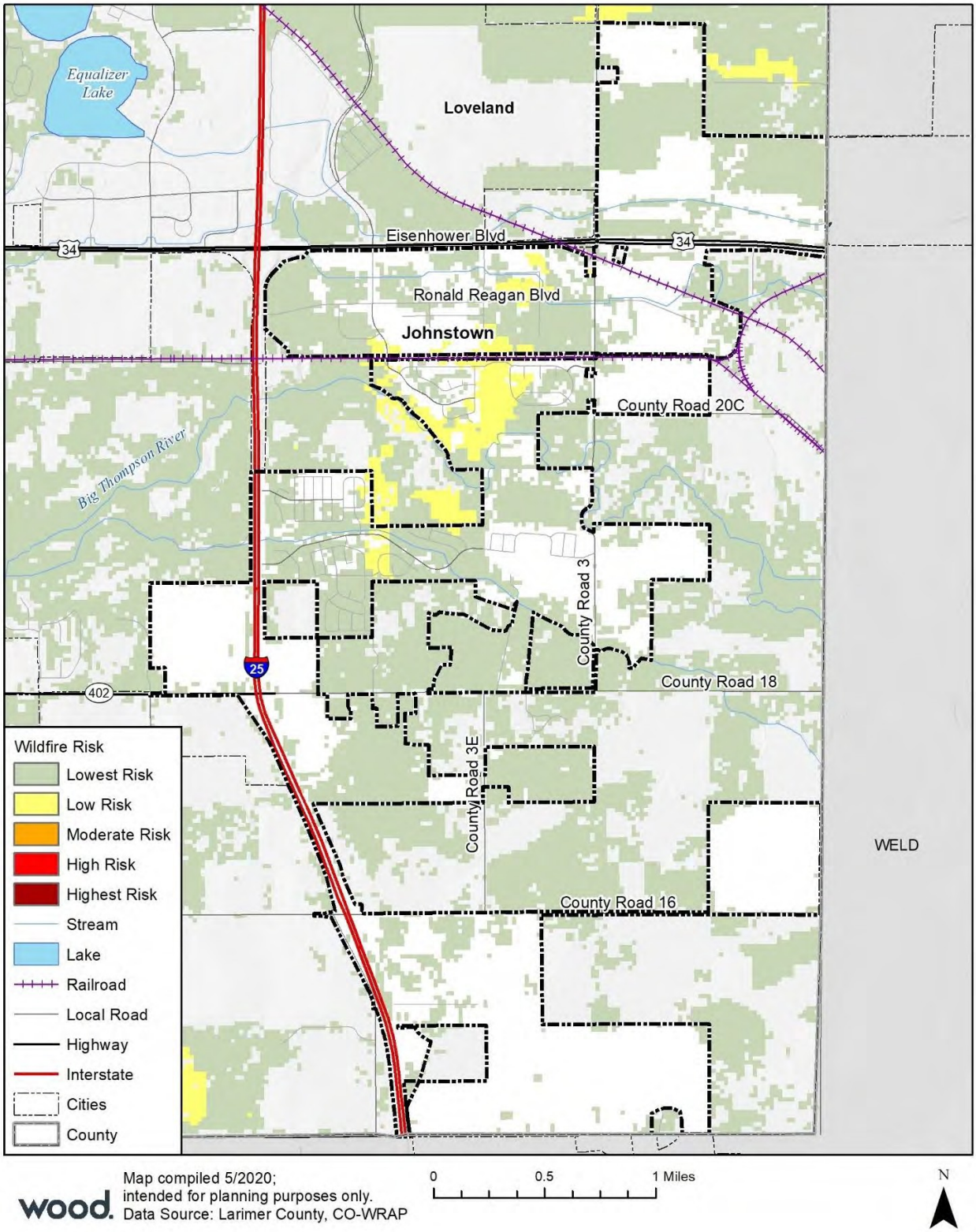
Table J-10 Johnstown Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Energy	1					1
Total	**1**	**0**	**0**	**0**	**0**	**1**

Source: Cascarta, CO-WRAP

The overall significance of this hazard for the Town is Low.

Figure J-9 Johnstown Wildfire Risk



J.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Town of Johnstown to reduce hazard impacts or that could be used to implement hazard mitigation activities.

J.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table J-11 Town of Johnstown Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	Yes	
Floodplain ordinance	Yes	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	
Building codes	Yes	
Fire department ISO rating	Unk	
Erosion or sediment control program	Yes	
Stormwater management program	Yes	
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	No	
Local emergency operations plan	Yes	
Other special plans	No	
Flood insurance study or other engineering study for streams	Unknown	Recent updates to floodplain, per FEMA
Elevation certificates (for floodplain development)	Yes	

Source: Town of Johnstown planning team

Table J-12 Town of Johnstown Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning Development Director, Planner 1 and 2
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Contracted Town Engineer IMEG
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	Planning and Development
Full time building official	No	Contracted ProCode
Floodplain manager	Yes	Planning and Development Director
Emergency manager	Yes	Manager/Police Chief
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Planning and Development, New program-building capacity

Personnel Resources	Yes/No	Department/Position/Comments
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Manager/Police Chief

Source: Town of Johnstown planning team

In Johnstown the Police Chief serves as the Emergency Manger as needed during an event.

Table J-13 Town of Johnstown Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Unknown	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	Yes	No	
Incur debt through special tax bonds	Yes	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	Unknown	Unknown	

Source: Town of Johnstown planning team

Table J-14 Education and Outreach Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	
Other?	No	

Source: Town of Johnstown planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Johnstown has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

J.5.2 Opportunities for Enhancement

Based on the capability assessment, Johnstown has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and Town Council on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the

Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

Another capability enhancement would be to consider joining the CRS, which would require enhancements to the Town's floodplain management program; however the low number and value of flood insurance policies in the Town of Johnstown means this would not significantly affect flood insurance affordability in the Town.

Other enhancements underway or being considered by the Town include updating the Town Comprehensive plan and land use code, and pursuing CFM certification for the floodplain manager.

J.6 Mitigation Strategy

The Town of Johnstown has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had two mitigation actions in the 2016 Plan, which were not completed and have been carried over into the 2021 Plan, along with two new actions.

The local planning team identified and prioritized the following mitigation actions for the Town of Johnstown based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included. These actions are also captured in Table 6-2 in the Base Plan.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Johnstown will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table J-15 Town of Johnstown 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
J-1	Goals 1,4 Objectives 1	Biological Hazards, Civil Disturbance, Soil Hazards, Dam Inundation, Spring/Summer Storm, Drought, Tornado, Earthquake, Utility Disruption, Flood, Wildfire, Hazmat, Winter Storm	**Community Outreach Project.** After the 2013 Floods, it became apparent that more outreach is needed to citizens regarding the hazards in our town and surrounding areas and how best to respond. In partnership with Larimer County, we would like to enhance our public outreach program for the Town of Johnstown. We will use existing educational materials as well as develop materials specific to the Town of Johnstown to increase hazard and risk preparedness, response to educate our citizens. Provide additional information using our Town web site and Facebook page as a part of our ongoing social media program.	**Town of Johnstown**, Larimer County OEM	$5,000	Town general fund, Larimer County outreach materials.	High	2021	In Progress.
J-2	Goals 1 Objectives 3,5	Flood	**NFIP Promotion and Administration.** As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status. The benefits are to flood-prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses. Continued administration of floodplain regulations and updates to town ordinances.	**Floodplain Manager,** Public Works Department	Can be accomplished within existing budgets	N/A	High	Ongoing	In Progress. Town staff is actively working on this.
J-3	Goals 1,2 Objectives 3,5	Flood	**High Plains Blvd Updates and Reconstruction.** Design updates and reconstruction of portions of Larimer County Rd 3 (High Plains Blvd.) within Town Limits, north of CR 18 (Freedom Parkway). This project smooths-out tight curves on the road next to the river, as well as incorporates better water quality on the road and adjacent areas via curb and gutter in "ultimate" areas that divert water to WQ ponds, in this flood prone/floodplain area adjacent to the Big Thompson River.	Town of Johnstown Public Works	TBD	Developer funded	Medium	June 2021	New in 2021

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
J-4	Goals 1,2,3,5 Objectives 3,4,5	Dam Failure, Drought, Flood, Soil Hazards, Spring/Summer Storms, Tornado, Wildfire, Winter Storm	**Land Use Code Update.** Massive overhaul of our land use code – including floodplain, stormwater, density controls, open space requirements, special use permits (USR), design guidelines, town tree and landscaping standards, wetlands, etc.	**Town of Johnstown Public Works**	$155K	Town funds	Low	June 2022	New in 2021

J.7 Plan Maintenance and Implementation

Johnstown has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

J.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Johnstown's implementation strategy included:

- Annual review of HMP and mitigation actions by Town Council.
  - With significant changes in Town staff in the past few years, it is unknown if this level of review and action was discussed with Town Council since the 2016 plan.
- Provision of public information on website.
  - The towns floodplain ordinance is provided on the Town's website, however, additional links and map information were not provided.
- We will maintain our floodplain regulations and update as needed so that they align with the HMP.
  - This is being accomplished in 2020-21, with effective date January 2021, per updated FIRM mapping and studies.

J.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Police Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Police Chief will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town, Fire District and Police Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Board of Trustees.

Integration Into Other Planning Mechanisms

The Town of Johnstown will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the Town will:

- Reference Hazard Mitigation Plans in the updated Comprehensive Plan, to be adopted in January 2021.
- These action items will be audited annually, along with actions related to the Comprehensive Plan to assess progress and needed resources. Town Staff will meet annually to discuss items that need to be updated and look at progress of action items.
- Ongoing updates to a new website will provide better information to residents on floodplain concerns.
- Mitigation actions will be incorporated in capital improvement planning.
- Incorporate information from the HMP into the next update of the Town's comprehensive plan/zoning code/etc.] Land use and zoning code rewrite is planned in 2021-22, and will review and discuss modifications to hazard management ordinances.

Continued Public Involvement

The Town of Johnstown will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website to get information to citizens and businesses.

J.8 Letter of Intent to Participate

Town of Johnstown

450 South Parish Avenue • P.O. Box 609
Johnstown, CO 80535
Phone: 970.587.4664 • Fax: 970.587.0141
www.townofjohnstown.com

December 10, 2018

Ms. Lori Hodges
Director of Emergency Management
Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Johnstown is submitting this letter of intent to confirm that the Town of Johnstown has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Johnstown agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The Town of Johnstown understands that it must engage in the following planning process and will do so based on the availability of resources, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

The Community That Cares

K. LIVERMORE FIRE PROTECTION DISTRICT

"To provide quality and compassionate services to the Community of the Livermore Fire Protection District, and those traveling through, in the event of medical, rescue, and fire emergencies."

– Mission Statement, Livermore Fire Protection District

K.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Livermore Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section K.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

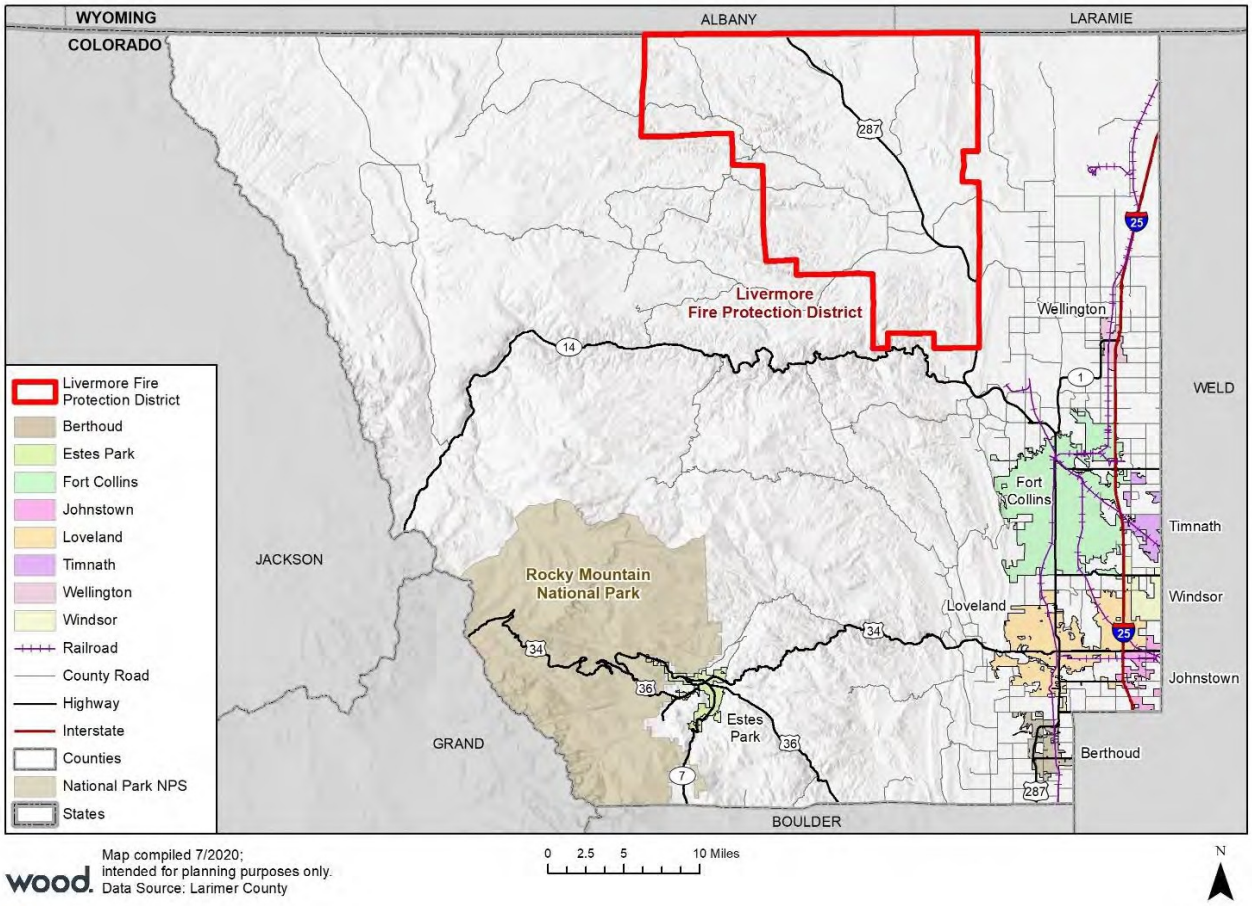
K.2 Community Profile

The Livermore Fire Department was incorporated in 1991 as an all-volunteer, privately funded fire department. In 1997, by general election, Livermore Fire Protection District was formed as a Special Fire District, funded by landowner property taxes in unincorporated Larimer County and tax deductible donations from the community.

Livermore Fire Protection District (LFPD) serves one of the largest fire protection districts and covers roughly 310 square miles. This includes 28 miles of US Highway 287. LFPD currently has two stations:

- Station 1 on 311 Red Feather Lakes Road or County Road 74E
- Station 2 on 8017 W. Cherokee Park or W. County Road 80C.

Figure K-1 Map of the Livermore Fire Protection District



LFPD is the local responding agency for 911 emergency calls including: wildland fire, structure fire, vehicle accidents, medical emergencies, and smoke reports within our district. LFPD also responds to surrounding districts with mutual aid agreements. The district has a budget of about $120,000/year with an operations budget of about $70,000.

Highway 287 greatly impacts the LFPD and affects its need for equipment and training. The highway is a source of severe accidents including hazmat incidents and vehicle fires. Obviously, as an important part of the US DOT infrastructure, it is an important consideration of LPFD's HMP and emergency responses. Accidents, storms, fires, hazmat; all potentially close this highway. Every year citizens die on this road due to bad weather. Many thousands of dollars in property are lost as well as lost time in shipping products over the road.

Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall the District is characterized by medium-low levels of social vulnerability, however it does rank high in housing and transportation vulnerability. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

K.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table K-1 Hazard Identification and Risk Assessment Summary for the Livermore Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Occasional	Significant	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Unlikely	Limited	Critical	Low
Hazardous Materials	Occasional	Limited	Significant	Medium
Landslide/Rockslide	Likely	Significant	Negligible	Medium
Soil Hazards	Unlikely	Limited	Significant	Low
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Unlikely	Limited	Significant	Low
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

K.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Livermore Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Earthquake
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

K.4.1 Civil Disturbance

There is no significant history of civil disturbance risk in the Livermore Fire Protection District. The overall significance of this hazard for the District is Low.

K.4.2 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows potential dam inundation areas in the Livermore Fire Protection District, primarily along the North Fork Cache la Poudre River, Meadow Creek, and Lone Pine Creek. While there are a number of dams upstream of the District, none of them are ranked as High Hazard. The overall significance of this hazard for the District is Low.

K.4.3 Flood

Figure 4-19 in Section 4.3.6 of the Base Plan shows mapped flood hazard areas within the Livermore Fire Protection District boundaries, primarily along the North Fork Cache la Poudre River. Additionally smaller waterways can flood having significant impact in local area, i.e. – Rabbit Creek, Stonewall Creek, Willow Creek, Mill Creek, Trail Creek, Devils Creek, Fish Creek, and others. The overall significance of this hazard for the District is Low.

K.4.4 Hazardous Materials Incident

There is a significant history of hazardous materials incidents in the Livermore Fire Protection District along US287. The overall significance of this hazard for the District is Medium.

K.4.5 Landslide/Rockslide

Figure 4-27 in Section 4.3.8 of the Base Plan shows potential rockslide areas in the Livermore Fire Protection District. The overall significance of this hazard for the District is Medium.

K.4.6 Soil Hazards

There is no significant history of expansive/collapsible soils or land subsidence in the Livermore Fire Protection District. The overall significance of this hazard for the District is Low.

K.4.7 Tornado

There is no significant history of tornadoes in the Livermore Fire Protection District. The overall significance of this hazard for the District is Low.

K.4.8 Wildfire

The Livermore Fire Protection District was directly impacted by the 2020 Cameron Peak Wildfire. LFPD units were tasked with life safety assignments to include firefighting, evacuations, tender assistance. Additionally LFPD Units have been called upon to assist with the Mullen Fire which started in Wyoming and has moved to Colorado.

As seen in Section 4.3.13 of the Base Plan, significant portions of the District are classified as being at Moderate or High risk of wildfires. The overall significance of this hazard for the District is High.

K.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Livermore Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

K.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table K-2 Livermore Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Regulated by County
Zoning ordinance	Yes	By County
Subdivision ordinance	No	
Growth management ordinance	No	Regulated by County
Floodplain ordinance	No	Regulated by County
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	Regulated by County
Building codes	No	Regulated by County
Fire department ISO rating	Yes	8.5
Erosion or sediment control program	No	Regulated by County
Stormwater management program	No	Regulated by County
Site plan review requirements	No	Regulated by County
Capital improvements plan	Yes	Growth Management and Response Levels
Economic development plan	No	Regulated by County
Local emergency operations plan	Yes	Partnership with County ICS
Other special plans		
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	Regulated by County

Source: Livermore Fire Protection District planning team

Table K-3 Livermore Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	Regulated by County
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	No	Assistance from County
Full time building official	No	
Floodplain manager	No	
Emergency manager	No	Utilize County EM
Grant writer	Yes	2 LFPD Grant Managers
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	Larimer County
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	County LETA and 911

Source: Livermore Fire Protection District planning team

Table K-4 Livermore Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	Yes	FEMA/Larimer Co.
Authority to levy taxes for specific purposes	Yes	No	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	No	No	
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	Yes	Yes	FEMA/ Larimer Co.

Source: Livermore Fire Protection District planning team

Table K-5 Livermore Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Social Media Platforms
Firewise	Yes	
StormReady	No	

Source: Livermore Fire Protection District planning team

K.5.2 Opportunities for Enhancement

Based on the capability assessment, Livermore Fire Protection District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

K.6 Mitigation Strategy

The Livermore Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had five mitigation actions in the 2016 Plan, and has completed four of them:

- Cistern Mitigation
- New Fire Station
- Private Land Wildfire Mitigation
- State and Federal Land Wildfire Mitigation

LFPD has also been awarded a grant, supported by both County and Federal funding, to install an emergency generator at Station 1 to support sheltering and emergency operation as well as communications in the area.

The remaining action has been carried over into the 2021 Plan, along with three new actions. The District planning team identified and prioritized the following mitigation actions for the Livermore Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table K-6 Livermore Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
K-1	Goals 1,2,3 Objectives 4,5	Winter Storm, Wildfire	**Snow Rescue Vehicle**. In severe weather, particularly snowstorms; there are many miles of public and private roads which will not be cleared. Any emergency response (Law, Fire, EMS) may be delayed for hours or days until roads can be cleared. Many residential roads are not maintained and can be impassable until a contractor can remove snow. Some of these roads are miles long. Obtain a vehicle which is capable to transporting responders and supplies/equipment into a scene, and be capable of removing citizens trapped or in distress when over the road vehicles are not able to make access. Determine vehicle configurations adaptable to fire and EMS situations that can travel off- road or over snow-closed road. Obtain trailer for such vehicle, if needed, obtain storage location which will be accessible to Livermore Fire Protection Members when roads are impassable. Train members on the use operation, use, and driving. Livermore Fire would maintain and repair this vehicle. We would also make other agencies aware of this capability and of its availability for situations in their district. We would also make this available for organizations providing essential services for our area. (REA, Verizon, etc.)	**Livermore Fire Protection District**	$110,000	Livermore Fire Protection District, fund raising, grants.	Medium	2023	In Progress.
K-2	Goals 1,2 Objectives 5	Wildfire	**Cistern Mitigation.** The Livermore Fire Protection District has no municipal water system. Water for fire protection must be obtained from a few existing cisterns or from natural water bodies. Access, distance, and reliability to water sources are a problem. Some of our areas are many miles from an accessible water source. Benefits: This would provide needed water to areas of population and those that are more susceptible to wildfire. The location assessment would be based on values to be protected, population, distance to reliable water, and risk of fire damage. Having a reliable water source will reduce loss of property (homes) as well as our forest resource. Our target would be to add four Mitigation Cisterns to selected areas of our Fire District.	**Livermore Fire Protection District,** HOAs, homeowners	$4,000 per tank $16,000 total project	Grants, HOAs, Fund Raising	High	2024	New in 2021

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
K-3	Goals 1,2,3 Objectives	Wildfire	**Station 4 Red Mountain.** The Livermore Fire Protection District serves one of the largest fire protection districts covering 310 square miles. This includes 28 miles of US Highway 287 seeing an average of 7200 vehicles pass through daily and 400 miles of county road. In our effort to provide quality fire and rescue service we need to add at station to a high fire call area where response time is over 30 minutes. We have determined the best location for the additional station by doing an assessment of risks and call loads. This data has shown the need for a station in the Red Mountain area of our district. The land has been acquired for this project. The building will accommodate at least one structural engine, one water tender, two brush trucks and one rescue. Additionally, a minimum of 4000 gallon cistern and a well for fire use. Benefits: This station will reduce response times and save lives and property. Swift Fire apparatus arrival will reduce loss of structures and prevent the spread of wildfire. Timely rescue arrival will help save lives.	**Livermore Fire Protection District,** Larimer County	$400,000.00	Grants, Fund Raising, Community Support	High	2024	New in 2021
K-4	Goals 2,3,5 Objectives 3,4,5	Wildfire, Flood	**Cameron Peak Wildfire Recovery.** Coordinate with Larimer County, LCSO, USFS, and other partners to identify and implement post-fire recovery and post-fire flooding mitigation projects as a result of the Cameron Peak Wildfire.	**Livermore Fire Protection District**, LCSO, USFS	Unknown	HMGP, BRIC	High	2020-2021	New in 2021

K.7 Plan Maintenance and Implementation

The Livermore Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

K.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our Fire District Board will help review plans in cooperation with County resources.
  - This was accomplished; the Board is apprised of all aspects of the LFPD.
- We have a newsletter which can be used to reach most homeowner and landowners. We can also use LFPD's web site and (possibly) Larimer County's web site.
  - This was accomplished and is ongoing.
- We will continue to conduct outreach to the community HOAs and ROAs to encourage mitigation for wildfire, structure fire, and be an advocate for road safety, first aid training. We will continue to work with the county when they request assistance for reviewing development plans as they pertain to fire issues.
  - This was accomplished and is ongoing as part of LFPD's education process and information sharing on social media platforms.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

- The 2016 Plan was used as a guiding roadmap to accomplish the goals set forth and was used as the basis for grants that the District applied for.

K.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan. LFPD will use this plan to guide projects and search for possible funding to obtain set goals.

The Fire Chief or designee will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Fire Chief or designee will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Livermore Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The Fire Chief and Assistant Chiefs along with the grant manager and a board designee will meet regularly to evaluate overall progress.
- Incorporate information from the HMP into existing public education & outreach programs via social media platforms and citizen meetings.

Continued Public Involvement

The Livermore Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

K.8 Letter of Intent to Participate

LIVERMORE Fire Protection District

P.O. Box 28 · Livermore · Colorado 80536

Letter of Intent to Participate

June 12, 2015

Lori R. Hodges
Larimer County Emergency Management
200 West Oak Street
Fort Collins, Co 80526

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR 201.6, which specifically identify criteria that allow for multi-jurisdiction mitigation plans, the Livermore Fire Protection District is submitting this letter of intent to confirm that Livermore Fire Protection District has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Livermore Fire Protection District agrees to meet the requirements for mitigation plans identified in 44 CFR 201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County OEM to complete the plan in conformance with FEMA requirements.

Livermore Fire Protection District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan)

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Donn Maynard, commit Livermore Fire Protection District to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 15 day of June, 2015

Donn Maynard/Chief LFPD

L. CITY OF LOVELAND

"A vibrant community – surrounded by natural beauty – where you belong."

– Community Vision, Create Loveland Comprehensive Plan, 2015

L.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The City of Loveland and Loveland Fire Rescue Authority participated in the 2016 Larimer County Hazard Mitigation Plan, and have been active in implementing that plan as described in Section L.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the City and LFRA on the Planning Team are listed in Appendix B.

The City of Loveland has partnered with Loveland Fire Rescue Authority (LFRA) in the update of this Plan and the development of this Annex. The City and LFRA have a combined emergency management program, and have previously partnered on the 2016 Larimer County HMP as well as the 2016 Mitigation Master Plan (MMP). Both the City and LFRA have met all participation requirements for this plan update.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

L.2 Community Profile

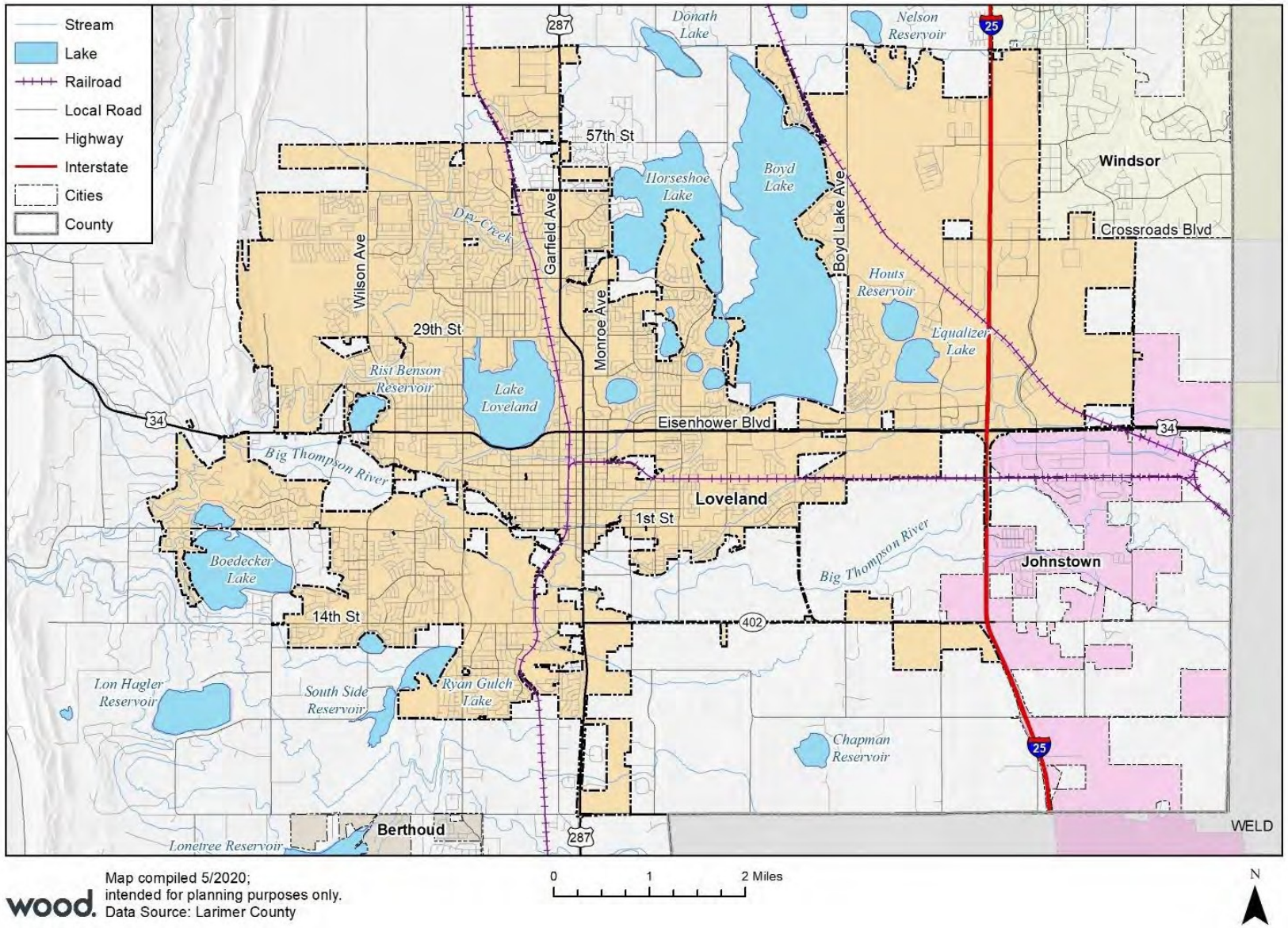
Loveland is located south of Fort Collins. Both cities have expanded steadily toward each other over the last several decades and are considered a single metropolitan area by the U.S. government. The establishment of county-owned open space between the two communities in the 1990s was intended to create a permanent buffer between them. Currently, Loveland's northeastern city limits are now contiguous with those of Windsor, which has expanded westward from Weld County across Interstate 25.

Loveland has aggressively expanded its incorporated limits eastward to capitalize on the interchange of Interstate 25 and U.S. Highway 34, and is currently developing the area. In the last decade, the intersection has become a primary commercial hub of northern Colorado, with the construction of shopping centers and the Budweiser Events Center. A new medical center and mall have also been built on the Interstate 25 and U.S. Highway 34 interchange area, known as Centerra. The interchange area is shared with its smaller neighbor Johnstown.

The Loveland Fire Rescue Authority is a combination department which utilizes both career and volunteer firefighters. LFRA staff consists of 126 total staff, which including a volunteer battalion that serves the Big Thompson Canyon and the Town of Drake. These department members operate under the leadership of a career Fire Chief. The department receives valuable citizen input from the Fire & Rescue Advisory Commission. LFRA provides fire and rescue services in an area totaling approximately 190 square miles, serving residents within the City of Loveland, and residents living within the Loveland Rural Fire Protection District, for a combined population of approximately 104,000.

Figure L-1 shows a map of the City of Loveland.

Figure L-1 Map of the City of Loveland



L.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the City of Loveland.

Table L-1 City of Loveland Demographic and Social Characteristics, 2014-2018

City of Loveland	2014	2018	% Change
Population	70,093	75,395	7.56%
Median Age	38.4	40.5	5.5%
Total Housing Units	30,752	32,735	6.4%
Housing Occupancy Rate	95.0%	95.6%	0.6%
% of Housing Units with no Vehicles Available	5.10%	4.40%	-13.7%
Median Home Value	$218,200	$286,500	31.3%
Unemployment Rate	7.5%	4.3%	-42.7%
Mean Travel Time to Work (minutes)	24.2	25.1	3.7%
Median Household Income	$55,580	$64,209	15.5%
Per Capita Income	$28,705	$33,778	17.7%
% of Individuals Below Poverty Level	9.7%	7.9%	-18.6%
% Without Health Insurance	13.8%	6.5%	-52.9%
# of Households	29,227	31,285	7.0%
Average Household Size	2.38	2.39	0.4%
% of Population Over 25 with High School Diploma	93.6%	95.9%	2.5%
% of Population Over 25 with bachelor's degree or Higher	34.0%	36.1%	6.2%
% with Disability	11.1%	12.2%	9.9%
% Speak English less than "Very Well"	2.3%	2.1%	-8.7%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table L-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Loveland	County	Colorado
Median Age	40.5	35.9	36.6
Housing Occupancy Rate	95.6%	91.7%	89.8%
% of Housing Units with no Vehicles Available	4.4%	4.1%	5.2%
Median Home Value	$286,500	$336,200	$313,600
Unemployment	4.3%	5.0%	4.7%
Mean Travel Time to Work (minutes)	25.1	23.2	25.5
Median Household Income	$64,209	$67,664	$68,811
Per Capita Income	$33,778	$35,390	$36,415

Demographic & Social Characteristics (as of 2018)	Loveland	County	Colorado
% of Individuals Below Poverty Level	7.9%	12.0%	10.9%
% Without Health Insurance	6.5%	6.3%	8.1%
Average Household Size	2.4	2.5	2.6
% of Population Over 25 with High School Diploma	95.9%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	36.1%	46.3%	40.1%
% with Disability	12.2%	9.8%	10.6%
% Speak English less than "Very Well"	2.1%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table L-3 Demographics by Race and Sex

Loveland	Population	%
Total Population	75,395	100%
Male	36,772	48.8%
Female	38,623	51.2%
White, not Hispanic	63,932	84.8%
Hispanic or Latino	8,578	11.4%
Black	344	0.5%
Asian	691	0.9%
American Indian and Alaska Native	487	0.6%
Native Hawaiian and Other Pacific Islander	106	0.1%
Some other race	923	1.2%
Two or more races	2327	3.1%

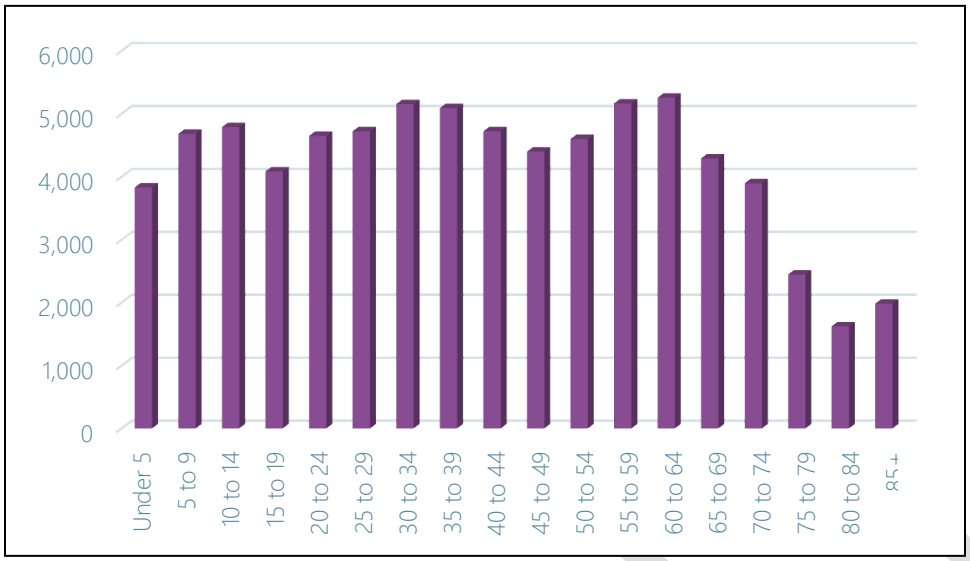
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table L-4 Types and Total Amounts of Housing Units in Loveland

Type of Housing Units	Total	%
Total housing units	32,735	100%
1-unit detached	21,191	64.7%
1-unit attached	3,250	9.9%
2 units	756	2.3%
3 or 4 units	1,270	3.9%
5 to 9 units	1,535	4.7%
10 to 19 units	1,853	5.7%
20 or more units	2,405	7.3%
Mobile home	475	1.5%
Boat, RV, van, etc.	0	0.0%

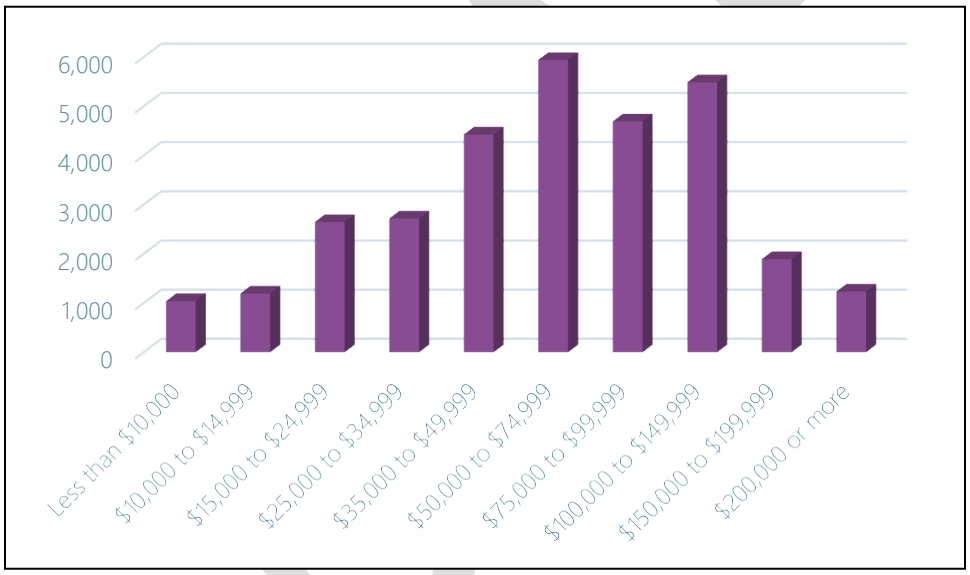
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure L-2 City of Loveland Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure L-3 City of Loveland Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

L.2.2 Social Vulnerability

Loveland is characterized by a mix of low to medium-high levels of social vulnerability. The south eastern area of the city has higher levels of social vulnerability to disasters than the rest of the community. There is also a pocket of highly socially vulnerable residents in the south west portion of the city. A closer look at the individual social vulnerability indicators within Loveland will give local emergency managers, planners, and stakeholders an even clearer picture of where resources should be prioritized in order to reduce vulnerability in the community. Over time, Loveland should continue to monitor their social vulnerability as demographic, economic, and housing related conditions change.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

L.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table L-5 Hazard Identification and Risk Assessment Summary for the City of Loveland

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Negligible	Medium
Dam Inundation	Occasional	Significant	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Occasional	Limited	Significant	Medium
Hazardous Materials	Likely	Limited	Critical	High
Landslide/Rockslide	Unlikely	Limited	Negligible	Low
Soil Hazards	Likely	Significant	Negligible	Medium
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Likely	Significant	Critical	Medium
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

L.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Loveland, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the City's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Tornado
- Utility Disruption

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

L.4.1 Community Asset Inventory

Table L-6 shows the total number of improved parcels, properties, and their improvement and content values for the City of Loveland. See Section 4.2.2 of the Base Plan for details and methodology.

Table L-6 Total Exposure of Improved Properties within the City of Loveland

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	11	15	$1,964,884	$1,964,884	$3,929,768
Commercial	1,514	2,780	$1,427,281,615	$1,427,281,615	$2,854,563,230
Exempt	257	2,547	$573,231,499	$573,231,499	$1,146,462,998
Industrial	45	74	$134,366,765	$201,550,147	$335,916,912
Mobile Home	28	811	$67,926,949	$33,963,475	$101,890,424
Multiple Unit	377	3,742	$592,265,659	$592,265,659	$1,184,531,318
Residential	25,476	26,312	$7,843,231,929	$3,921,615,930	$11,764,847,859
Total	**27,708**	**36,281**	**$10,640,269,300**	**$6,751,873,209**	**$17,392,142,509**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

Table L-7 lists summary information about the 16 critical facilities and other community assets identified by the City as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure L-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table L-7 City of Loveland Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Communications	3
Energy	13
Food, Water, Shelter	40
Hazardous Material	1
Health and Medical	9
Miscellaneous	7
Safety and Security	40
Transportation	2
Total	**115**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure L-4 City of Loveland Critical Facilities and Infrastructure

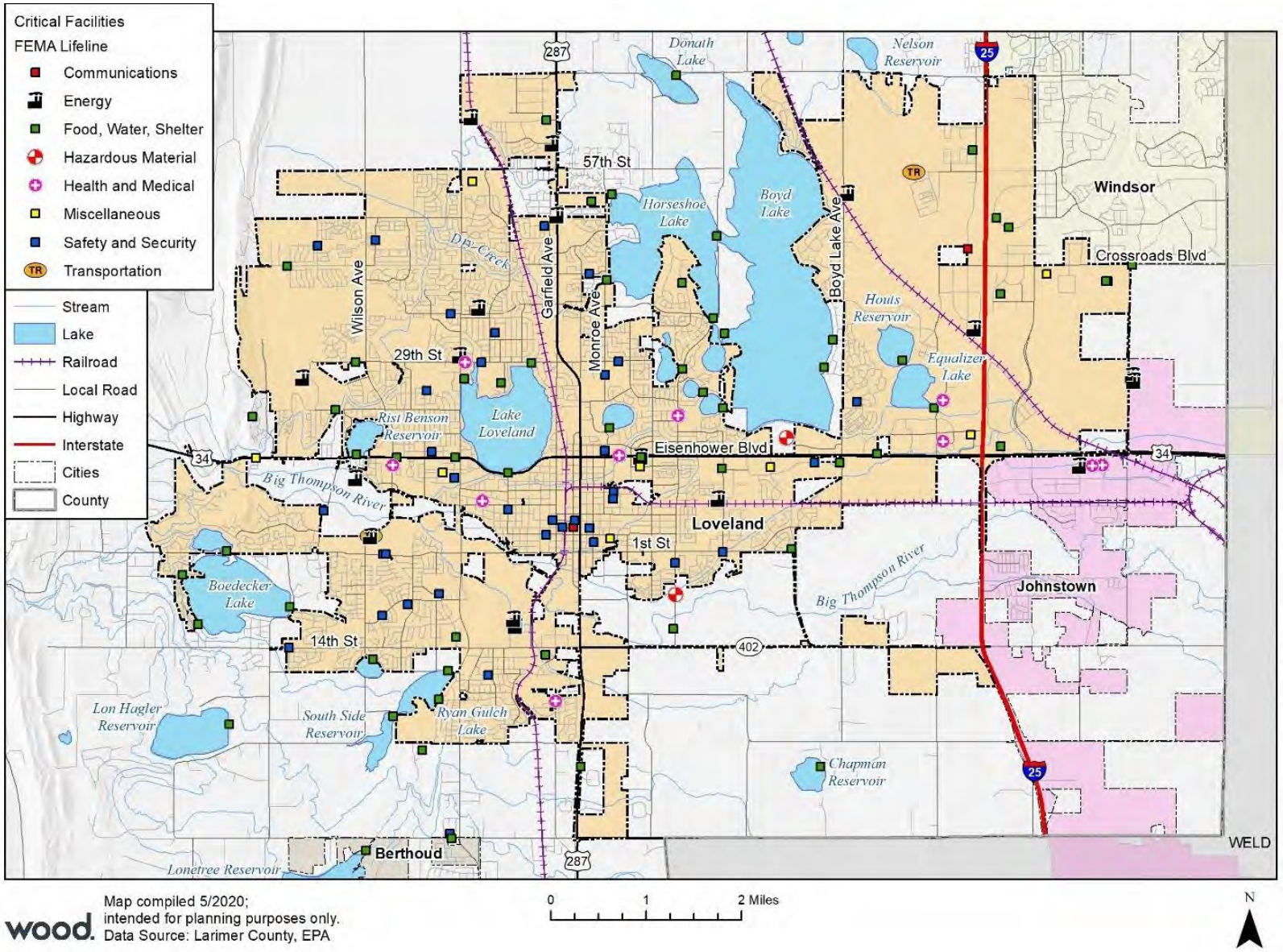
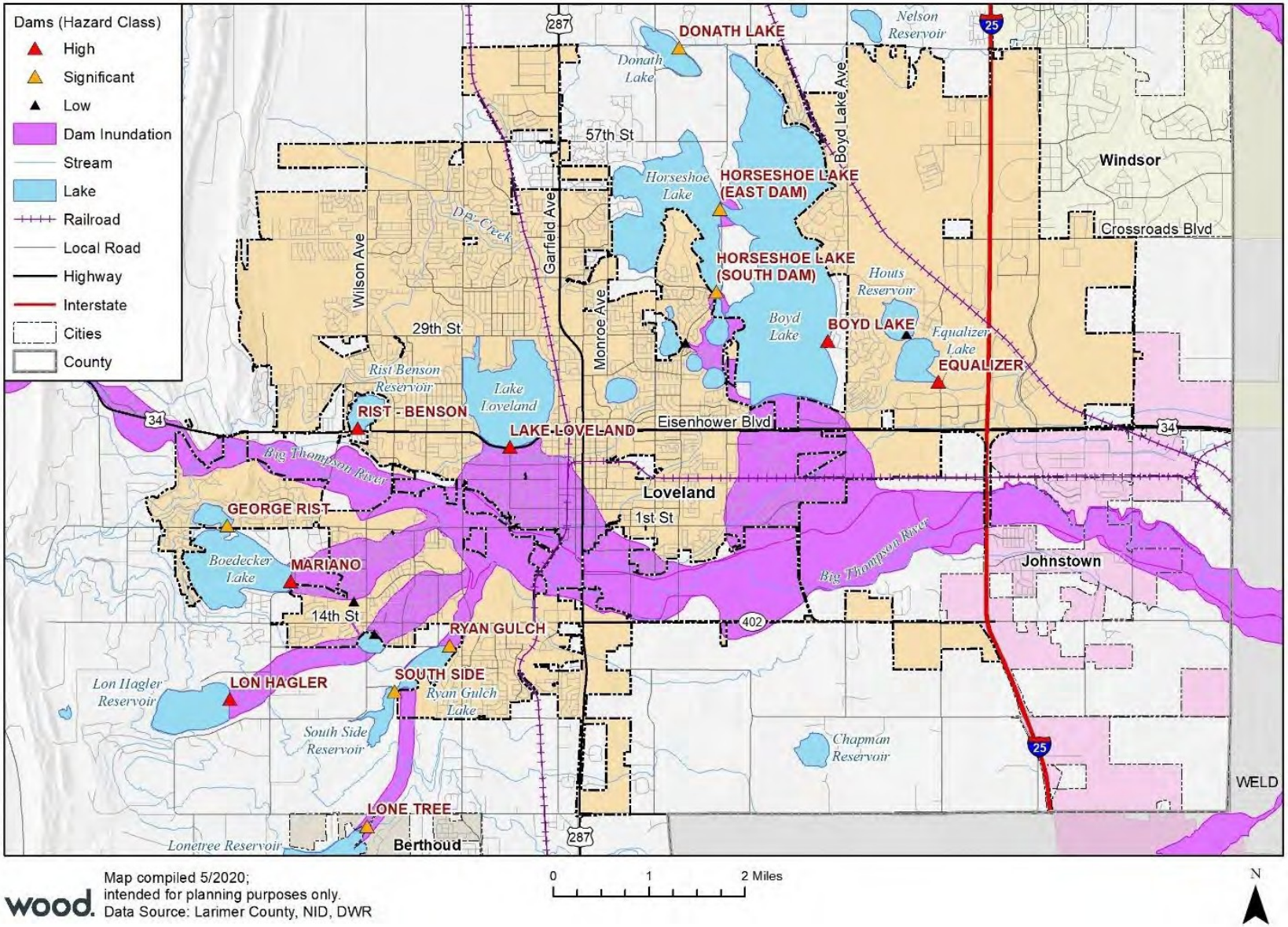


Figure L-5 Dam Inundation Areas for the City of Loveland



L.4.1 Dam Inundation

Potential dam inundation areas in and around the City of Loveland are shown in Figure L-5.

Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. High Hazard dams upstream of the City of Loveland are:

- Boyd Lake
- Carter Lake Dam #3
- Flatiron
- Lake Loveland
- Lon Hagler
- Loveland Water Storage
- Mariano
- Horseshoe Lake (East Dam)
- Horseshoe Lake (South Dam)
- Olympus
- Rist - Benson

Table L-8 shows that Loveland has 110 parcels potentially at risk of dam inundation, valued at $50M; an estimated 275 residents live in those parcels.

Table L-8 City of Loveland Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Agricultural	2	4	$188,066	$188,066	$376,132	
Commercial	249	448	$234,373,338	$234,373,338	$468,746,676	
Exempt	105	760	$184,031,933	$184,031,933	$368,063,866	
Industrial	4	6	$2,930,698	$4,396,047	$7,326,745	
Mobile Home	1	1	$22,400	$11,200	$33,600	2
Multiple Unit	110	677	$154,828,997	$154,828,997	$309,657,994	
Residential	4,588	4,777	$1,345,166,813	$672,583,354	$2,017,750,167	11,417
Total	**5,059**	**6,673**	**$1,921,542,245**	**$1,250,412,935**	**$3,171,955,180**	**11,419**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

There are 25 critical facilities identified in areas at risk of dam inundation in the City of Loveland, shown in Table L-9.

Table L-9 City of Loveland Critical Facilities Potentially at Risk of Dam Inundation

FEMA Lifeline	Count
Communications	2
Energy	1
Food, Water, Shelter	7
Hazardous Material	1
Health and Medical	1
Miscellaneous	1
Safety and Security	11
Transportation	1
Total	**25**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Cascarta, Larimer County GIS, U.S. Census Bureau, Wood analysis

Based on the above analysis, the spatial extent and severity of the dam inundation hazard, the City of Loveland is comparable to that of Larimer County as a whole. The overall significance of this hazard for the City is Medium.

L.4.2 Flood

FEMA mapped floodplains in and around the City of Loveland are shown in Figure L-6.

As shown in Table 4-34 in Section 4.3.6 of the Base Plan, the City of Loveland has 64 parcels, 86 buildings, and an estimated 45 residents in areas at 1% annual chance of flooding, with an estimated loss value of $14,545,890. There are an additional 72 parcels, 380 buildings, and 105 residents located in the 0.2% annual chance flood hazard area, with a total value of $121,425,906, and estimated losses of $30,356,477.

The City has one critical facility identified in FEMA mapped floodplains, as shown in Table L-10.

Table L-10 Loveland Critical Facilities Exposed to Risk of Flooding

FEMA Lifeline	1% Annual Flood Risk	0.2% Annual Flood Risk	Protected by Levee	Total
Safety and Security	1	0	0	1
Total	**1**	**0**	**0**	**1**

Source: Cascarta

As of March 1st, 2021, the City is in the process of adopting updated and expanded floodplain mapping I cooperation with FEMA.

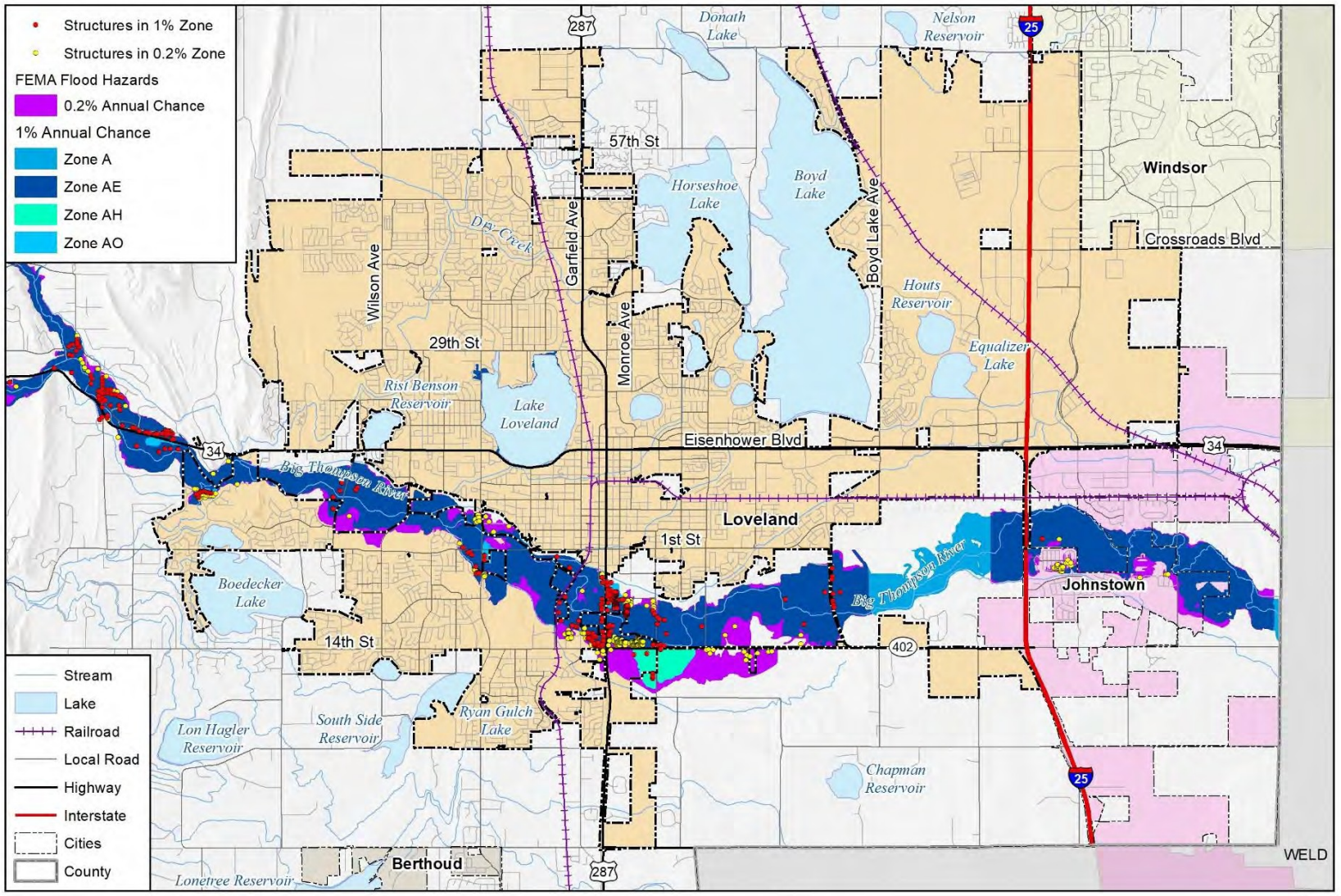
The overall significance of this hazard for the City is Medium.

National Flood Insurance Program Policy Analysis

Loveland has participated in the National Flood Insurance Program (NFIP) since 1978. NFIP insurance data shows that as of September 2020 there are 124 flood insurance policies in force in the City with $41,560,800 of coverage. There have been 28 historical claims for flood losses, totaling $1,450,959. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The City of Loveland participates in the Community Rating System (CRS) program; its current Class 6 CRS rating saves NFIP policy holders $11,624 per year.

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Figure L-6 FEMA Special Flood Hazard Areas for the City of Loveland



L.4.3 Hazardous Materials Incident

The City of Loveland successfully collaborated with CDOT and Weld County to re-route the Interstate 25 emergency traffic primary route out of downtown Loveland and onto Weld County Road 17. This effort greatly reduced the risk of hazardous materials accidents occurring within the vital downtown Loveland area or en route/departure from that area.

Three of the County's ten Risk Management Plan (RMP) facilities are located within the City limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes 67 hazardous materials incidents in or near the City of Loveland from 1987 through 2019. This equal 23% of the incidents in Larimer County, and averages out to two hazardous materials incident a year. Five evacuations are associated with these incidents, along with one deaths and two injuries; however as noted in the Base Plan, it is likely that the majority of those injuries came from the physical impacts of the accident that caused the release, rather from exposure to hazardous materials themselves.

Based on the above analysis, the frequency of reported hazardous materials incidents in the City of Loveland is higher than that of Larimer County as a whole. This is most likely due to the higher concentration of fixed facilities combined with the City's proximity to multiple transportation routes. The overall significance of this hazard for the City is High.

L.4.4 Landslide/Rockslide

There are 6 parcels and 8 buildings at risk of landslide in the City of Loveland. The total value of these buildings is $4,341,833, and an estimated 12 residents would be affected.

There are 10 parcels and 10 buildings at risk of rockslide, with a total value of $6,832,751, and an estimated population of 24 residents.

No critical facilities are at risk of landslide and/or rockslide hazards.

Figure L-8 and Figure L-9 show the potential landslide and rockfall hazards for the City of Loveland.

Based on the analysis above, the overall significance of this hazard for the City is Low. Note however that Loveland Fire Rescue Authority's response district includes unincorporated areas that may be at higher risk; see the following maps and Section 4.3.8 of the Base Plan for further details.

Figure L-7 Landslide Deposits in the City of Loveland

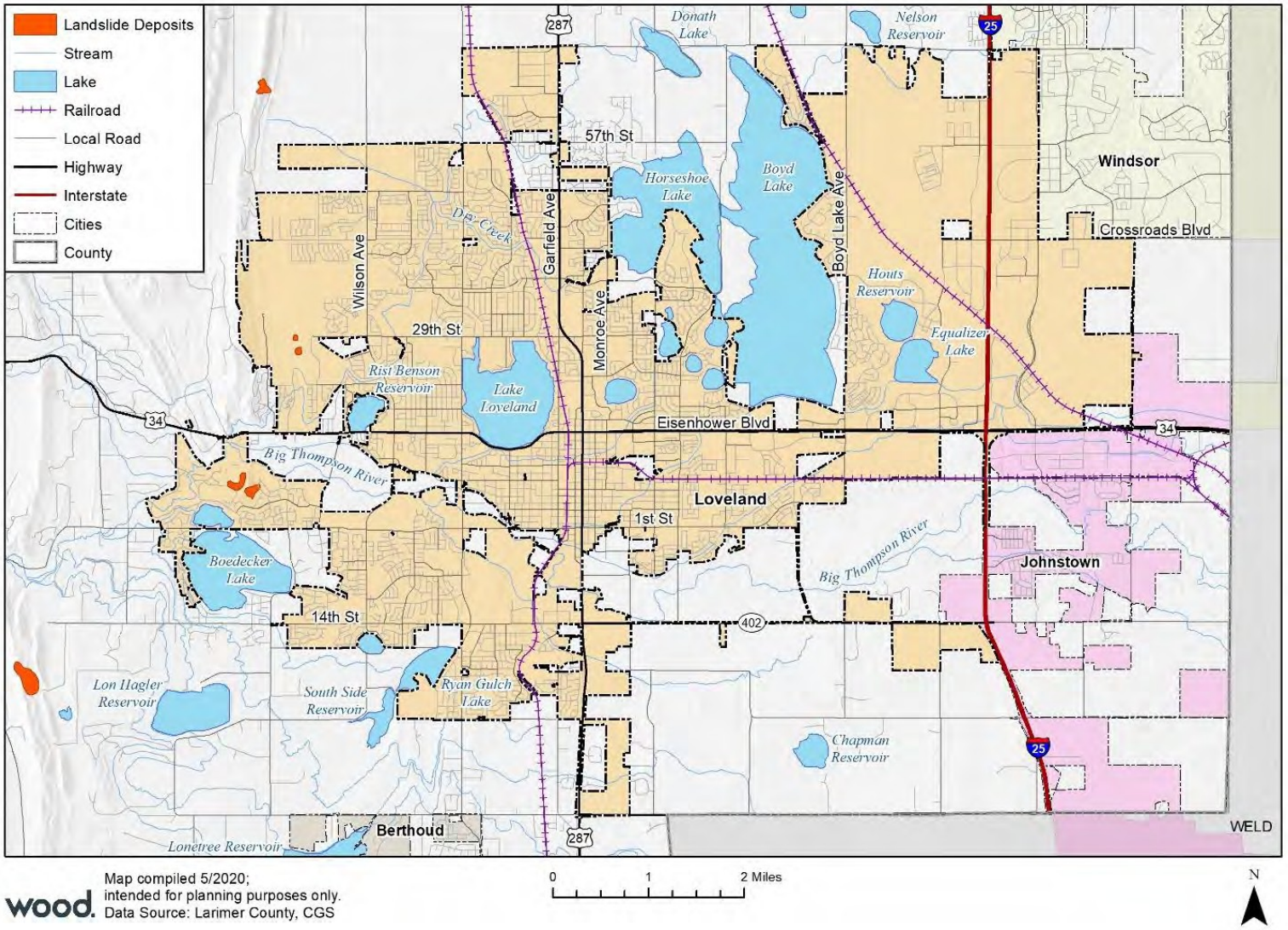
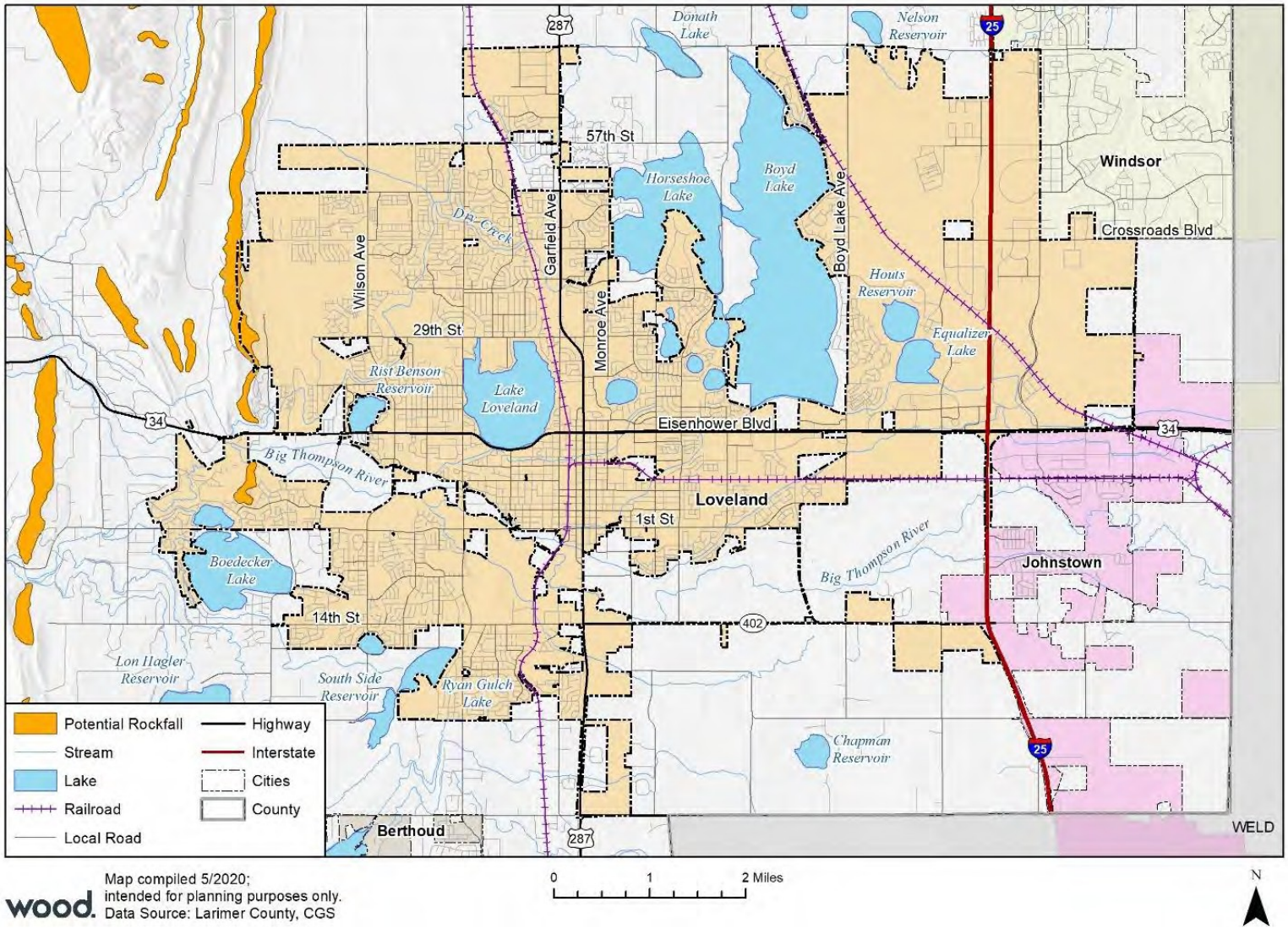


Figure L-8 Potential Rockfall in the City of Loveland



L.4.5 Soil Hazards

While no historically undermined areas or areas at risk of land subsidence have been identified in the City of Loveland, the area to the northwest shows small areas of subsidence, shown in Figure L-9. Significant portions of the City are however at risk of collapsible or expansive soils, as shown in Figure L-10 and Figure L-11. The City has had one occurrence of a major sink hole related to a water pipe leak.

Table 4-49 in Section 4.3.9 of the Base Plan shows 1,015 parcels and 1,640 buildings potentially at risk to collapsible soils, with a total value of $704,017,522.

Similarly, Table 4-50 in Section 4.3.9 of the Base Plan shows 17,961 parcels and 22,976 buildings potentially at risk to expansive soils, with a total value of $10,615,498,819. The overall significance of this hazard for the City is Medium.

The critical facility exposure analysis shows 5 critical facilities in Loveland at risk of collapsible soils and 71 potentially at risk of expansive soils, as shown in the following table.

Table L-11 Loveland Critical Facilities with Potential Collapsible Soil Hazards

FEMA Lifeline	Collapsible Soil	Expansive Soils	Total
Communications		2	2
Energy	1	6	7
Food, Water, Shelter	2	23	25
Health and Medical	1	8	9
Miscellaneous		5	5
Safety and Security	1	27	28
Total	**5**	**71**	**76**

Source: Cascarta

While the City is at low risk of land subsidence or undermined areas, significant portions of the City are exposed to expansive or collapsible soils compared to Larimer County as a whole. The overall significance of this hazard for the City is Medium.

Figure L-9 Land Subsidence in the City of Loveland

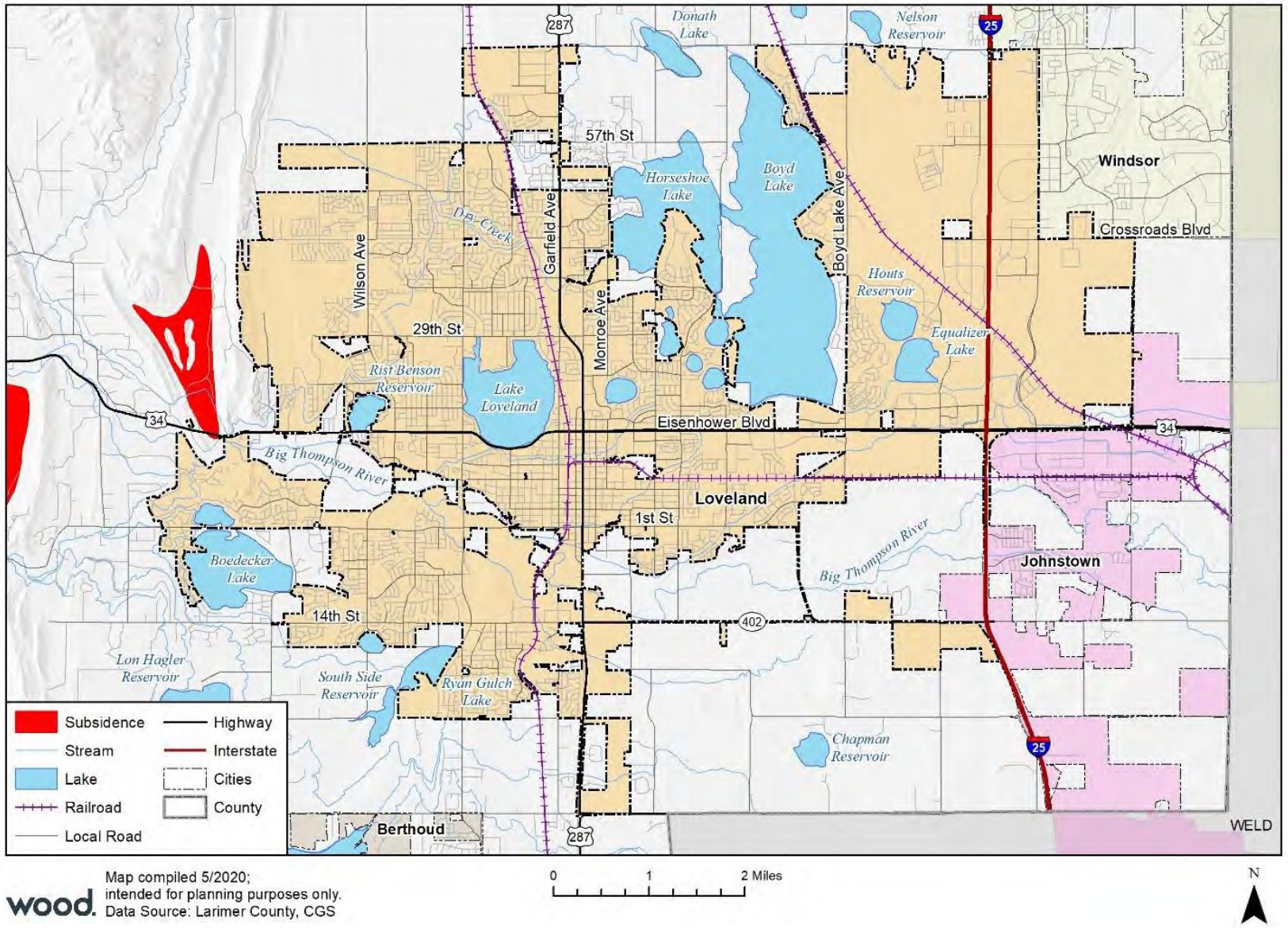


Figure L-10 Potential Collapsible Soils Areas - City of Loveland

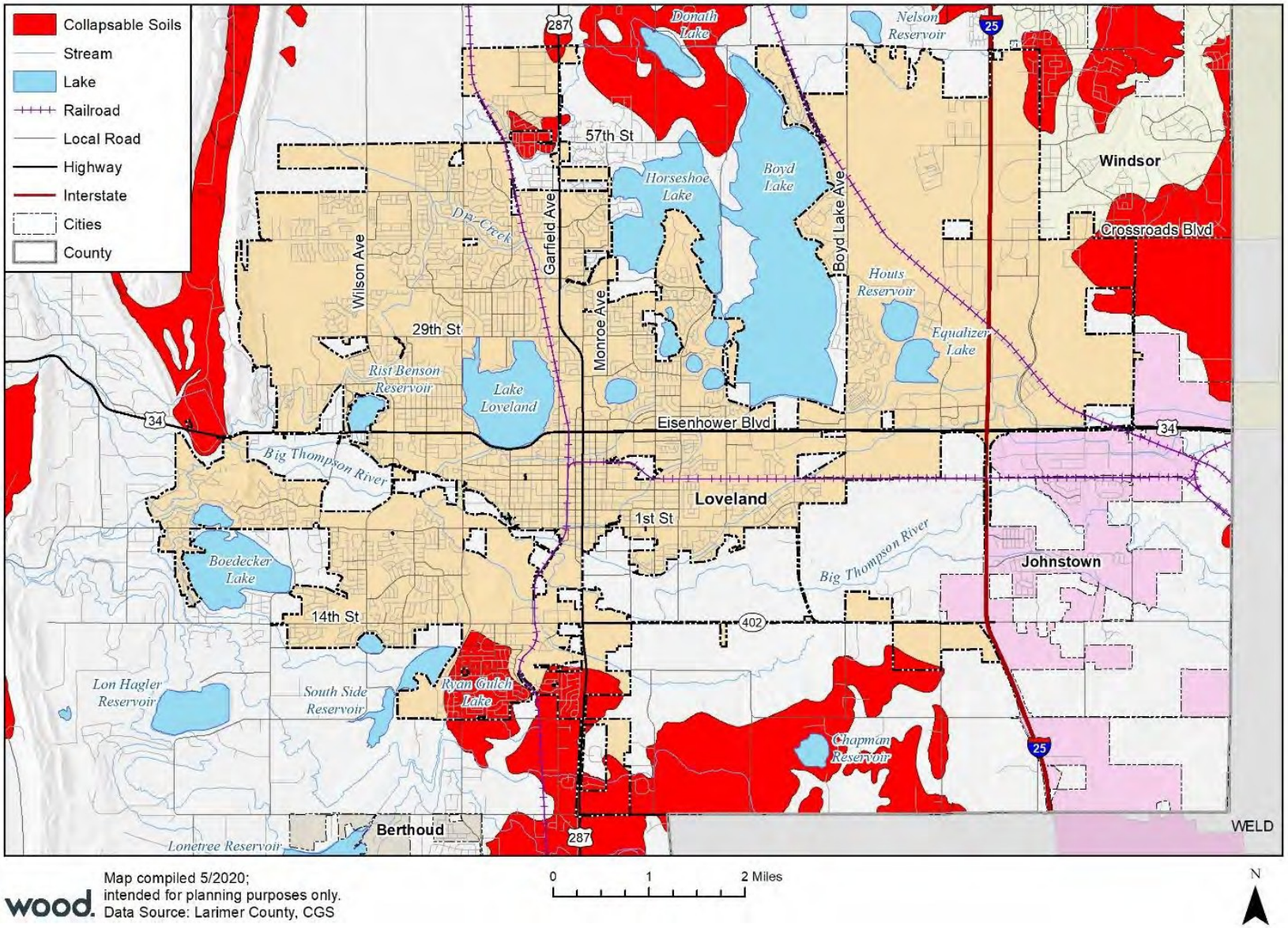
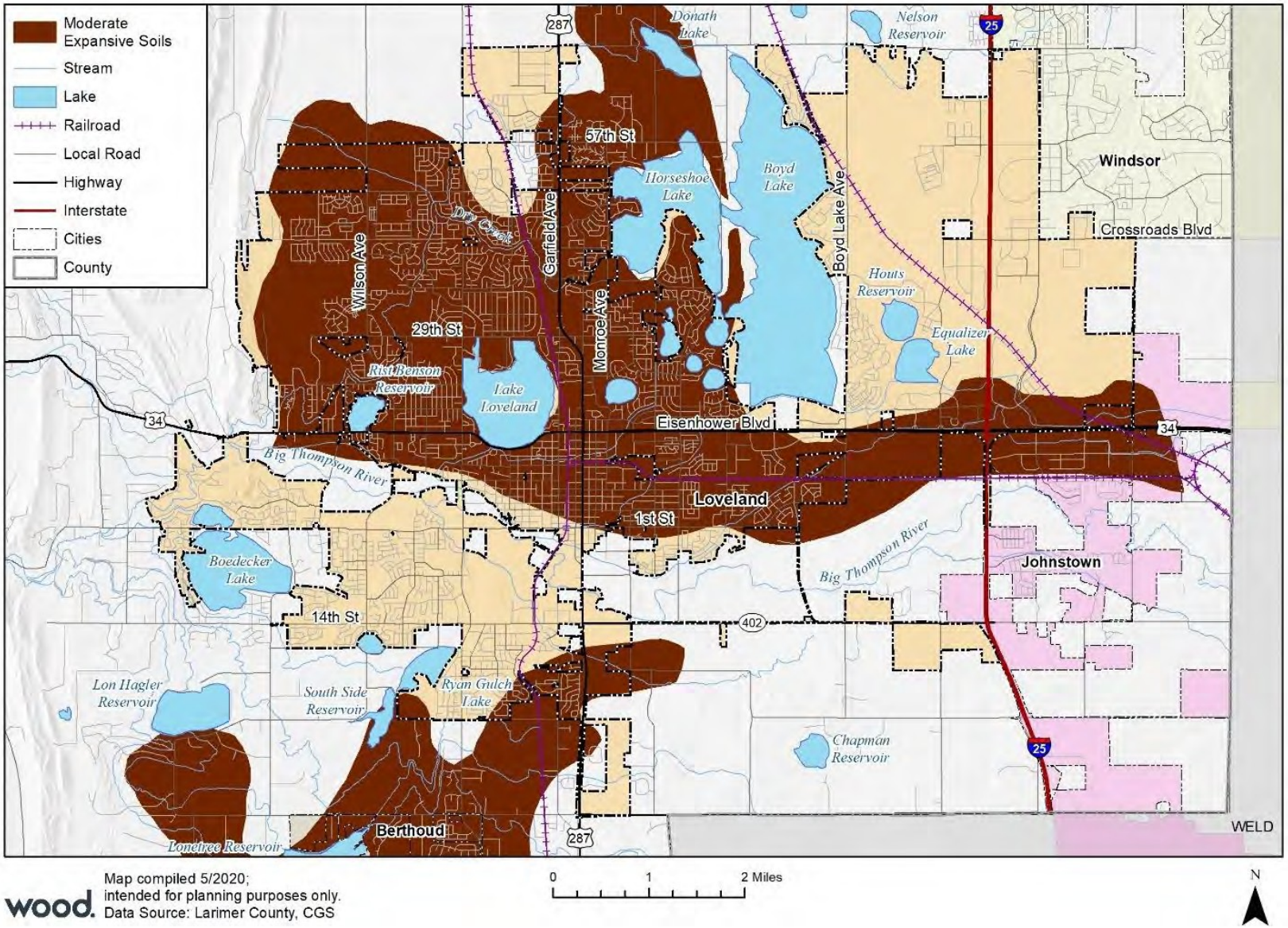


Figure L-11 Potential Expansive Soils Areas - City of Loveland



L.4.6 Wildfire

The City of Loveland has not had a significant history of wildfire activity in or adjacent to the City, although the City has felt impacts from wildfires in other areas of the County. In 2020, the City was significantly impacted by the effects and hazards created by the Cameron Peak Fire and adjacent East Troublesome Fire. In addition to being directly impacted by fire ash showers and smoke clouds, the City released emergency notifications for the evaluation orders within city limits, a first for Loveland. The Loveland Fire Rescue Authority worked with the Larimer County Emergency services and Federal resources to extinguish the fire and manage the community impacts.

Areas in and around the City of Loveland at risk of wildfire, based on CO-WRAP assessment, are shown in Figure L-12. Note that the risk to the NE quadrant of the City is lower in part because that area has recently burned, reducing fuel loads.

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the City has only 104 parcels and 104 buildings at moderate, high, or highest risk of wildfire, with a total value of $52,414,867. An estimated 249 residents live in these at-risk areas.

The City has 13 critical facilities identified at being at risk of wildfires, as shown in Table 4-75.

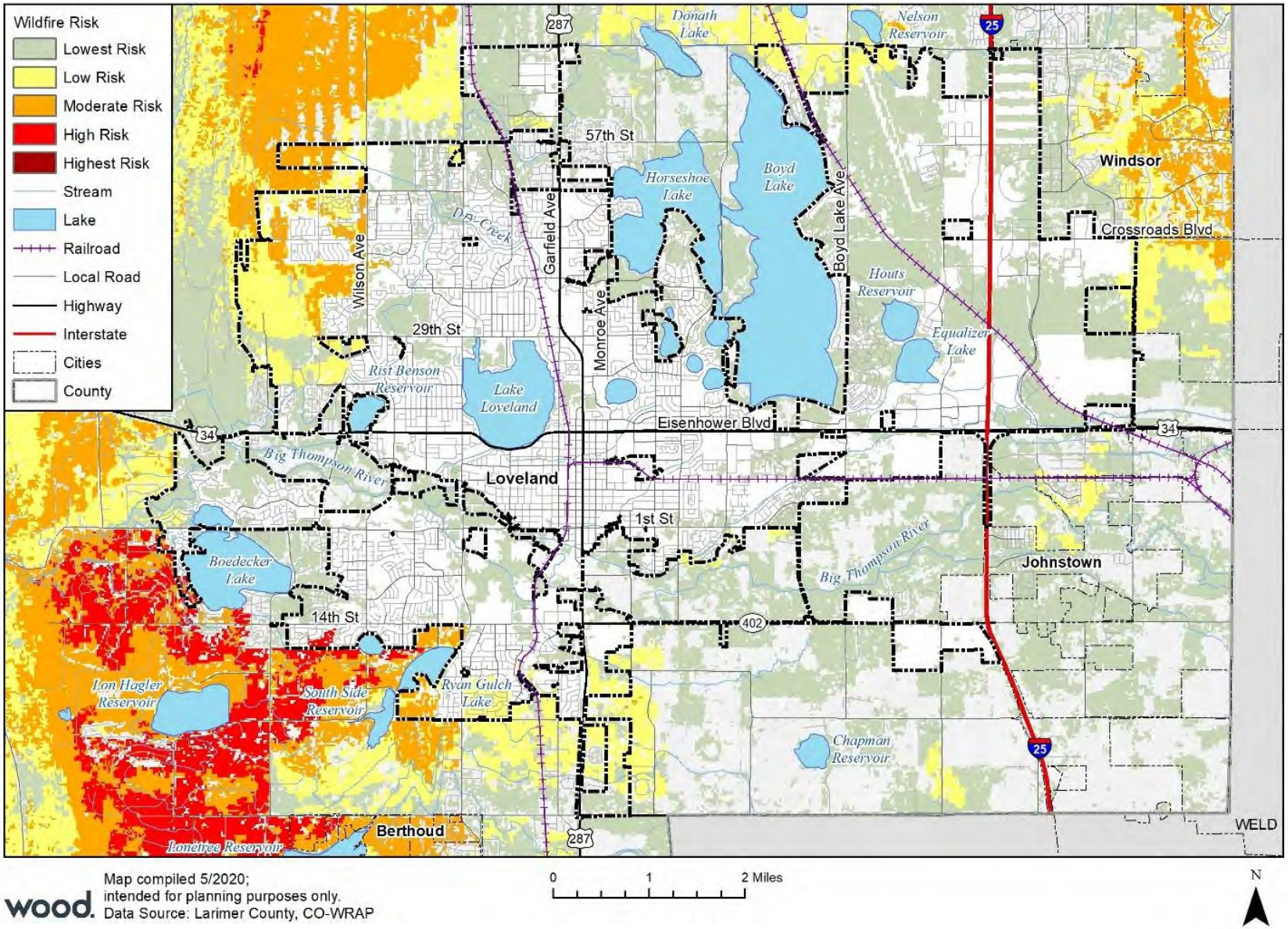
Table L-12 Loveland Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Energy	5					5
Food, Water, Shelter	6			1		7
Safety and Security	1					1
Total	**12**	**0**	**0**	**1**	**0**	**13**

Source: Cascarta, CO-WRAP

A relatively low percentage of the City's total parcels and structures is at direct risk of wildfire. However, a look at Figure L-12 shows a significant portion of the land immediately southwest of the City are at moderate or high wildfire risk, much of which falls within LFRA's service area. The overall significance of this hazard for the City is Medium.

Figure L-12 Loveland Wildfire Risk



L.5 Capabilities Assessment

The capability assessment examines the ability of the City of Loveland to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the City's hazard mitigation program.

L.5.1 Existing Capabilities

The following tables summarize the City's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table L-13 City of Loveland Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Municipal Code
Zoning ordinance	Yes	Municipal Code
Subdivision ordinance	Yes	Municipal Code
Growth management ordinance	No	
Floodplain ordinance	Yes	Municipal Code
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Storm Drainage Criteria
Building codes	Yes	
Fire department ISO rating	Yes	
Erosion or sediment control program	Yes	Storm Drainage Criteria
Stormwater management program	Yes	Storm Drainage Criteria
Site plan review requirements	Yes	Municipal Code
Capital improvements plan	Yes	Storm Drainage Master Plan
Economic development plan	Yes	
Local emergency operations plan	Yes	
Other special plans	Yes	Mitigation Master Plan
Flood insurance study or other engineering study for streams	Yes	Larimer County FIS
Elevation certificates (for floodplain development)	Yes	Limited

Source: City of Loveland planning team

Table L-14 City of Loveland Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Public Works/Stormwater Utility
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Public Works/Stormwater & Transportation
Planner/engineer/scientist with an understanding of natural hazards	Yes	Public Works/Stormwater
Personnel skilled in GIS	Yes	Public Works/GIS
Full time building official	Yes	Development Services/Building Department
Floodplain manager	Yes	Public Works/Stormwater Utility
Emergency manager	Yes	Fire/Emergency Manager
Grant writer	Yes	Full time grant administrator

Personnel Resources	Yes/No	Department/Position/Comments
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Public Works/GIS
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Public Works/Stormwater Utility

Source: City of Loveland planning team

Table L-15 City of Loveland Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: City of Loveland planning team

Table L-16 City of Loveland Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Participation in LEPC
Firewise	Yes	
StormReady	Yes	

Source: City of Loveland planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Loveland has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

L.5.2 Opportunities for Enhancement

Based on the capability assessment, Loveland has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the City to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Internal training and exercises are always based on local risks and mitigation gaps. Additional training opportunities may help to inform City staff and City Council on how best to integrate hazard information and mitigation projects into the City policies and ongoing duties of the City. Continuing to train City staff on mitigation and the hazards that pose a risk to the City will lead to more informed staff

members who can better communicate this information to the public. Improving the City's Community Rating System rating is also a possibility that should be considered; as shown in Table 5-8 in the Base Plan, each step increase in the City's CRS rating would result in an additional $2,700 discount on flood insurance premiums.

L.6 Mitigation Strategy

The City of Loveland and LFRA have adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The City had seven mitigation actions in the 2016 Plan, and has completed five of them:

- Sodium Hypo Chlorite for Water Treatment
- Install Staff Gages
- Foothills Solar Facility Construction
- Foothills Substation Construction
- CWPP Development

The remaining actions have been carried over into the 2021 Plan.

Recognizing the importance of mitigation in reducing losses from natural and human-caused hazards, the City of Loveland developed their own Mitigation Master Plan (MMP) for the City in 2016. The MMP built on the work done during the 2016 update of the Larimer County HMP and is meant to be an extension of the County HMP rather than a standalone HMP under DMA2000. The MMP includes 167 mitigation projects organized into three categories:

- Planning projects: 49
- Policy and Procedure Projects: 46
- Purchase, Install, or Construct Projects: 72

Five of the higher-priority projects from the MMP have been included in this HMP update as new actions, but to avoid duplication or confusion the City has decided not to include all 167 MMP projects in the County HMP. Once the 2021 Larimer County HMP update has been completed, the City will use the updated HMP to inform an update of the MMP and the projects listed therein.

The local planning team identified and prioritized the following mitigation actions for the City of Loveland based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the City of Loveland will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the City has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas. The City's participation in the CRS is evidence of this commitment to go beyond the minimum standards of the NFIP.

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Table L-17 City of Loveland 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
L1	Goals 1,2 Objectives 5	Flood, Spring/Summer Storm	**Railroad Ave Improvements.** During the 2013 and the 1976 Floods, Railroad Ave on both sides of the bridge flooded. During both events, all of the North-South routes across the Big Thompson river were cut off by flood waters. Motorists were forced to drive more than 30 miles east to find a viable river crossing. Emergency vehicles that were on one side of the river were unable to respond to the opposite side for emergencies. Railroad Ave elevation change on both sides of the bridge and add second bridge. The base height of Railroad Ave roadway will be raised on both sides of the bridge and a second bridge will be added. This project will provide better flood management along Railroad Ave. It will also provide the City, County, and State with an open route over the Big Thompson River during 50-year and smaller storm events.	**Public Works,** Storm Water, Engineering, FHWA, CDOT, Larimer County	$3.6M	FHWA, city internal budget	High	2021	In Progress. Construction has been completed. City staff are currently working on a FEMA LOMR to amend the Big Thompson River floodplain in order to incorporate the recently constructed improvements.
L2	Goals 1,2,3 Objectives 3,4,5	Flood, Severe Storm, Wind & Tornado, Wildfire, Biological, Hazmat	**Fleet Tracking & Communications.** During daily operations or emergencies, not all personnel or vehicles in the field have radios for communications and there is no means to have a snapshot perspective of where a city vehicle is at any given time. Add an 800 MHz radio and GPS tracking to priority vehicles. Determine which and how many city vehicles should have GPS locators and have them installed. Install 800 MHz radios in all city vehicles.	**Fleet Management**, Public Works, Emergency Communications, WAC, GPS vendor, NCRCN	$500,000	City internal budget, grant	Medium	2025	Continue - Not completed. Partial funding was placed in 2019 budget and seeking grant funds.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
L25	Goals 1,2, Objectives 4,5	Biological Hazards, Civil Disturbance, Dam Inundation, Earthquake, Flood, Hazmat, Landslide/ Rockslide, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Install Radio Site Near Budweiser Center.** This will fill in several radio dead spots in and around Loveland by all City departments and agencies. In addition to improving communication and coordination during response, it will also improve the reliability of flood notifications and warning, and help coordinate activities such as wildfire fuels reduction.	**Loveland Fire Rescue Authority**, CMO, Public Works, IT, Larimer County	$150,000-200,000	Grants	Medium	TBD based on availability of funding	New in 2021. (from MMP #25)
L44	Goals 1,2,5 Objectives 3,5	Biological Hazards, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazmat, Landslide/ Rockslide, Soil Hazards, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Emergency spending policy.** Clarify emergency spending policy on increased spending limit during times of emergency response (re-evaluate mid-year budget caps).	**Finance**	Staff Time	Internal budgets	High	2021	New in 2021. (from MMP #44)

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ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
L91	Goals 1,2,5 Objectives 3,5	Flood, Hazmat, Landslide/ Rockslide, Soil Hazards, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Review zoning codes and development standards to limit the risks to development in hazard areas.** Add to UBC, consider comprehensive plan.	**Development Services,** Loveland Fire Rescue Authority	Staff Time	Internal budgets	Medium	2021	New in 2021. (from MMP #91)
L 130	Goals 1,2,5 Objectives 2,3,5	Dam Inundation, Earthquake, Flood, Landslide/ Rockslide, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Generator testing.** Regularly test all city backup generators under real-world conditions to ensure proper function and capability. This is a proven problem from past events.	**Public Works,** Water & Power	Staff Time	Internal budgets	High	Ongoing	New in 2021. (from MMP #25)
L 183	Goals 1,2,3,5 Objectives 2,3,5	Dam Inundation, Earthquake, Flood, Hazmat, Landslide/ Rockslide, Spring/Summer Storm, Tornado, Wildfire, Winter Storm	**Implementation of 'all clear' placards system.** For all city facilities for evacuations/search and provide training. City's Safety Coordinator will bring this procedure city-wide for implementation.	**City Human Resources Risk Management;** Emergency Manager	$5,000	Grants	High	Ongoing	New in 2021. (from MMP #25)

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L.7 Plan Maintenance and Implementation

The City of Loveland has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the City will continue public participation in the plan maintenance process.

L.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The City of Loveland's implementation strategy included:

- Our mitigation actions will be reviewed and updated annually.
  - This was accomplished.
- Mitigation actions, activities and information will be integrated into existing public education programs and shared via website and or social media.
  - These have been integrated to the extent possible.
- We will integrate hazard mitigation actions into our existing public education/community training programs to continually increase awareness about local hazards and potential consequences."
  - This was accomplished and is ongoing.
- We will incorporate mitigation actions from the 2016 Larimer County Plan into our soon-to-be-developed Mitigation Master Plan
  - The MMP was developed and has been implemented. Completed in 2016, the City's Mitigation Master Plan states that it "specifically addresses each of the known hazards, risks, and vulnerabilities that are already defined within the recently updated Larimer County Hazard Mitigation Plan." The MMP is used to help coordinate mitigation planning and prioritize implementation across departments.

L.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the City to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Emergency Manager will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Emergency Manager will also be responsible for representing the City on future Larimer County Planning Team meetings, and for coordination with city staff and departments during plan updates. The City, Fire Authority, and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by City Council.

Integration Into Other Planning Mechanisms

The City of Loveland will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the City will:

- Incorporate mitigation actions from the 2021 Larimer County Plan into the next update of the Mitigation Master Plan.

- Incorporate information from the HMP and MMP into amendments to the City's planning and zoning codes.
- The MMP planning team will meet annually to discuss items that need to be updated and look at progress of action items.
- Continue to incorporate information from the HMP into existing public education & outreach programs.
- Maintain information on the City's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning.

Continued Public Involvement

The City will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include using internal marketing and communications resources to share information to get information to citizens and businesses.

DRAFT

L.8 Letter of Intent to Participate

City of Loveland
Office of Emergency Management
• 410 East Fifth Street • Loveland, Colorado 80537
(970) 962-2534 • FAX (970) 962-2912
www.cityofloveland.org

LETTER OF INTENT TO PARTICIPATE

November 26, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Loveland and the Loveland Fire Rescue Authority are submitting this letter of intent to confirm that City of Loveland and the Loveland Fire Rescue Authority have agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, City of Loveland and the Loveland Fire Rescue Authority agree to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

City of Loveland and the Loveland Fire Rescue Authority understand that they must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals;
- Proactively offer opportunities for participation in the planning process by all community stakeholders;
- Documentation of an effective process to maintain and implement the plan; and,
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body.

City of Loveland

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Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, we Steve Adams City Manager and Mark A. Miller Fire Chief, commit City of Loveland and the Loveland Fire Rescue Authority to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 26 day of November, 2018

Steve Adams - City Manager

Mark A. Miller - Fire Chief

M. Northern Colorado Water Conservancy District (Northern Water)

"Provide water resources management, project operations, and conservation services for C-BT Project beneficiaries."

—Mission, Northern Water

M.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. Northern Water participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section M.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

M.2 Community Profile

Northern Water is a public agency created in 1937 to contract with the federal government to build the Colorado-Big Thompson (C-BT) Project. The C-BT collects water west of the Continental Divide and delivers it to Northeastern Colorado for agricultural, municipal, domestic and industrial uses. Northern Water and the U.S. Bureau of Reclamation jointly operate and maintain the C-BT Project.

About 880,000 people live within Northern Water boundaries, which encompass 1.6 million acres in portions of eight counties: Boulder, Broomfield, Larimer, Logan, Morgan, Sedgwick, Washington and Weld. Northern Water provides cities, towns rural-domestic water districts and industries with year-round deliveries. And between April and October, the primary growing season, Northern Water also delivers water to more than 120 ditch, reservoir and irrigation companies serving thousands of farms and more than 640,000 acres.

M.3 Hazard Identification and Risk Assessment

Northern Water covers parts of eight counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the district that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table M-1 Hazard Identification and Risk Assessment Summary for Northern Water

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Critical	Medium
Civil Disturbance	Likely	Limited	Limited	Medium
Dam Inundation	Occasional	Extensive	Critical	High
Drought	Likely	Significant	Critical	High
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Likely	Significant	Catastrophic	Medium
Hazardous Materials	Likely	Limited	Critical	Medium
Landslide/Rockslide	Likely	Significant	Significant	Medium
Soil Hazards	Likely	Significant	Critical	Medium
Spring/Summer Storm	Highly Likely	Significant	Significant	Medium
Tornado	Likely	Significant	Critical	High
Utility Disruption	Likely	Extensive	Negligible	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Significant	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

M.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Northern Water service area, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. Because the Northern Water service area covers a significant portion of Larimer County, including both urban and rural areas, the potential impact of most hazards is the same as that of the County overall. However, differences in the vulnerability of Northern Water's assets does change the overall risk from some hazards, as noted in the Table above.

For the following hazards, the City's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Earthquake
- Flood
- Hazardous Materials
- Landslide/Rockslide
- Soil Hazards
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Wildfire
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

M.4.1 Dam Inundation

Northern Water operates several dams in Larimer County or that have the potential to impact Larimer County in the event of a dam failure or incident. High Hazard dams include Carter Lake, Flatiron, and Horsetooth; Significant hazard dams include Mary's Lake. All of these dams are discussed in Section 4.3.3 of the base Plan. It should be reiterated that dams are classified as high or significant hazard due to the potential impacts if an incident were to occur, and in no way reflect the likelihood of a failure or incident.

Additionally, several Northern Water assets are themselves potentially at risk of a dam failure or incident at a dam not operated by Northern Water. There are a number of other dams of concern located in or upstream of Larimer County that pose a potential risk to Northern Water owned and operated facilities. Depending on the type and severity of the incident, this could result in water quality impacts, and possibly lead to spillway flows or concerns for the integrity of the impacted Northern Water dams.

M.4.2 Drought

The most significant impacts associated with drought and water shortage for Northern Water are those related to water intensive activities such as wildfire protection and municipal usage. Northern Water will utilize their Water Shortage Response Plan during water shortage events. This plan contains progressive stages that can be enacted. These stages contain voluntary and mandatory conservation measures in addition to specific curtailments of water usage for specific industries. Northern Water uses various indicators when deciding to enact restrictions. These indicators include geographical, environmental and economic conditions on the western slope, where most of the Northern Water's most critical assets are located. However, restrictions and subsequent reductions in usage on the western slope do not increase water in streams and waterways in Northern Water's collection system. Revenue shortages, water quality issues and recycled water availability are all potential impacts during water shortage events. In addition, a lack of available water can also lower reservoir levels, which exposes more shoreline to erosion. This can result in increased water treatment costs. During an extraordinary, long-term water shortage event, hydropower availability may be at risk.

M.4.3 Growth and Development Trends

Northern Water does not have authority to manage growth or development within its district outside of Northern Water property. As the population continues to grow in Larimer County and throughout Colorado, so too will the demand for water growth and reliance on Northern Water assets, particularly during times of drought.

M.5 Capabilities Assessment

This section profiles the programs and policies currently in use by Northern Water to reduce hazard impacts or that could be used to implement hazard mitigation activities.

M.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table M-2 Northern Water Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	No	
Zoning ordinance	No	
Subdivision ordinance	No	
Growth management ordinance	No	
Floodplain ordinance	No	
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	
Building codes	Yes	
Fire department ISO rating	No	
Erosion or sediment control program	Yes	
Stormwater management program	Yes	
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	Yes	
Local emergency operations plan	Yes	
Other special plans	Yes	COOP, Water Shortage Response Plan
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	

Source: Northern Water planning team

Table M-3 Northern Water Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Water Quality Dept, Environmental Service Div.
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Engineering Dept.
Planner/engineer/scientist with an understanding of natural hazards	Yes	Water Quality / Real Estate / Security / Emergency Management
Personnel skilled in GIS	Yes	IT / GIS
Full time building official	Yes	Facilities
Floodplain manager	No	
Emergency manager	Yes	Real Estate / Security / Emergency Management
Grant writer	Yes	Water Quality Dept, Environmental Service Div.
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	IT / GIS
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Alertus and Everbridge: Real Estate / Security / Emergency Management / O&M / IT

Source: Northern Water planning team

Table M-4 Northern Water Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	No	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	No	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	Yes	No	
Incur debt through private activities	Yes	Yes	
Withhold spending in hazard prone areas	Yes	No	

Source: Northern Water planning team

Table M-5 Northern Water Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Northern Water participates in multiple county and state watershed programs to educate the public on water use and environmental education.
Firewise	No	
StormReady	No	

Source: Northern Water planning team

M.5.2 Opportunities for Enhancement

Based on the capability assessment, Northern Water has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

Northern Water has established a Drought Committee and the Water Efficiency Department has hired a Water Efficiency Planner whose job it is to provide drought Planning and Response.

M.6 Mitigation Strategy

Northern Water has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had one mitigation action in the 2016 Plan, which was not completed and has been carried over to the 2021 Plan along with 11 new actions. Additionally, Northern Water participates in multiple fireshed/watershed partnerships on mitigation projects for water conservation and source water protection and fire mitigation.

The District planning team identified and prioritized the following mitigation actions for the Northern Water based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table M-6 Northern Water 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
M-1	Goals 1,2,3 Objectives 4,5	Biological, Flood, Wildfire	**Colorado-Big Thompson Headwaters Partnership.** Northern Water jointly owns, operates and maintains the Colorado Big-Thompson Project (C-BT) with the Bureau of Reclamation. C-BT delivers about 215,000 acre-feet of water annually to supplement water supplies for 860,000 people and 640,000 acres of irrigated land in northeastern Colo. Watersheds include the Upper Colorado and Big Thompson rivers in Grand and Larimer counties. C-BT water supplies are nearly entirely dependent upon snowmelt from high elevation watersheds along the Continental Divide in Northern Colorado. Forest health and fires within these watersheds can have dramatic effects on the quality of watershed runoff and the ability of C-BT water supplies to meet municipal, industrial and agricultural water uses. Catastrophic wildfires that occurred in Northern Colorado during 2012-2013 drought conditions highlighted the risk that C-BT water supplies face given deteriorated forest health conditions, drought, and urbanization at the wildland-urban interface. Northern Water, in conjunction with its partner local, State and Federal agencies is taking a pro-active approach to addressing these conditions. The C-BT Headwaters Partnership was created in December 2012 through an MOU between the US Forest Service, Colorado State Forest Service, Bureau of Reclamation and Northern Water. The goal of the partnership is to restore health and resiliency of forests and watersheds and preplan wildfire response to protect C-BT infrastructure and water supplies. The following actions will be conducted by Northern Water through the Partnership: • Conduct forest and watershed health treatments, and pre-plan post-wildfire response • Develop a 5-year operating plan specifying treatment zones and activities	**Northern Water,** U.S. Forest Service, Colorado State Forest Service, Bureau of Reclamation, National Park Service, Western Area Power Administration, Larimer County	$350,000 per year	Lead and support agencies, Colorado Department of Natural Resources grants, Colorado State Forest Service grants, Other grants	High	Ongoing	Annual Implementation. The C-BT Headwaters Partnership now also includes the Western Area Power Administration (WAPA) and Rocky Mountain National Park in addition to the other listed parties. The Five Year Plan for the C-BT Headwaters Partnership has been finalized and has been updated four times (currently version 5). We have received five years of Wildfire Risk Reduction Grant funding. This program is also now administered through the Colorado State Forest Service.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			• Support creation and refinement of watershed assessments • Coordinate to provide education, technical and financial incentives • Engage other partners • Develop a shared communications and media campaign • The C-BT Headwaters Partnership meets on a monthly basis to plan and coordinate activities, review on-going projects, and perform field investigations of new projects. The partnership is currently developing its 5-year operating plan."						
M-2	Goals 1,2,3 Objectives 3,4,5	Wildfire	**2020 Pole Hill.** Pole Hill- Pinewood, 246 acres, (Dry Creek Huc 12) Whole tree removal. This will build off of a 25-acre treatment that was completed last year. Historic forest type is Ponderosa Pine. Tree densities are much higher & average tree age class is lower than historic reference conditions for the site. The properties have experienced beetle & mistletoe events, as well as nearby wildfire resulting in areas of patchy mortality. This project area requires heavy tree thinning to restore the forests to a healthy composition, structure, and ecologically functioning system. Benefits include: • Reduce sediment deposits and damage to water supply and infrastructure • Decrease modeled active crown fire potential • Enhance wildlife habitat though an increase of grass – forb – shrub abundance • Increased social licensing in the surrounding communities • Increase spatial heterogeneity of trees • Increase Ponderosa pine dominance and age class diversity	**Northern Water,** Big Thompson Conservation District	$774,900	Nine landowners. Additional funders are NRCS EQIP, CSFS Grant, Peaks to People water fund	High	2021	New in 2021. This project has led to increased interest of forest restoration and is leading to many future projects.
M-3	Goals 1,2,3 Objectives 3,4,5	Biological, Wildfire	**Cheley Camp.** Fish Creek Drainage; 80 acres (Lake Estes HUC 12); Whole tree removal. This will build off of a ~200-acre treatment that was completed in 2018. Historic forest type is Ponderosa Pine. Tree densities are much higher & species composition has shifted from historic reference conditions for	**Northern Water,** Big Thompson Conservation District	$16,000	$100,000 of NW funds split between BTCD projects for FY21. Some EQIP funding	Medium	2021	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			the site. This project area has been highly affected by infestations of both dwarf mistletoe and various forest pests. This project area requires heavy tree thinning to restore the forests to a healthy composition, structure, and ecologically functioning system. Benefits include: • Reduce sediment deposits and damage to the Fish Creek and Lake Estes water supply and infrastructure • Decrease modeled active crown fire potential • Enhance wildlife habitat though an increase of grass – forb – shrub abundance • Increased health and function of the forest • Increased social licensing in the surrounding communities. • Increase spatial heterogeneity of trees • Increase Ponderosa pine dominance and age class diversity						
M-4	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Fox Creek.** Hand treatment; 15 acres (North Fork Big Thompson HUC 12); Whole tree removal. This project site has showcased tree densities that are much higher & species composition has shifted from historic reference conditions for the site. This project area has been affected by infestations of both dwarf mistletoe and various forest pests. This project area requires heavy tree thinning to restore the forests to a healthy composition, structure, and ecologically functioning system. Benefits include: • Reduce sediment deposits and damage to Fox Creek and North Fork of the Big Thompson river. • Decrease modeled active crown fire potential • Enhance wildlife habitat though an increase of grass – forb – shrub abundance • Increased health and function of the forest • Decrease the likelihood of home and community losses to wildfire • Increased social licensing in the surrounding communities • Increase spatial heterogeneity of trees	**Northern Water,** Big Thompson Conservation District		$100,000 of NW funds split between BTCD projects forFY21	Low	2022	New in 2021.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			• Increase Ponderosa pine dominance and age class diversity						
M-5	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Husted Ranch.** Dry Creek Drainage; 250 acres (Lake Estes HUC 12); Whole tree removal. The Husted Ranch has experienced a drastic shift from historical reference conditions. Species compositions have shifted from Ponderosa Pine to Douglas-Fir & forest densities have greatly increased. The project area has also experienced Mountain Pine Beetle and mistletoe outbreaks which have adversely affected forest health. Mechanical thinning will be implemented on approximately 250 acres of forested lands to restore the functionality and vigor of the forest. Benefits include: • Reduced sediment deposits and damage to Dry Creek and Lake Estes water supply and infrastructure • Decrease modeled active crown fire potential • Enhance wildlife habitat though an increase of grass – forb – shrub abundance • Increased health and function of the forest • Decrease the likelihood of home and community losses to wildfire • Increased social licensing in the surrounding communities • Increase spatial heterogeneity of trees • Increase Ponderosa pine dominance and age class diversity	**Northern Water,** Big Thompson Conservation District	$275,000	$100,000 of NW funds split between BTCD projects for FY21; $175,000 - Joint Chiefs Funding (CSFS & EQIP)	Medium	2022	New in 2021.
M-6	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Cedar Park.** Big Thompson Canyon hand crew pile and burn, 50-100 acres. Certified forester designed plan to address Fuel Reassignment / Treatment Thinning of trees Mulching / chipping	**Northern Water,** Big Thompson Watershed Coalition	$180,000	TBD	Medium	2021	New in 2021. The Nature Conservancy will implement pile burning with their own funds. Will be complimented by 600 acres of work by the USFS on National Forest land adjacent to Sylvan Dale, which was catalyzed by this project. USFS will likely spend ~ $1M

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
M-7	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Glen Haven.** Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water,** Big Thompson Watershed Coalition	$231,500	$80K from Norther Water budget; remainder TBD	Low	2021	New in 2021. Did not receive first grant applied for; applied for second grant - waiting for approval process
M-8	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Lory State Park.** Additional Acres per Lory State Park FMP. Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water**, CSFS	$75,000	$40,000 FRWRM	High	2021	New in 2021. $40K 2017 FRWRM grant moved here. Lory Phase 1 had sufficient funding ($80K between Peaks to People and CPRW funds). Will be matched by CPW
M-9	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Mary's Lake.** 150 acres. Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water**, Estes Valley Watershed Coalition	$70,000	TBD	High	2021	New in 2021. Working w/ CSFS on silviculture before writing prescription; Working on landowner agreements - project not to begin until spring/summer 21; NW budget may be split with other projects identified by EVWC
M-10	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Chimney Hollow.** Hand crew lop and scatter, 80 acres. Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water**, Larimer County Natural Resources	$84,000	TBD	High	2021	New in 2021. Need to coordinate activity with Chimney Hollow Construction for access and safety
M-11	Goals 1,2,3 Objectives 3,4,5	Wildfire	**Horsetooth Mountain Open Space, Hermit Park Open Space, Ramsay-Shockey Open Space.** Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water**, Larimer County Natural Resources	TBD	$60,000 NW funds split between LC projects in FY21	High	2021	New in 2021. Projects TBD: Forest prescriptions will be determined based on weather, access and potential matching grant funds.
M-12	Goals 1,2,3 Objectives 3,4,5	Biological, Flood, Wildfire	**Location(s) TBD.** Certified forester designed plan to address: • Fuel Reassignment / Treatment • Thinning of trees • Mulching / chipping	**Northern Water**, CSFS	TBD	$100,000 of NW funds split between CSFS projects in both Ft Collins & Granby field offices for FY21	Medium	2021	New in 2021. NW funds will be split between projects in both Ft Collins & Granby field offices

M.7 Plan Maintenance and Implementation

The Northern Colorado Water Conservancy District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

M.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- We participate in the C-BT Headwaters Partnership, a partnership of Northern Water, the U.S. Forest Service, Colorado State Forest Service and the Bureau of Reclamation. Our wildfire mitigation and planning activities will be incorporated into the 5-year operating plan of this group. Other mitigation activities are incorporated into our annual O&M planning activities, which are monitored by our management team and Board of Directors.
  - This was accomplished.
- Our mitigation actions and priorities are discussed with our Board of Directors during open session of our Planning & Action and Board meetings, which are open to the public. Mitigation activities are also discussed at our Water User's meetings, which happen twice per year, and advertised through our general electronic mailings and other public information activities.
  - This was accomplished.
- Our wildfire mitigation activities will be incorporated into the C-BT Headwaters Partnership 5-year operating plan. Other mitigation activities are incorporated into our annual O&M activities or capital projects activities. Northern Water is implementing a new Asset Management program that will monitor and track these activities.
  - This was accomplished.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

M.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Emergency Management Specialist will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Emergency Management Specialist will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

Northern Water will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan.

Continued Public Involvement

Northern Water will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

M.8 Letter of Intent to Participate

Northern Water
Northern Colorado Water Conservancy District
220 Water Avenue Berthoud, Colorado 80513
Phone 1-800-369-7246 • www.northernwater.org

February 10, 2020

Lori R. Hodges
Director
Larimer County Office of Emergency Management
200 West Oak Street
Fort Collins, Co 80526

Re: "Statement of Intent to Participate" as a Participating Jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Lori R. Hodges;

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR § 201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, Northern Colorado Water Conservancy District (Northern Water) is submitting this letter of intent to confirm that Norther Water has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Northern Water agrees to meet requirements for mitigation plans identified in 44 CFR § 201.6 and to price such cooperation as is necessary and in a timely manner for Larimer County Office of Emergency Management to complete the plan in conformance with FEMA requirements.

Northern Water understands that it must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including, but not limited to:

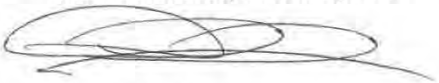
- Identification of hazards unique to the jurisdiction;
- The conduct a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;

Lori R. Hodges
Page 2
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- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the participating Jurisdiction, I, Bernard Lodge, commit Northern Water to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 6th Day of February 2020



Bernard Lodge
Emergency Management Specialist

eal

N. PINEWOOD SPRINGS FIRE PROTECTION DISTRICT

"Professional and Courteous Mountain Community Emergency Services"



N.1 Background and Planning Process

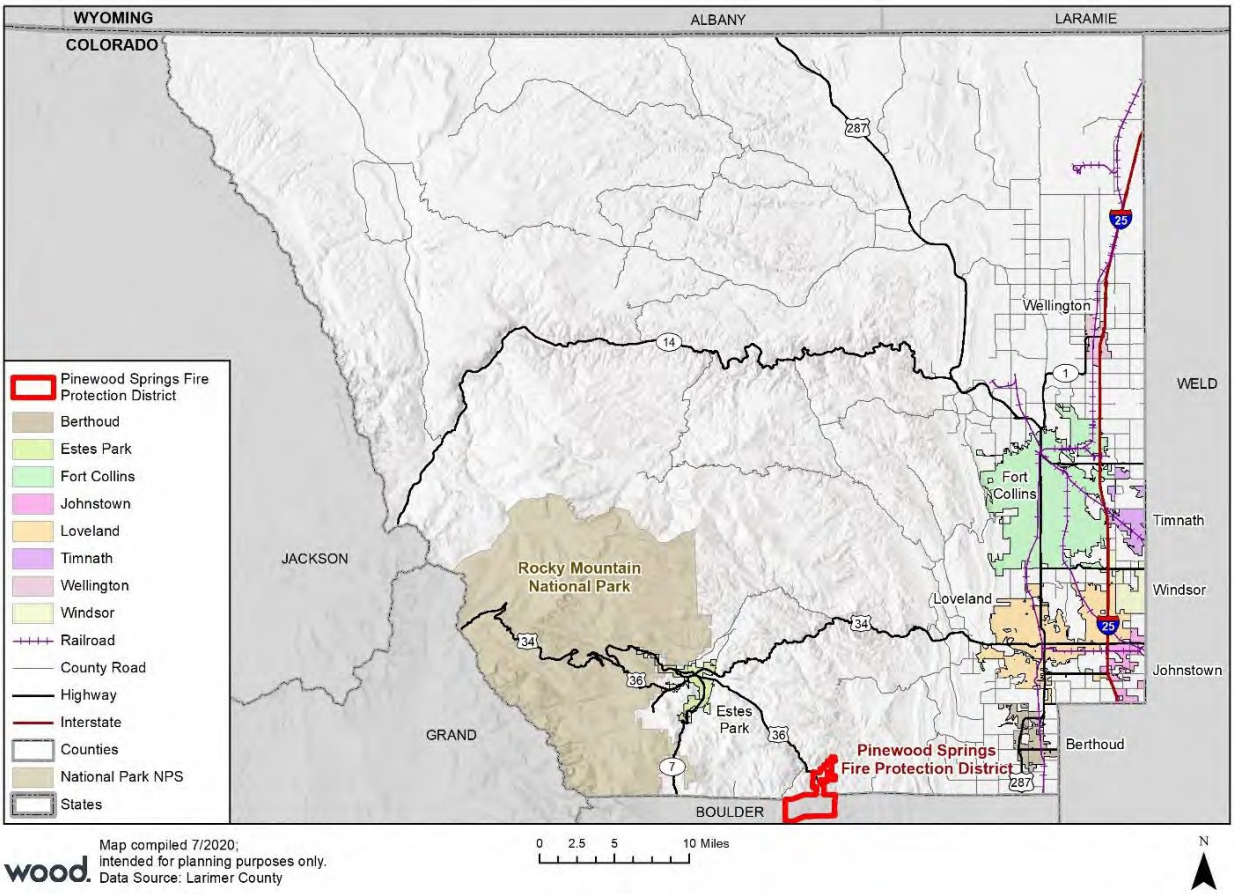
This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Pinewood Springs Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan and has been active in implementing that plan as described in Section N.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

N.2 Community Profile

The Pinewood Springs Fire Protection District is a volunteer fire protection district located in the mountains between Estes Park and Lyons along highway 36. They provide services to the communities of Pinewood Springs and Estes Park Estates. Pinewood Springs Fire Protection services include structure fire protection, wildland fire suppression, vehicle-fire suppression, basic medical response, motor vehicle accident response, hazardous material containment and mitigation, mutual aid response, and rapid intervention team services. The preceding services are provided with an emphasis on protection of life, limb, and property.

Figure N-1 Map of the Pinewood Springs Fire Protection District



Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall, the District is characterized by medium-low levels of social vulnerability. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

N.3 Hazard Identification and Risk Assessment

Pinewood Springs Fire Protection District is situated in both Larimer and Boulder Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the district that lie specifically within Larimer County.

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table N-1 Hazard Identification and Risk Assessment Summary for the Pinewood Springs Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Significant	High
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Likely	Limited	Limited	Medium
Drought	Occasional	Extensive	Critical	Medium
Earthquake	Unlikely	Significant	Critical	Medium
Flood	Likely	Limited	Negligible	Medium
Hazardous Materials	Occasional	Limited	Negligible	Low
Landslide/Rockslide	Likely	Significant	Limited	Medium
Soil Hazards	Unlikely	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Limited	Medium
Tornado	Unlikely	Limited	Negligible	Low
Utility Disruption	Highly Likely	Extensive	Significant	Medium
Wildfire	Highly Likely	Extensive	Catastrophic	High
Winter Storm	Highly Likely	Extensive	Significant	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

N.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Pinewood Springs Fire Rescue District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Flood
- Hazardous Materials Incident
- Landslide/Rockslide
- Soil Hazards
- Tornado
- Wildfire

For the purpose of this plan, only the parts of the District that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

N.4.1 Civil Disturbance

There is no significant history of civil disturbance risk in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Low.

N.4.2 Dam Inundation

Figure 4-5 in the base plan does not show any significant dam inundation areas in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Low.

N.4.3 Flood

The frequency and spatial extent of flooding in the Pinewood Springs Fire Protection District is lower than the County as a whole. The overall significance of this hazard for the District is Medium.

N.4.4 Hazardous Materials Incident

There is no significant history of hazardous materials incidents in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Low.

N.4.5 Landslide/Rockslide

Figure D-7 in Annex D (Town of Estes Park) shows significant rockfall potential in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Medium.

N.4.6 Soil Hazards

There is no significant history of expansive/collapsible soils or land subsidence in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Low.

N.4.7 Tornado

There is no significant history of tornadoes in the Pinewood Springs Fire Protection District. The overall significance of this hazard for the District is Low.

N.4.8 Wildfire

Pinewood Springs has experienced several large wildfire events in the past. As seen in Section 4.3.13 of the Base Plan, most of the District is classified as being at High or Highest risk of wildfires. The overall significance of this hazard for the District is High.

N.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Pinewood Springs Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

N.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table N-2 Pinewood Springs Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	No	County
Zoning ordinance	No	County
Subdivision ordinance	No	
Growth management ordinance	No	
Floodplain ordinance	No	County
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	County
Building codes	No	County
Fire department ISO rating	Yes	Current PSFPD ISO rating is 3
Erosion or sediment control program	No	
Stormwater management program	No	
Site plan review requirements	No	County
Capital improvements plan	No	
Economic development plan	No	
Local emergency operations plan	No	County
Other special plans	No	
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	

Source: Pinewood Springs Fire Protection District planning team

Table N-3 Pinewood Springs Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	No	
Full time building official	No	
Floodplain manager	No	
Emergency manager	No	
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Larimer and Boulder Counties provide Reverse 911, LETA

Source: Pinewood Springs Fire Protection District planning team

Table N-4 Pinewood Springs Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	No	No	
Authority to levy taxes for specific purposes	Yes	Yes	Mill levy
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	No	No	
Incur debt through special tax bonds	Yes	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	
DOLA Grants	Yes	Yes	

Source: Pinewood Springs Fire Protection District planning team

Table N-5 Pinewood Springs Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Local social media groups such as Nextdoor and the Pinewood Springs Community Facebook page
Firewise	No	PSFPD does utilize Firewise Communities materials and recommendations
StormReady	No	
The Pinewood Springs Fire Protection District offers ongoing fire mitigation surveys and information to all residents. The Pinewood Springs Water District has strict water usage rules and guidelines that are communicated to customers.	Yes	

Source: Pinewood Springs Fire Protection District planning team

N.5.2 Opportunities for Enhancement

Based on the capability assessment, the Pinewood Springs Fire Protection District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

N.6 Mitigation Strategy

The Pinewood Springs Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had five mitigation actions in the 2016 Plan, and has completed three of them:

- New Fire Station construction

- Replace the dry hydrant and reestablish access
- Install emergency power to critical portions of the fire station

The remaining actions have been carried over into the 2021 Plan, along with two new actions.

The District planning team identified and prioritized the following mitigation actions for the Pinewood Springs Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table N-6 Pinewood Springs Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
N-1	Goals 1,2,3,4,5 Objectives 1,2,3,4,5	Flood	**Full Adoption of Updated FEMA Floodplains.** Floodplain mapping is out of date and the 2013 Flood caused extensive changes to current floodplains. The Little Thompson River has never been mapped. Work with FEMA on updating current floodplain mapping in coordination with Larimer County. By 2020, the Little Thompson River through the Pinewood Springs Fire Protection District will be mapped and adopted by FEMA	Pinewood Springs Fire Protection District, Larimer County, Community Development and Office of Emergency Management	$300,000	Colorado State Flood Hazard Mapping Project	Low	2023	In Progress
N-2	Goals 1,2,4,5 Objectives 2,3,5	Wildfire	**Mitigation Code Changes.** Recent large-scale disasters have caused Pinewood Springs to re-evaluate all Wildfire codes for possible mitigation actions. Provide recommendations for code changes to the Pinewood Springs Fire Board for reducing losses and mitigating risk to structural and wildfire. Update fire codes with recommendations approved by the Board to decrease future risk and disaster losses.	**Pinewood Springs Fire Protection District**, Larimer Community Development Division, Office of Emergency Management	$0	Staff time	Medium	2022	In progress
N-3	Goals 1,2,3,4 Objectives 1,4,5	Wildfire	**Enhanced Community Wildland Fire Mitigation Programming and Resource Development.** As long-term residents move away and new residents move into the Pinewood Springs area, it is important to have programs available to educate residents about the hazards of wildland fire in the Wildland/Urban Interface (WUI). In addition, since the implementation of mitigation strategies such as metal roofing, fire-resistant siding, tree/vegetation trimming and removal, cisterns, sprinkling systems is cost-prohibitive for many residents, we need to develop financial resources and grants that residents can access to accomplish these kinds of measures. Benefits: Reduce or eliminate damage to buildings and property caused by wildland fire in the Pinewood Springs area.	**Pinewood Springs Fire Protection District**, Pinewood Springs Property Owners Association, Larimer County, others to be determined.	$11M	Unknown	High	Ongoing	New in 2021. Initial education and outreach to begin Spring 2021. Financial programming timeline unknown, dependent upon development or resources. Overall project continues indefinitely.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
N-4	Goals 1,2,3,5 Objectives 3,5	Civil Disturbance, Dam Inundation, Earthquake, Flood, Hazardous Materials, Landslide/ Rockslide, Spring/ Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Technology Update.** Upon being dispatched to an incident, Pinewood Springs Firefighters must view maps placed on the walls in the fire station in order to determine where the incident is located. Little or no other information is available until the first units arrive on scene and can provide more detail. This project would equip each Pinewood Springs apparatus with a tablet computer, where detailed maps, trail maps, hazards and hazard mitigation information and surveys could be stored for use in the field. The most significant benefit gained would be that firefighters could arrive on a scene with enhanced information about the location and surrounding area. This would allow for the safest and most efficient approach the incident, and might allow firefighters the ability to identify and protect the highest valued assets with the least risk. Information carried on tablets may help to reduce risk to firefighters and other responders, as well as those affected by an incident. Detailed knowledge available at the scene could increase the efficiency of actions taken on scene.	**Pinewood Springs Fire Protection District**	$5,000	Grants, budget review	Medium	2021	New in 2021

N.7 Plan Maintenance and Implementation

The Pinewood Springs Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

N.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our mitigation actions will be reviewed annually by the Fire District.
  - This was not accomplished due to transitions in District leadership. Under new leadership, the HMP and associated mitigation actions will be reviewed on an annual basis by the Pinewood Springs Fire Protection District's Board of Directors.
- Changes, actions and priorities communicated via monthly news information and social media.
  - This was not accomplished. The Pinewood Springs Fire Protection District did not have sufficient communication resources in place. The District has launched new social media outlets, and is updating its web site capabilities.
- We will integrate highest risk hazards in our annual operating budget and long term planning process.
  - This was accomplished with several initiatives from the 2016 HMP, including the construction of a new fire station and the installation of an emergency generator at the fire station.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

N.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Fire Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Fire Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Pinewood Springs Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The Fire Chief, Planning Team and PSFPD Board of Directors will meet annually to discuss items that need to be updated and look at progress of action items.

- Information from the HMP will be incorporated into existing and future public education & outreach programs as it is relevant.
- The HMP will be posted on the Pinewood Springs Fire Protection District's website.
- Mitigation actions will be incorporated in capital funding and improvement planning as appropriate.

Continued Public Involvement

The Pinewood Springs Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

N.8 Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE

Pinewood Springs Fire Protection District

August 15, 2014

Lori Hodges
Larimer County
200 West Oak St, 2nd floor
Fort Collins, CO, 80522-1190

Re: "Statement of Intent to Participate" as a participating jurisdiction in Larimer County CO Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Lori Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Pinewood Springs Fire Protection District is submitting this letter of intent to confirm that the Pinewood Springs Fire Protection District has agreed to participate in the Lariner County CO Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Pinewood Springs Fire Protection District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Larimer County CO HMP to complete the plan in conformance with FEMA requirements.

The Pinewood Springs Fire Protection District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I R. L. Wilcox (Chief PSFPD), commit the Pinewood Springs Fire Protection District to the Larimer County CO Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 15 day of August 2014 R. L. Wilcox (Chief PSFPD)

O. POUDRE CANYON FIRE PROTECTION DISTRICT

"Fire and Emergency Medical Services for people who live and play in the Poudre Canyon!"

O.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Poudre Canyon Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section O.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

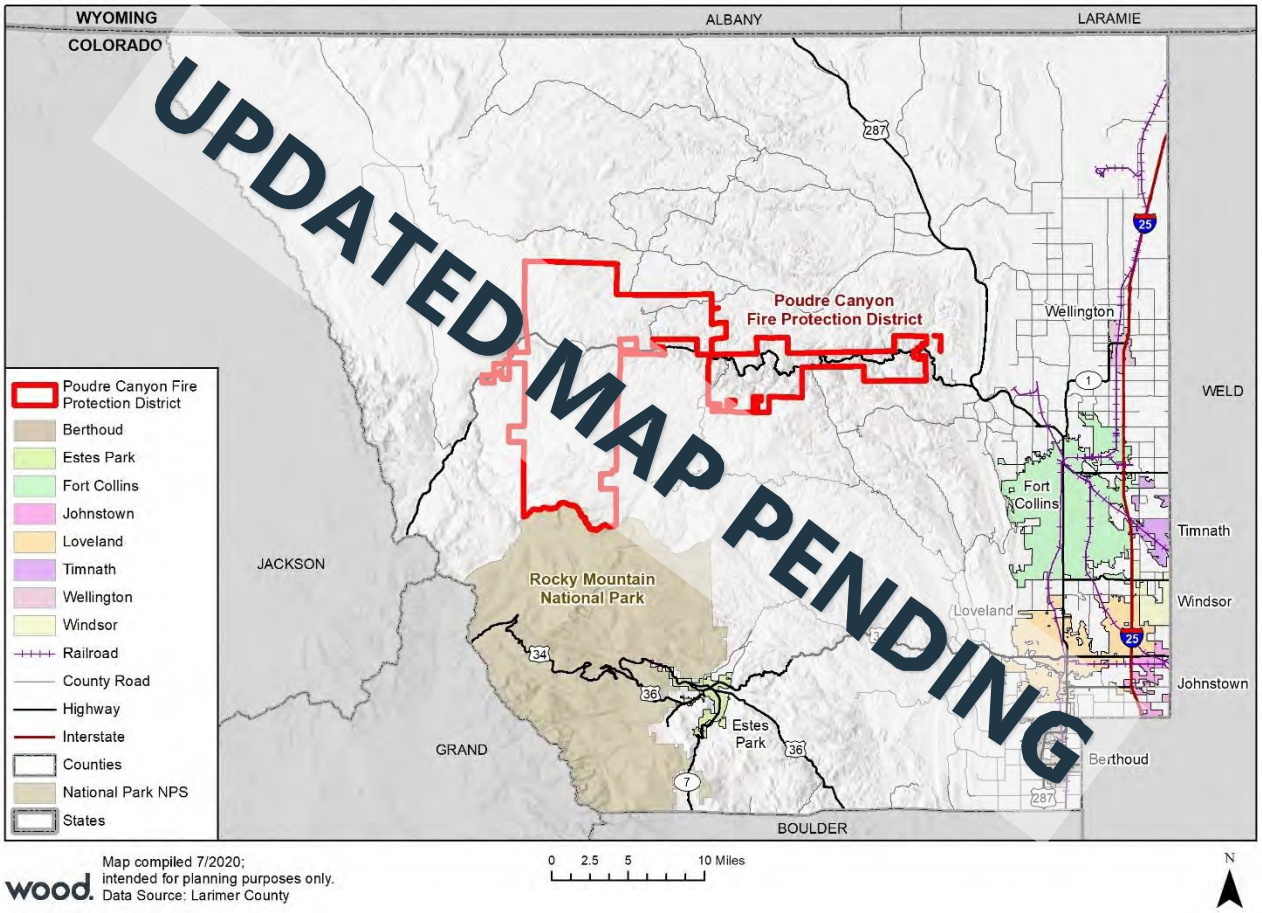
O.2 Community Profile

Poudre Canyon is located in the mountains west of Fort Collins. Poudre Canyon has approximately 500 full time residents with a summertime population of around 1,500. Many visitors engage in activities within the canyon including fishing, boating, and hiking, mountain biking, sightseeing, motorcycling, and exploring the back country.

Poudre Canyon Fire Protection District is a volunteer fire department providing services for fire (structure and wildland), emergency medical care, ice rescue, river rescue, low angle rescue, traffic accidents, and information to residents and visitors to the Poudre Canyon. The district covers over 100 square miles along Colorado State Highway 14 from Gateway Park to Poudre Falls, along County Road 69, County Road 68C, and Forest Road 171, and also provides service to an additional 150 square miles that include County Road 103, County Road 63E and Forest Roads 139 and 156.



Figure O-1 Map of the Poudre Canyon Fire Protection District



Social vulnerability scores for the District can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Overall, the District is characterized by medium-low levels of social vulnerability, however it does rank high in household composition and disability vulnerability. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

O.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table O-1 Hazard Identification and Risk Assessment Summary for the Poudre Canyon Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Limited	Critical	Low
Civil Disturbance	Unlikely	Limited	Negligible	Low
Dam Inundation	Occasional	Extensive	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Significant	Medium
Flood	Likely	Limited	Negligible	Medium
Hazardous Materials	Unlikely	Limited	Negligible	Low
Landslide/Rockslide	Likely	Significant	Negligible	Medium
Soil Hazards	Likely	Limited	Negligible	Low
Spring/Summer Storm	Likely	Limited	Negligible	Medium
Tornado	Unlikely	Limited	Significant	Low
Utility Disruption	Likely	Significant	Significant	Medium
Wildfire	Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Significant	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
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Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
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Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

O.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Poudre Canyon Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Drought
- Earthquake
- Spring/Summer Storm
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

O.4.1 Biological Hazards

The majority of the District is rural and forested with only two population centers. The overall significance of this hazard for the District is Low.

O.4.2 Civil Disturbance

There is no significant history of civil disturbance risk in the Poudre Canyon Fire Protection District. The overall significance of this hazard for the District is Low.

O.4.3 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows potential dam inundation areas in the Poudre Canyon Fire Protection District, including a number of High Hazard dams. The overall significance of this hazard for the District is Medium.

O.4.4 Flood

Figure 4-19 in Section 4.3.6 of the Base Plan shows relatively few mapped floodplain areas in Poudre Canyon Fire Protection District. While localized flash flooding is always possible, the District's flood risk is lower than the County as a whole. The overall significance of this hazard for the District is Medium.

O.4.5 Hazardous Materials Incident

There is no significant history of hazardous materials incidents in the Poudre Canyon Fire Protection District, although accidents along Highway 14 remain a possibility. The overall significance of this hazard for the District is Low.

O.4.6 Landslide/Rockslide

Figures 4-26 and 4-27 in Section 4.3.8 of the Base Plan shows considerable potential landslide and rockslide areas in the Poudre Canyon Fire Protection District, particularly along Highway 14. The overall significance of this hazard for the District is Medium.

O.4.7 Soil Hazards

There are no known areas at significant risk of expansive/collapsible soils or land subsidence in the Poudre Canyon Fire Protection District. The overall significance of this hazard for the District is Low.

O.4.8 Tornado

There is no significant history of tornadoes in the Poudre Canyon Fire Protection District. The overall significance of this hazard for the District is Low.

O.4.9 Wildfire

As seen in Section 4.3.13 of the Base Plan, most of the Poudre Canyon Fire Protection District is classified as being at Low risk of wildfires, however there are several areas at moderate or high risk. Given the District's history of wildfires, the overall significance of this hazard for the District is High.

O.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Poudre Canyon Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

O.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table O-2 Poudre Canyon Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	NA	County
Zoning ordinance	No	
Subdivision ordinance	No	
Growth management ordinance	No	
Floodplain ordinance	NA	County
Other special purpose ordinance (stormwater, steep slope, wildfire)	NA	County
Building codes	NA	County
Fire department ISO rating	No	
Erosion or sediment control program	No	
Stormwater management program	No	
Site plan review requirements	NA	County
Capital improvements plan	No	
Economic development plan	No	
Local emergency operations plan	NA	County
Other special plans	No	
Flood insurance study or other engineering study for streams	NA	County
Elevation certificates (for floodplain development)	NA	County

Source: Poudre Canyon Fire Protection District planning team

Table O-3 Poudre Canyon Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	No	
Full time building official	No	
Floodplain manager	No	
Emergency manager	No	
Grant writer	Yes	Several members of PCFPD have had successful grant applications
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	

Source: Poudre Canyon Fire Protection District planning team

Table O-4 Poudre Canyon Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	No	No	
Authority to levy taxes for specific purposes	Yes	No	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	Yes	No	
Incur debt through general obligation bonds	No	No	
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Poudre Canyon Fire Protection District planning team

Table O-5 Poudre Canyon Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	
Wildfire mitigation information program	Yes	

Source: Poudre Canyon Fire Protection District planning team

O.5.2 Opportunities for Enhancement

Based on the capability assessment, the Poudre Canyon Fire Protection District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for volunteer members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District volunteers on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District volunteers on mitigation and the hazards that pose a risk to the District will lead to more informed volunteers who can better communicate this information to the public.

O.6 Mitigation Strategy

The Poudre Canyon Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had one mitigation action in the 2016 Plan, which was not completed. It has been carried over to the 2021 Plan along with one new action.

The District planning team identified and prioritized the following mitigation actions for the Poudre Canyon Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table O-6 Poudre Canyon Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
O-1	Goals 1,2,3 Objectives 5	Wildfire	**Homeowner Wildfire Hazard Awareness.** Numerous properties in the district need to be better mitigated against wildfire hazards. Inform homeowners of best practices in mitigating properties against wildfire. Make presentations at community meetings, include information in newsletter to property owners, include topic in monthly newsletters to canyon association groups, one on one consultation with property owners as requested.	Poudre Canyon FPD	$2500	FPD Budget	High	Ongoing	Annual Implementation. We have published numerous articles about wildfire hazard mitigation around the home. Articles have been in both the Upper and Lower Canyon Association monthly newsletters and the Fire District semi-annual newsletter. Additionally, presentations have been made to the Upper Canyon Association at their monthly meetings.
O-2	Goals 1,2,3,4 Objectives 1,4,5	Wildfire	**Chipping and Burning Slash.** Assist canyon residents with mitigation needs by providing assistance with chipping or burning slash as volunteers are available. Benefits: Structures more likely to survive a wildfire or other runaway fire.	Poudre Canyon FPD	FPD Budget	Donations and district operating budget	Medium	2025	New in 2021. The District has applied for a grant to purchase a chipper for reducing slash where burning is not desirable.

O.7 Plan Maintenance and Implementation

The Poudre Canyon Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

O.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our hazard mitigation actions will be reviewed by the Fire Board annually.
  - This was accomplished.
- Our hazard awareness plan will be discussed at community meetings at least annually.
  - This was accomplished.
- We have no planning or regulatory authority. We will seek grants that will allow the district to provide mitigation assistance.
  - This wasn't accomplished due to lack of staff time.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

O.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Poudre Canyon Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan.

Continued Public Involvement

The Poudre Canyon Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and presenting information at community meetings.

O.8 Letter of Intent to Participate

POUDRE CANYON
Fire Protection District

December 11, 2014

Lori R. Hodges
Larimer County
Emergency Management
200 West Oak Street
Fort Collins, CO 80526

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Poudre Canyon Fire Protection District is submitting this letter of intent to confirm that Poudre Canyon Fire Protection District has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Poudre Canyon Fire Protection District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County OEM to complete the plan in conformance with FEMA requirements.

Poudre Canyon Fire Protection District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Hugh Collins, commit Poudre Canyon Fire Protection District to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 11th day of December 2014

H L Collins

CHIEF

P. POUDRE FIRE AUTHORITY

"To protect life and property by being prompt, skillful, and caring. Our actions are anchored in the core values of courage, leadership, and duty."

— Mission, Poudre Fire Authority

P.1 Background and Planning Process

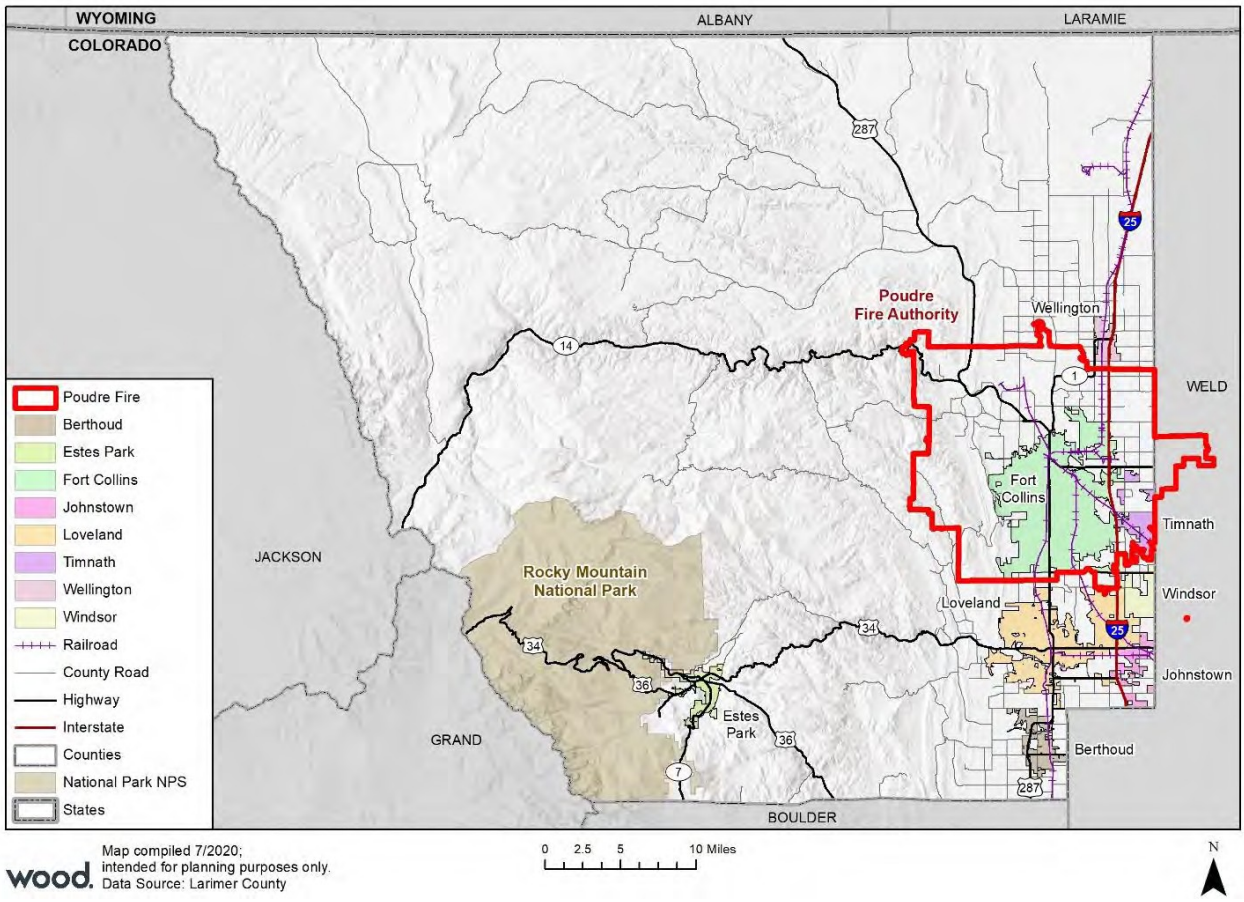
This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Poudre Fire Authority participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section P.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

P.2 Community Profile

The Poudre Fire Authority (PFA) is a Fire and Rescue service agency serving the City of Fort Collins and the Poudre Valley Fire Protection District. The PFA district service area is approximately 235 square miles and has a population of approximately 189,635 people. The PFA was established in 1981 with the merging of the City of Fort Collins and Poudre Valley Fire Departments to improve fire and rescue services.

Table P-1 Map of the Poudre Fire Authority



Social vulnerability scores for the Authority can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. The Poudre Fire Authority service area consists of areas that range from low social vulnerability (the bottom 20% of the county) and high social vulnerability (the top 20% of the county). The highly socially vulnerable areas are clustered in the central part of the service area. For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

P.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table P-2 Hazard Identification and Risk Assessment Summary for the Poudre Fire Authority

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Significant	Critical	Medium
Civil Disturbance	Highly Likely	Limited	Negligible	Low
Dam Inundation	Occasional	Extensive	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Critical	Medium
Flood	Highly Likely	Significant	Critical	High
Hazardous Materials	Likely	Limited	Critical	High
Landslide/Rockslide	Likely	Limited	Significant	Medium
Soil Hazards	Occasional	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Significant	Negligible	Medium
Tornado	Likely	Significant	Critical	High
Utility Disruption	Highly Likely	Limited	Negligible	Low
Wildfire	Highly Likely	Limited	Significant	High
Winter Storm	Highly Likely	Significant	Significant	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

P.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Poudre Fire Authority, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials Incident
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

P.4.1 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows significant potential dam inundation areas in the Poudre Fire Authority service area, including a number of High Hazard dams. The overall significance of this hazard for the District is Medium.

P.4.2 Flood

Figure 4-19 in Section 4.3.6 of the Base Plan shows significant areas at 1% annual risk and/or 0.2% annual risk of flooding in the Poudre Fire Authority service area. The overall significance of this hazard for the District is High.

P.4.3 Landslide/Rockslide

Figures 4-26 and 4-27 in Section 4.3.8 of the Base Plan shows several areas in the Poudre Fire Authority service area potentially at risk of landslide and rockslide. The overall significance of this hazard for the District is Medium.

P.4.4 Soil Hazards

Section 4.3.9 in the Base Plan shows several areas in the Poudre Fire Authority service area potentially at risk of expansive or collapsible soils or land subsidence. The overall significance of this hazard for the District is Low.

P.4.5 Wildfire

As seen in Section 4.3.13 of the Base Plan, there are several locations in the Poudre Fire Authority service area classified as being at moderate or High risk of wildfires, particularly in the areas west of Fort Collins. The overall significance of this hazard for the District is High.

P.5 Capabilities Assessment

The capability assessment examines the ability of the Poudre Fire Authority to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Fire Authority's hazard mitigation program.

P.5.1 Existing Capabilities

The following tables summarize the Authority's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table P-3 Poudre Fire Authority Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	City/County
Zoning ordinance	Yes	City/County
Subdivision ordinance	Yes	City/County
Growth management ordinance	Yes	City/County
Floodplain ordinance	Yes	City/County
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	City/County

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Building codes	Yes	City/County
Fire department ISO rating	2	Within Fort Collins and Timnath and within 5 miles of a 24 hour staffed fire station. Anything outside of the city limits, but within 1,000 feet of a hydrant is a 3. Outside of that it is a 10.
Erosion or sediment control program	Yes	City/County
Stormwater management program	Yes	City/County
Site plan review requirements	Yes	PFA has inspectors that look at fire related issues
Capital improvements plan	Yes	City/County
Economic development plan	Yes	City/County
Local emergency operations plan	Yes	City/County
Other special plans		
Flood insurance study or other engineering study for streams	Yes	City/County
Elevation certificates (for floodplain development)	Yes	City/County

Source: Poudre Fire Authority planning team

Table P-4 Poudre Fire Authority Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	PFA IT Department/ GIS analyst position
Full time building official	No	
Floodplain manager	No	
Emergency manager	Yes	Emergency Management Specialist works for PFA, but is assigned to the City of Fort Collins Emergency Preparedness and Security
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Fort Collins 911

Source: Poudre Fire Authority planning team

Table P-5 Poudre Fire Authority Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	No	No	
Authority to levy taxes for specific purposes	No	No	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	No	No	

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Incur debt through special tax bonds	No	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Poudre Fire Authority planning team

Table C-P-6 Poudre Fire Authority Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	
PFA employs a full-time public educator that is responsible for a variety of fire and home safety education programs. In addition, the emergency management specialist delivers emergency preparedness programs.	Yes	

Source: Poudre Fire Authority planning team

P.5.2 Opportunities for Enhancement

Based on the capability assessment, Poudre Fire Authority has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Authority staff and Town Council on how best to integrate hazard information and mitigation projects into the Authority policies and ongoing duties of the Authority. Continuing to train District staff on mitigation and the hazards that pose a risk to the Authority will lead to more informed staff members who can better communicate this information to the public.

P.6 Mitigation Strategy

The Poudre Fire Authority has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had three mitigation actions in the 2016 Plan, which were not completed. They been carried over to the 2021 Plan along with two new actions.

The District planning team identified and prioritized the following mitigation actions for the Poudre Fire Authority based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table P-7 Poudre Fire Authority 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
P-1	Goals 1,2,3,5 Objectives 2,3,4,5	Biological, Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Wildfire, Hazmat	**Training in Disaster Management Large Scale Incidents.** Poudre Fire Authority needs to expand their disaster management training from fire and wildland to all hazards. As an emergency response and rescue organization, expanding their scope in areas other than response will increase the community's capability to be more resilient. Increase training and knowledge in disaster management: • Additional training in ICS • Additional training in EOC Operations Additional training in Disaster Management Operations	**PFA Training Division**, Fort Collins OEM	$2,000	Annual Budget, EMPG	High	Ongoing	PFA in conjunction with the City of Fort Collins, provides a minimum of three training opportunities per year in ICS. The EOC Operations training is currently being revamped and is expected to be delivered in early 2021. The Department will continue to look for opportunities to partner with FEMA and bring disaster management training to the area.
P-2	Goals 1,2,5 Objectives 3,4,5	Biological Hazards, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazmat, Landslide/Rockslide, Soil Hazards, Spring/ Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Implementation of Capital Improvement Plans to Enhance Mitigation.** Recent large-scale disasters have caused Poudre Fire Authority and the City of Fort Collins to re-evaluate existing regulatory documents and programs for possible mitigation changes and actions, which has led to the development of a Capital Improvement Plan. Integrate the Mitigation Plan adopted by the Poudre Fire Authority into current Capital Improvement Plans to ensure that development does not encroach on known hazard areas. Partner with other organizations and agencies with similar goals to promote Building, Fire and Life Safety Codes that are more disaster resilient. Integrate the Mitigation Plan adopted by the Poudre Fire Authority into current Capital Improvement Plans to ensure that development does not encroach on known hazard areas. Partner with other organizations and agencies with similar goals to promote Building, Fire and Life Safety Codes that are more disaster resilient.	**Poudre Fire Authority.** City of Fort Collins, Larimer Community Development Division, Fort Collins and Larimer Offices of Emergency Management	Unknown	Staff time, Poudre Fire Authority, City of Fort Collins, grant funding	High	Ongoing	The Community Safety and Service Division of the Poudre Fire Authority reviews plans for new building projects in their jurisdiction and works closely with the City and County Building Departments to ensure that projects meet all applicable codes.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
P-3	Goals 1,2,5 Objectives 3,5	Biological Hazards, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazmat, Landslide/Rockslide, Soil Hazards, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Critical Infrastructure Project.** The Larimer Resiliency Framework and recent meetings regarding critical infrastructure have illustrated the need to ensure redundant power supplies to critical facilities in the Poudre Fire Authority and to provide for lightning mitigation measures. Facilitate development and installation of uninterruptible/back up power supply for Poudre Fire Authority facilities. Complete the installation of uninterruptible power supply (UPS) for all Poudre Fire Authority maintained computers. The UPS system will improve the safety and communication of responders. Establish plans and begin development of the build out and installation of backup power supplies (generators) for all Poudre Fire Authority facilities. These will be installed based upon the priorities on the system, with the most critical facilities ranked the highest.	**Poudre Fire Authority,** City of Fort Collins, Fort Collins and Larimer Office of Emergency Management	$200,000	City Resources, PFA resources, grant funding	Medium	End of 2022	In Progress. All PFA Stations except Station 2, 3, and 7, and the Administration building currently have a backup power source. There are plans to build a new Station 7 at some point in the future and a backup power source will be part of that build. The status of Stations 2 and 3 and Admin are unknown at this time.
P-4	Goals 1,2,5 Objectives 3,5	Cyber Attacks, Utility Disruption	**Business Continuity Planning / Disaster Recovery (IT).** The Poudre Fire Authority IT department with assistance from the City of Ft. Collins IT department is working to build a redundant/secondary data center that can ensure critical IT operations function in the event of a natural or man-made cyber event which would disrupt operations at our primary data center.	**Poudre Fire Authority IT**, Partner agencies such as the CoFC, Larimer County, and more	Difficult to estimate as this has been an ongoing effort over multiple years	O&M & Capital budget requests	Medium	2021	New in 2021
P-5	Goals 1,2,5 Objectives 3,5	Spring/ Summer Storm, Tornado	**Station Roof Replacement Project.** Over the years, PFA Stations have suffered significant damage due to hail and severe weather. In an attempt to cut down on the amount of damage, the Department is replacing roofs with a shingle that is resistant to wind and has the highest impact rating when it comes to hail and storm debris. This will reduce the amount of money spent on roof repairs after severe weather and improves the safety of the station.	**Poudre Fire Authority Facilities**	Facilities Repair Budget	$250,000	Medium	5 years	New in 2021

P.7 Plan Maintenance and Implementation

The Poudre Fire Authority has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the organization will continue public participation in the plan maintenance process.

P.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Annual updates and quarterly monitoring of the action items within the plan.
  - This was not accomplished due to organizational changes as the Office of Emergency Management was moved from PFA to the City.
- PFA holds monthly board meetings with the opportunity for public comment. Quarterly reports are in the board packet which covers updates of mitigation actions and priorities. These reports that cover maintenance and progress are made public and posted on the PFA website.
  - This was accomplished.
- Items in the Hazard Mitigation plan that impact PFA will be incorporated into other plans including our strategic plan. For example: We will update our local policies and procedures to include hazard specific sections that address the highest risks within the fire service. Training and exercises that cover these hazards will also be incorporated into our training and exercise program.
  - This This was accomplished. The Training Division designed several trainings around the high hazards found in the Hazard Mitigation Plan.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

P.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

PFAs Emergency Management Specialist will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Emergency Management Specialist will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

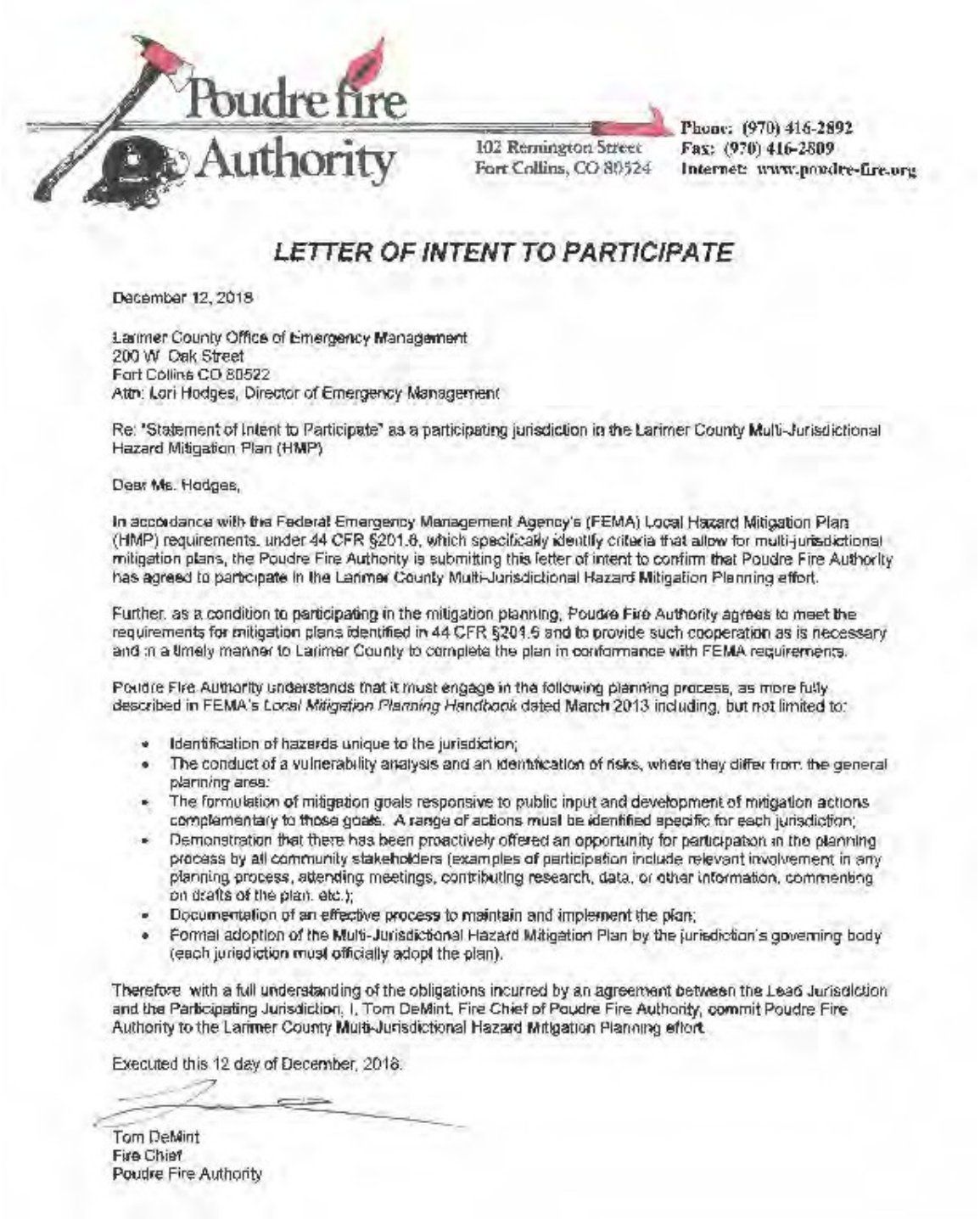
The Poudre Fire Authority will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The Emergency Management Specialist with meet annually with PFA Division Chiefs to review the plan and look at progress They will discuss ways in which the information can be incorporated into Public Outreach programs and PFA training plans. Information on the Hazard Mitigation Plan will be incorporated into PFAs annual report.

Continued Public Involvement

The Poudre Fire Authority will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

P.8 Letter of Intent to Participate



Poudre fire Authority

102 Remington Street
Fort Collins, CO 80524

Phone: (970) 416-2892
Fax: (970) 416-2809
Internet: www.poudre-fire.org

LETTER OF INTENT TO PARTICIPATE

December 12, 2018

Larimer County Office of Emergency Management
200 W Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Poudre Fire Authority is submitting this letter of intent to confirm that Poudre Fire Authority has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Poudre Fire Authority agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

Poudre Fire Authority understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Tom DeMint, Fire Chief of Poudre Fire Authority, commit Poudre Fire Authority to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 12 day of December, 2018.

Tom DeMint
Fire Chief
Poudre Fire Authority

Q. THOMPSON VALLEY EMS



Thompson Valley EMS East Station Source: Thompson Valley EMS

Q.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. Thompson Valley EMS participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section Q.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

Q.2 Community Profile

The Thompson Valley EMS service covers approximately 450 square miles of southeastern Larimer County. It includes the Towns of Berthoud and Johnstown, the City of Loveland, and portions of the Windsor Severance Fire Districts with a total estimated population of 100,000. The Thompson Valley EMS is a full service 911 ALS provider. Some of the services include providing emergency medical services, EMS education and training, EMT training, and job safety training. Thompson Valley EMS was established in 1983.

Q.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table Q-1 Hazard Identification and Risk Assessment Summary for Thompson Valley EMS

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Limited	Medium
Dam Inundation	Occasional	Extensive	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Highly Likely	Significant	Catastrophic	High
Hazardous Materials	Likely	Limited	Critical	High
Landslide/Rockslide	Occasional	Limited	Significant	Low
Soil Hazards	Likely	Significant	Limited	Low
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	High
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

Q.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for Thompson Valley EMS, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials Incident
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

Q.4.1 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows significant potential dam inundation areas in the Thompson Valley EMS service area, including a number of High Hazard dams. The overall significance of this hazard for the District is Medium.

Q.4.2 Flood

Figure 4-19 in Section 4.3.6 of the Base Plan shows significant areas at 1% annual risk and/or 0.2% annual risk of flooding in the Thompson Valley EMS service area. The overall significance of this hazard for the District is High.

Q.4.3 Landslide/Rockslide

Figures 4-26 and 4-27 in Section 4.3.8 of the Base Plan shows few areas in the Thompson Valley EMS service area potentially at risk of landslide and rockslide. The overall significance of this hazard for the District is Low.

Q.4.4 Soil Hazards

Section 4.3.9 in the Base Plan shows several areas in the Thompson Valley EMS service area potentially at risk of expansive or collapsible soils or land subsidence. The overall significance of this hazard for the District is Low.

Q.4.5 Wildfire

As seen in Section 4.3.13 of the Base Plan, there are several locations in the Thompson Valley EMS service area classified as being at Moderate or High risk of wildfires, particularly in the areas west of Berthoud. The overall significance of this hazard for the District is High.

Q.5 Capabilities Assessment

This section profiles the programs and policies currently in use by Thompson Valley EMS to reduce hazard impacts or that could be used to implement hazard mitigation activities.

Q.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table Q-2 Thompson Valley EMS Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	No	City of Loveland/Larimer County
Zoning ordinance	No	City of Loveland/Larimer County
Subdivision ordinance	No	City of Loveland/Larimer County
Growth management ordinance	No	City of Loveland/Larimer County
Floodplain ordinance	No	City of Loveland/Larimer County
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	City of Loveland/Larimer County
Building codes	No	City of Loveland/Larimer County
Fire department ISO rating	No	City of Loveland/Larimer County

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Erosion or sediment control program	No	City of Loveland/Larimer County
Stormwater management program	No	City of Loveland/Larimer County
Site plan review requirements	No	City of Loveland/Larimer County
Capital improvements plan	Yes	Internal Process
Economic development plan	No	City of Loveland/Larimer County
Local emergency operations plan	No	City of Loveland/Larimer County
Other special plans	N/A	
Flood insurance study or other engineering study for streams	No	City of Loveland/Larimer County
Elevation certificates (for floodplain development)	No	City of Loveland/Larimer County

Source: Thompson Valley EMS planning team

Table Q-3 Thompson Valley EMS Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	No	
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	No	
Full time building official	No	
Floodplain manager	No	
Emergency manager	No	
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	No	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Coordinate with LETA and PSAPs

Source: Thompson Valley EMS planning team

Table Q-4 Thompson Valley EMS Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	Yes	Yearly Internal Process
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	Yes	Yes	
Incur debt through private activities	Yes	Yes	
Withhold spending in hazard prone areas	No	No	

Source: Thompson Valley EMS planning team

Table Q-5 Education and Outreach Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	

Source: Thompson Valley EMS planning team

Q.5.2 Opportunities for Enhancement

Based on the capability assessment, Thompson Valley EMS has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

Q.6 Mitigation Strategy

Thompson Valley EMS has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had three mitigation actions in the 2016 Plan. None of these actions have been completed or deleted; all have been carried over into the 2021 Plan, along with one new action.

The District planning team identified and prioritized the following mitigation actions for Thompson Valley EMS based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table Q-6 Thompson Valley EMS 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
Q-1	Goal 1 Objectives 3	Dam Inundation, Earthquake, Flood, Hazmat, Landslide/Rockslide, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Emergency Generators.** In the event of a large scale power outage that effects the power at an EMS station, an emergency generator would allow for the garage door openers to operate thus allowing the crew to be able to respond to emergency calls. Budget and equip at least one EMS station with an emergency generator per year. Budgeting of one emergency generator and partner with contractor who is licensed to install generator. Conduct monthly inspection and testing of generators to assure their capability.	**Thompson Valley EMS**	$500,000 - $1,000,000	General operating funds and/or potential grants.	Low	2025	Priority evaluation ongoing
Q-2	Goal 1 Objectives 3	Dam Inundation, Drought, Earthquake, Flood, Landslide/Rockslide, Soil Hazards, Spring/Summer Storm, Tornado, Wildfire, Winter Storm	**Mitigation Assessment.** Thompson Valley EMS covers a large portion of southern Larimer County. Many of the highest natural hazards exist in this area, including flooding along the Little Thompson River and WUI areas. A determination of mitigation actions to protect Thompson EMS assets is needed. Conduct a mitigation assessment of Thompson Valley EMS infrastructure and assets to determine key protection and mitigation actions.	**Thompson Valley EMS**	$0	General operating funds and/or potential grants.	Medium	2022	Currently in progress
Q-3	Goal 1,2,4,5 Objectives 2,3,5	Wildfire	**Wildfire Mitigation Project.** The Larimer Resiliency Framework and recent meetings regarding critical infrastructure have illustrated the need to ensure the functionality of all critical systems during and after disaster. Mitigate against wildfire at all Thompson Valley EMS facilities. Create defensible space around all district-owned facilities and infrastructure, including creating buffer zones, replacing flammable vegetation with less flammable species and creating defensible space around power lines, oil and gas lines, and other infrastructure systems.	**Thompson Valley EMS**, Loveland and Larimer Offices of Emergency Management	$200,000	City Resources, Thompson Valley EMS resources, grant funding	High	2022	Mitigation is being done to a minimal extent yearly, permanent mitigation is being evaluated

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
Q-4	Goal 1,3 Objectives 3,5	Utility Disruption	**Install power generator at Thompson Valley EMS Headquarters.** A fully functioning dispatch center capable of communication with all Thompson Valley EMS ambulances and support staff is functioning at the Headquarters building on Clydesdale Avenue. This project would create a backup power for the center in the event of a hazard causing power disruptions. Benefits: Ability to dispatch EMS to medical emergencies is retained by the service.	**Thompson Valley EMS**	$125,000	Internal funding	High	2021	New in 2021

Q.7 Plan Maintenance and Implementation

Thompson Valley EMS has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the organization will continue public participation in the plan maintenance process.

Q.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our mitigation actions will be added to the capital budget each year and evaluated annually.
  - This was accomplished. Each year our mitigation actions are added and then prioritized based on the financial resources available for that budget year.
- Through our accreditation process, mitigation actions will be listed as a line item for public review.
  - This was accomplished.
- We will integrate the plan into our annual SWOT analysis.
  - This was accomplished.

Q.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Chief and/or Battalion Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Chief and/or Battalion Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

Thompson Valley EMS will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The Chief and Battalion Chief will meet annually to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.
- Post information on the TVEMS website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning.

Continued Public Involvement

Thompson Valley EMS will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

Q.8 Letter of Intent to Participate

Thompson Valley EMS
4480 Clydesdale Parkway
Loveland, Colorado 80538
970-663-6025

December 12, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, Thompson Valley EMS is submitting this letter of intent to confirm that Thompson Valley EMS has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Thompson Valley EMS agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

Thompson Valley EMS understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;

Page 1

- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body.

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Randy Lesher, Chief, commit Thompson Valley EMS to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 12th day of December 2018



Randy Lesher, Chief
Thompson Valley EMS

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R. TOWN OF TIMNATH

Twenty-five years from now, the Town of Timnath will be:

- *A well-planned and branded community that provides full services and amenities to its residents.*
- *An integrated and safe community with multiple physical connections and mobility options.*
- *Self-sustaining with a stable balance of commercial and residential growth.*
- *Artfully reflective of Town's history, ambience, and historical agrarian uses.*
- *Well-managed with intelligent use of financial resources.*
- *Pro-business with meaningful primary employment opportunities for the residents.*
- *Connected with an integrated system of parks, trails, open space and natural protected areas.*
- *An influential player among the regional partnerships in Northern Colorado.*
- *A destination community that is clean, green, and serene.*
  -- Town of Timnath Vision Statement

R.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Timnath participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section R.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

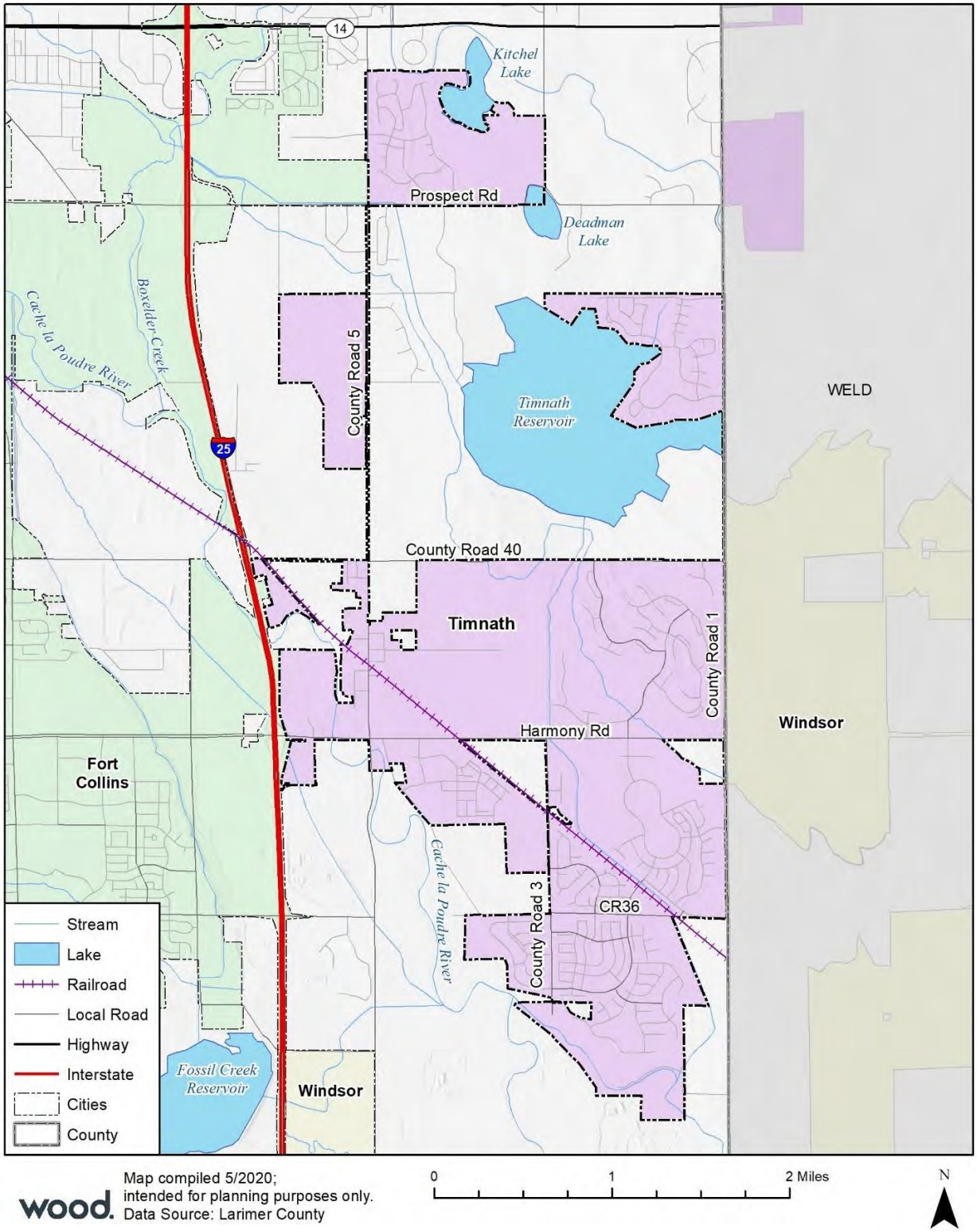
R.2 Community Profile

The Town of Timnath is located east of Interstate 25 and the cities of Fort Collins and Loveland, and northwest of Windsor. Timnath is also within short travel distance to Denver, just 56 miles to the south, and Cheyenne, 46 miles to the north. The proximity of Timnath to 1-25, makes it a prime location for development. Fort Collins and Windsor presently provide the majority of employment, service, and retail opportunities to the town and its residents.

The incorporated area of Timnath currently consists of over 3,200 acres of land. The town's Growth Management Area encompasses over 13,600 acres or 21.4 square miles. Residential development is predominantly concentrated in the eastern portion of the town both north and south of Harmony Road in the Harmony and Timnath Ranch subdivisions, north of downtown in the Serratoga Falls subdivision, and in the downtown area along Main Street between County Road 38 and County Road 40. New development is also occurring in the Wild Wing subdivision located north of Harmony west of County Line Road. Larger lot single-family residential development has occurred on agricultural lands both in the Town and in unincorporated Larimer County, a trend that is expected to continue as the town grows. Commercial activity is centered primarily within the downtown area along Main Street, and at the Interstate 25 and Harmony Road interchange. New commercial development has been approved along Harmony Road just east of the Cache la Poudre River.

Figure R-1 shows a map of the Town of Timnath.

Figure R-1 Map of the Town of Timnath



R.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Timnath.

Table R-1 Town of Timnath Demographic and Social Characteristics, 2014-2018

Town of Timnath	2014	2018	% Change
Population	1,210	2,922	141.49%
Median Age	30.6	34.0	11.1%
Total Housing Units	446	975	118.6%
Housing Occupancy Rate	87.4%	90.4%	3.4%
% of Housing Units with no Vehicles Available	0.00%	1.20%	
Median Home Value	$364,200	$484,100	32.9%
Unemployment Rate	7.6%	1.5%	-80.3%
Mean Travel Time to Work (minutes)	22.2	34.5	55.4%
Median Household Income	$78,906	$126,940	60.9%
Per Capita Income	$31,471	$38,538	22.5%
% of Individuals Below Poverty Level	1.2%	3.2%	166.7%
% Without Health Insurance	1.7%	2.1%	23.5%
# of Households	390	881	125.9%
Average Household Size	3.1	3.3	7.1%
% of Population Over 25 with High School Diploma	97.5%	95.1%	-2.5%
% of Population Over 25 with bachelor's degree or Higher	46.5%	55.2%	18.7%
% with Disability	4.7%	6.9%	46.8%
% Speak English less than "Very Well"	0.0%	4.4%	

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table R-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Timnath	County	Colorado
Median Age	34.0	35.9	36.6
Housing Occupancy Rate	90.4%	91.7%	89.8%
% of Housing Units with no Vehicles Available	1.2%	4.1%	5.2%
Median Home Value	$484,100	$336,200	$313,600
Unemployment	1.5%	5.0%	4.7%
Mean Travel Time to Work (minutes)	34.5	23.2	25.5
Median Household Income	$126,940	$67,664	$68,811
Per Capita Income	$38,538	$35,390	$36,415
% of Individuals Below Poverty Level	3.2%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Timnath	County	Colorado
% Without Health Insurance	2.1%	6.3%	8.1%
Average Household Size	3.3	2.5	2.6
% of Population Over 25 with High School Diploma	95.1%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	55.2%	46.3%	40.1%
% with Disability	6.9%	9.8%	10.6%
% Speak English less than "Very Well"	4.4%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table R-3 Demographics by Race and Sex

Timnath	Population	%
Total Population	2,922	100%
Male	1,327	45.4%
Female	1,595	54.6%
White, not Hispanic	2,494	85.4%
Hispanic or Latino	240	8.2%
Black	0	0.0%
Asian	180	6.2%
American Indian and Alaska Native	0	0.0%
Native Hawaiian and Other Pacific Islander	0	0.0%
Some other race	0	0.0%
Two or more races	12	0.4%

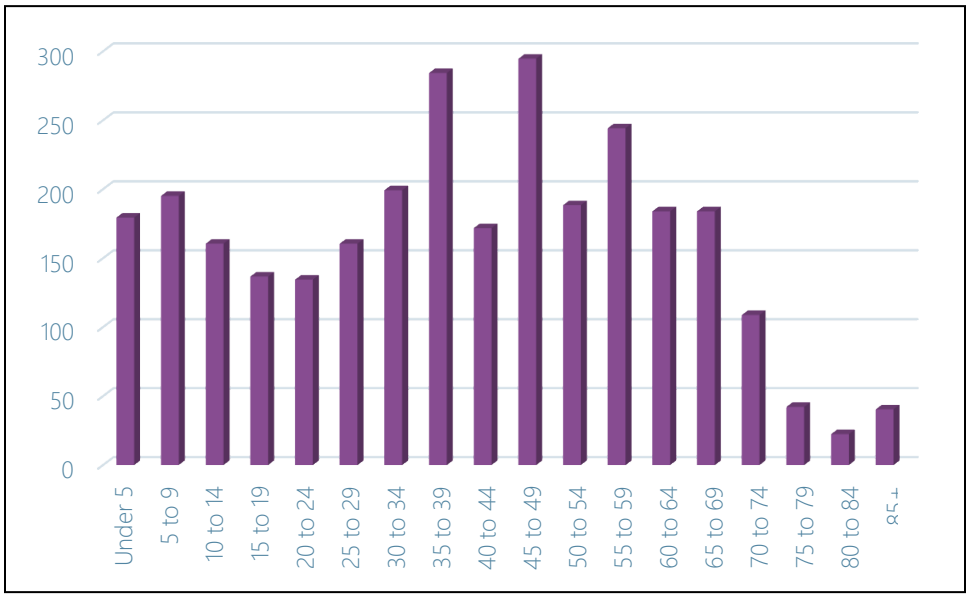
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table R-4 Types and Total Amounts of Housing Units in Timnath

Type of Housing Units	Total	%
Total housing units	975	100%
1-unit detached	971	99.6%
1-unit attached	4	0.4%
2 units	0	0.0%
3 or 4 units	0	0.0%
5 to 9 units	0	0.0%
10 to 19 units	0	0.0%
20 or more units	0	0.0%
Mobile home	0	0.0%
Boat, RV, van, etc.	0	0.0%

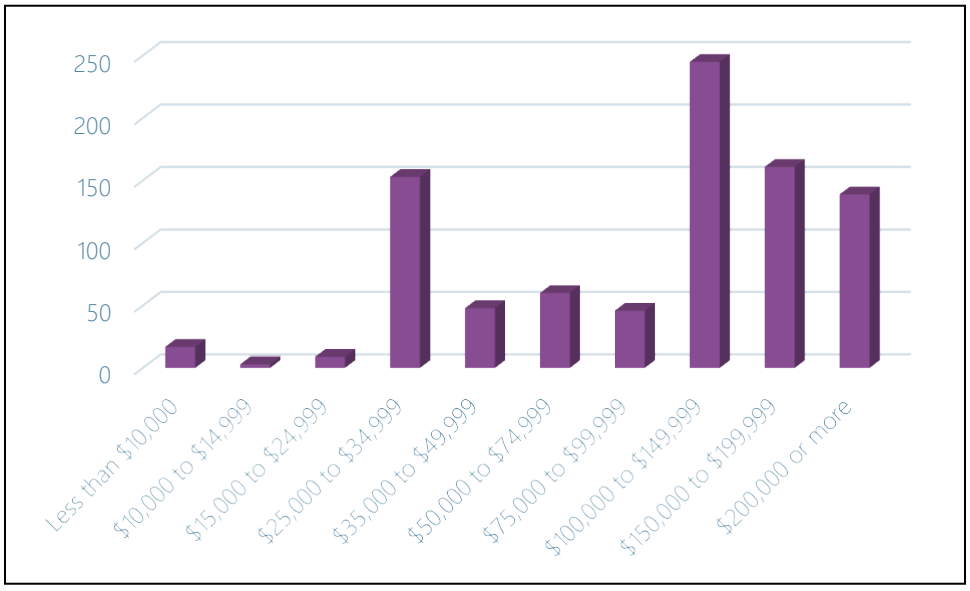
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure R-2 Town of Timnath Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure R-3 Town of Timnath Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

R.2.2 Social Vulnerability

Social vulnerability scores for the Town of Timnath can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Timnath is characterized by medium-low levels of social vulnerability. This does not mean, however, that there aren't any socially vulnerable residents living in the community or that social vulnerability levels will remain the same over time. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in order to reduce vulnerability. Over time, the town should

continue to monitor their local social vulnerability as demographic, economic, and housing related conditions change.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

R.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table R-5 Hazard Identification and Risk Assessment Summary for the Town of Timnath

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Critical	High
Civil Disturbance	Occasional	Limited	Negligible	Low
Dam Inundation	Occasional	Significant	Critical	Medium
Drought	Likely	Significant	Negligible	Low
Earthquake	Unlikely	-	-	-
Flood	Likely	Limited	Significant	Medium
Hazardous Materials	Occasional	Limited	Significant	Low
Landslide/Rockslide	Unlikely	-	-	-
Soil Hazards	Occasional	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Significant	Low
Tornado	Occasional	Significant	Catastrophic	High
Utility Disruption	Likely	Extensive	Negligible	Medium
Wildfire	Unlikely	-	-	-
Winter Storm	Highly Likely	Extensive	Significant	Low

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

R.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Timnath, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Utility Disruption

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

R.4.1 Community Asset Inventory

Table R-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Timnath. See Section 4.2.2 of the Base Plan for details and methodology.

Table R-6 Total Exposure of Improved Properties within the Town of Timnath

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	6	9	$1,258,416	$1,258,416	$2,516,832
Commercial	33	41	$43,989,997	$43,989,997	$87,979,994
Exempt	11	40	$11,948,647	$11,948,647	$23,897,294
Industrial	2	2	$1,081,420	$1,622,130	$2,703,550
Mobile Home	1	3	$446,949	$223,474	$670,423
Multiple Unit	3	73	$26,836,415	$26,836,415	$53,672,830
Residential	2,157	2,173	$987,151,248	$493,575,652	$1,480,726,900
Total	**2,213**	**2,341**	**$1,072,713,092**	**$579,454,731**	**$1,652,167,823**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

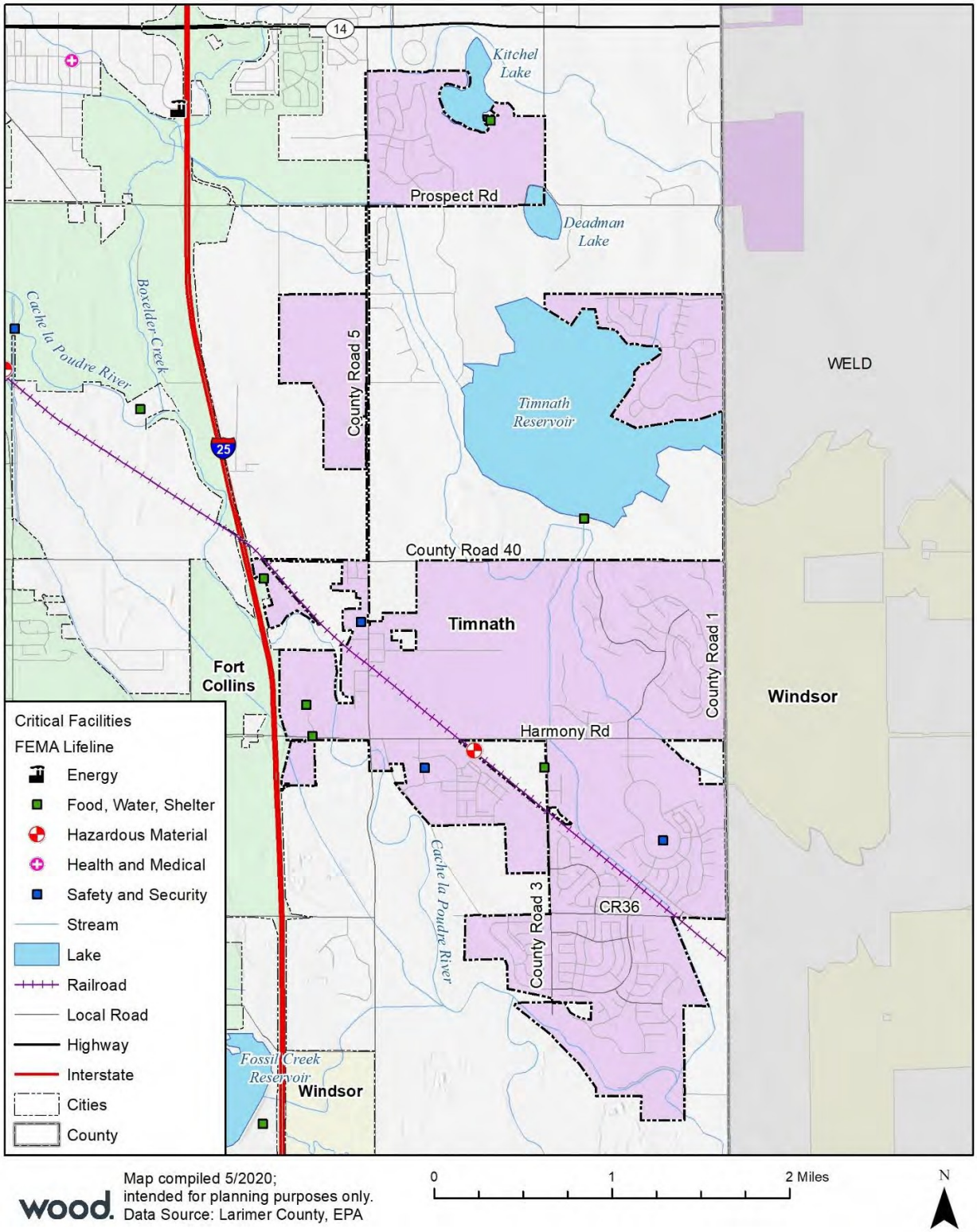
Table R-7 lists summary information about the 16 critical facilities and other community assets identified by the Town as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure R-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table R-7 Town of Timnath Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Food, Water, Shelter	3
Safety and Security	3
Total	**6**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure R-4 Town of Timnath Critical Facilities and Infrastructure



R.4.2 Dam Inundation

Potential dam inundation areas in and around the Town of Timnath are shown in Figure R-5.

Figure R-5 Dam Inundation Areas for the Town of Timnath

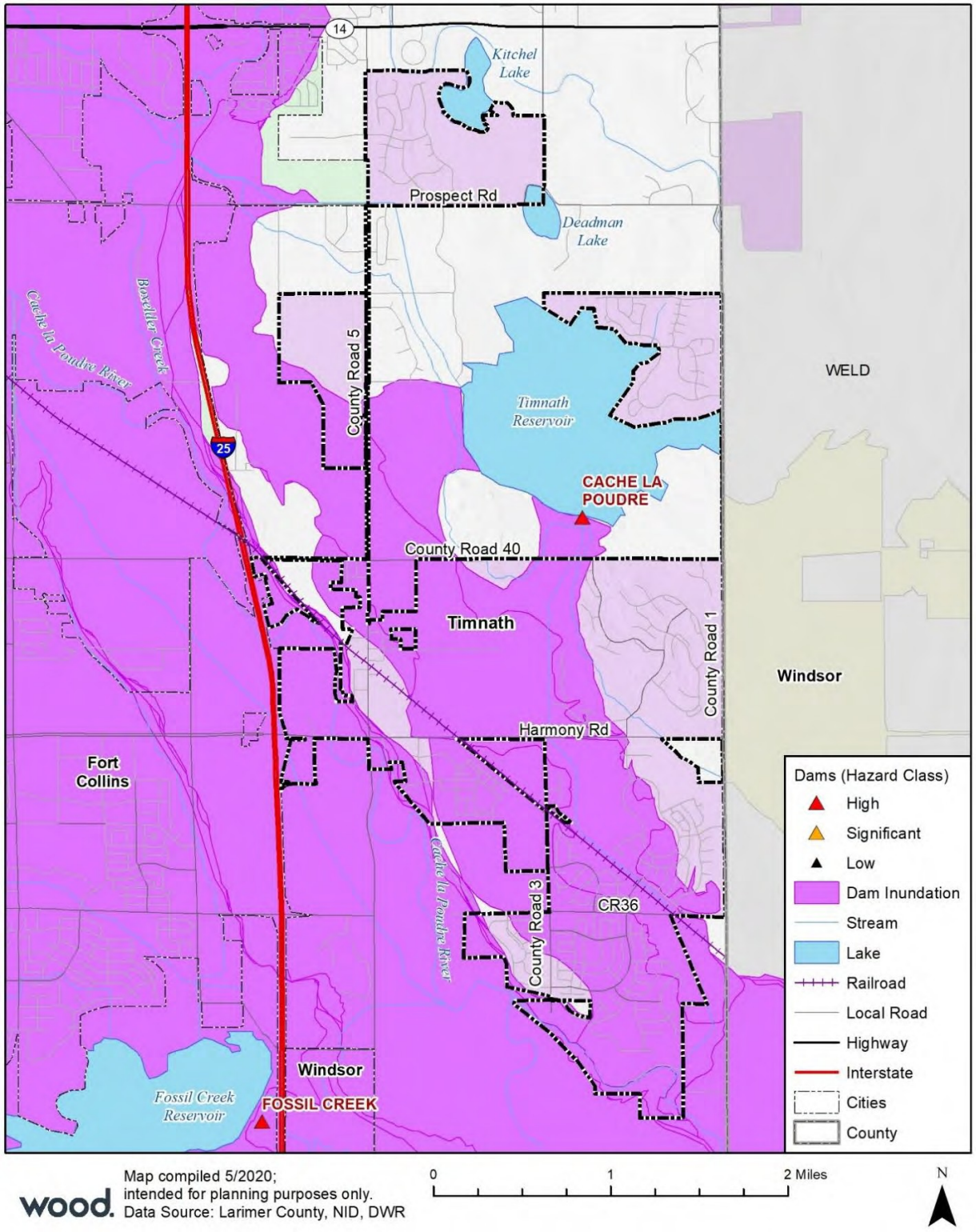


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. Dams in or upstream of the Town of Timnath are:

- Cache La Poudre (Timnath Reservoir)
- East Side Detention Facility
- Fossil Creek
- Horsetooth Reservoir
- Indian Creek

Table R-8 shows that Timnath has 1,165 parcels potentially at risk of dam inundation, valued at $785M; an estimated 3,788 residents live in those parcels.

Table R-8 Town of Timnath Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Agricultural	4	6	$1,061,189	$1,061,189	$2,122,378	
Commercial	18	23	$35,641,176	$35,641,176	$71,282,352	
Exempt	5	31	$6,701,244	$6,701,244	$13,402,488	
Multiple Unit	3	72	$26,836,415	$26,836,415	$53,672,830	
Residential	1,135	1,141	$429,936,489	$214,968,267	$644,904,756	3,788
Total	**1,165**	**1,273**	**$500,176,513**	**$285,208,291**	**$785,384,804**	**3,788**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

There are 4 critical facilities identified in areas at risk of dam inundation in the Town of Timnath, shown in Table R-9.

Table R-9 Town of Timnath Critical Facilities Potentially at Risk of Dam Inundation

FEMA Lifeline	Count
Food, Water, Shelter	2
Safety and Security	2
Total	**4**

Based on the above analysis, the spatial extent and severity of the dam inundation hazard, the Town of Timnath is comparable to that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

R.4.3 Flood

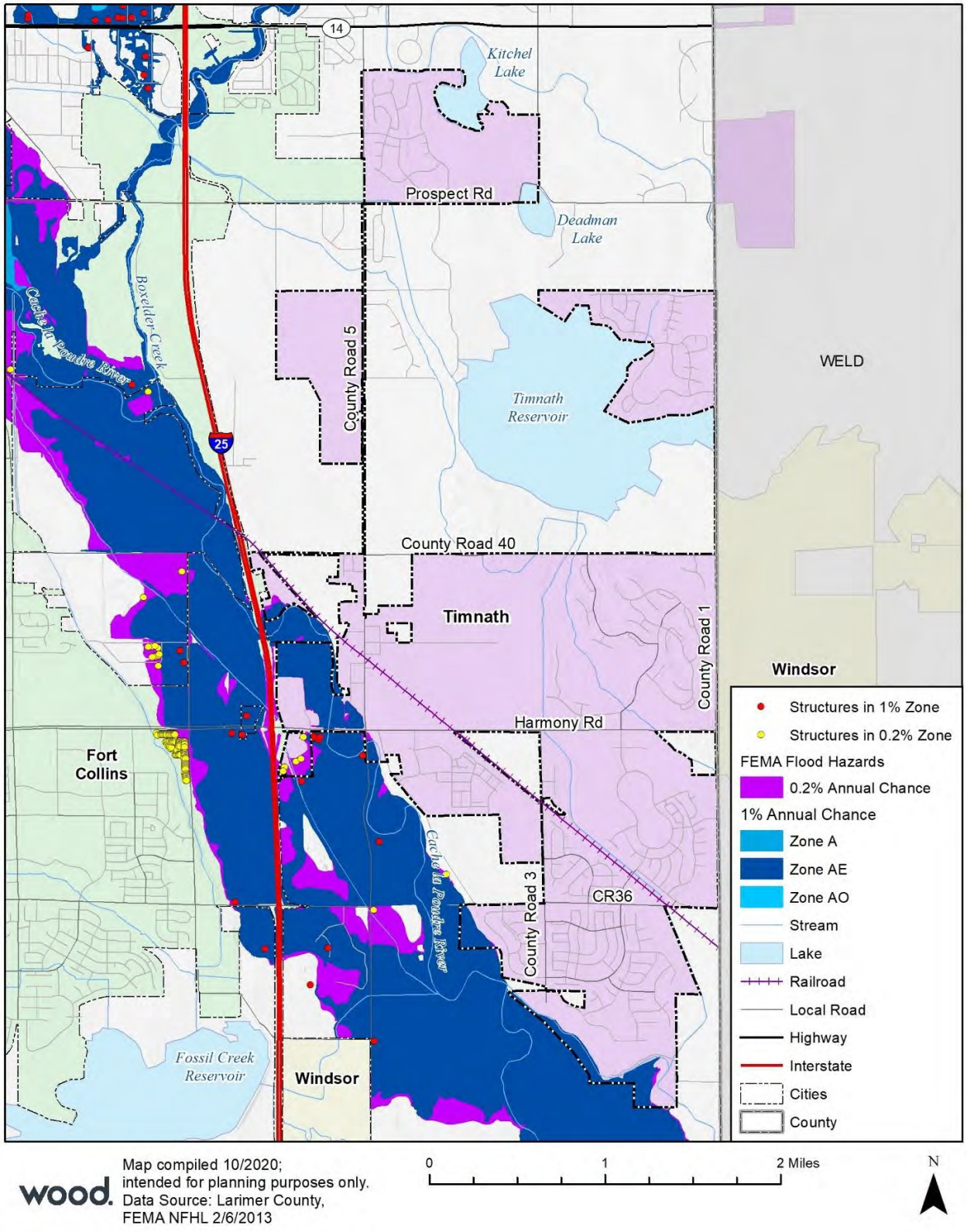
FEMA mapped floodplains in and around the Town of Timnath are shown in Figure R-6.

The Town of Timnath does not have any improved parcels in areas at 1% annual chance of flooding. As shown in Table 4-35 in Section 4.3.6 of the Base Plan, there are an estimated 3 parcels and 0 residents located in the 0.2% annual chance flood hazard area, with an estimated value of $5,380,816.

The Town does not have any critical facilities in 1% or the 0.2% annual chance flood hazard areas.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Timnath is lower than that of the County as a whole. The overall significance of this hazard for the Town is Medium.

Figure R-6 FEMA Special Flood Hazard Areas for the Town of Timnath



National Flood Insurance Program Policy Analysis

Timnath has participated in the National Flood Insurance Program (NFIP) since 2006. NFIP insurance data shows that as of January 2021 there are 3 flood insurance policies in force in the Town with $910,000 of coverage. There has been only one historical claim for flood losses, for $4,074. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The Town of Timnath does not participate in the Community Rating System (CRS) program.

R.4.4 Hazardous Materials Incident

Designated hazardous materials routes passing through or near the Town of Timnath include I-25 and several rail lines. None of the County's Risk Management Plan (RMP) facilities are located within the Town limits.

There are no designated hazardous materials routes passing through the Town of Timnath. However hazardous materials are still shipped through the Town, primarily along US287 and the rail line. There is one Risk Management Plan (RMP) facility located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes only one hazardous materials incident in or near the Town of Timnath from 1987 through 2019, a gas pipeline explosion in 2009 that resulted in no injuries, but caused $50,000 in property damage.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Timnath is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

R.4.5 Landslide/Rockslide

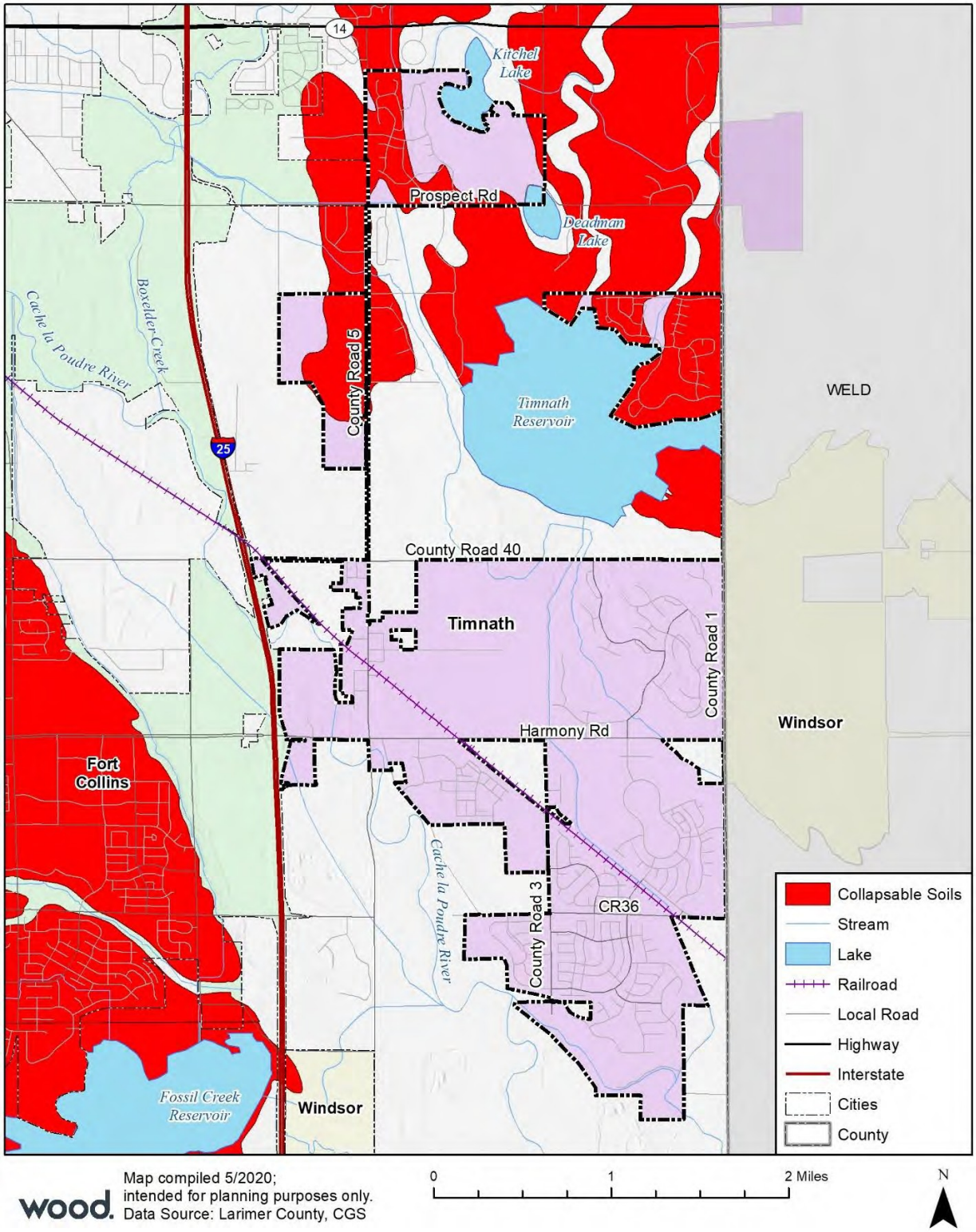
There are no identified areas of landslide or rockslide risk in the Town of Timnath. The overall significance of this hazard for the Town is Low.

R.4.6 Soil Hazards

There are no historically undermined areas or areas at risk of land subsidence or expansive soils that have been identified in the Town of Timnath. However, portions of the Town are at risk of collapsible soil, as shown in Figure R-7.

Table 4-49 in Section 4.3.9 of the Base Plan shows 327 parcels and 328 buildings potentially at risk to collapsible soils, with a total value of $256,667,353. An estimated 1,079 residents are at risk. The overall significance of this hazard for the Town is Low.

Figure R-7 Potential Collapsible Soils Areas – Town of Timnath



The critical facility exposure analysis shows that there are no critical facilities in Timnath at risk of collapsible or expansive soils.

The overall significance of this hazard for the Town is Low.

R.4.7 Wildfire

The Town of Timnath has not had a significant history of wildfire activity in or adjacent to the Town, although the Town has felt impacts from wildfires in other areas of the County.

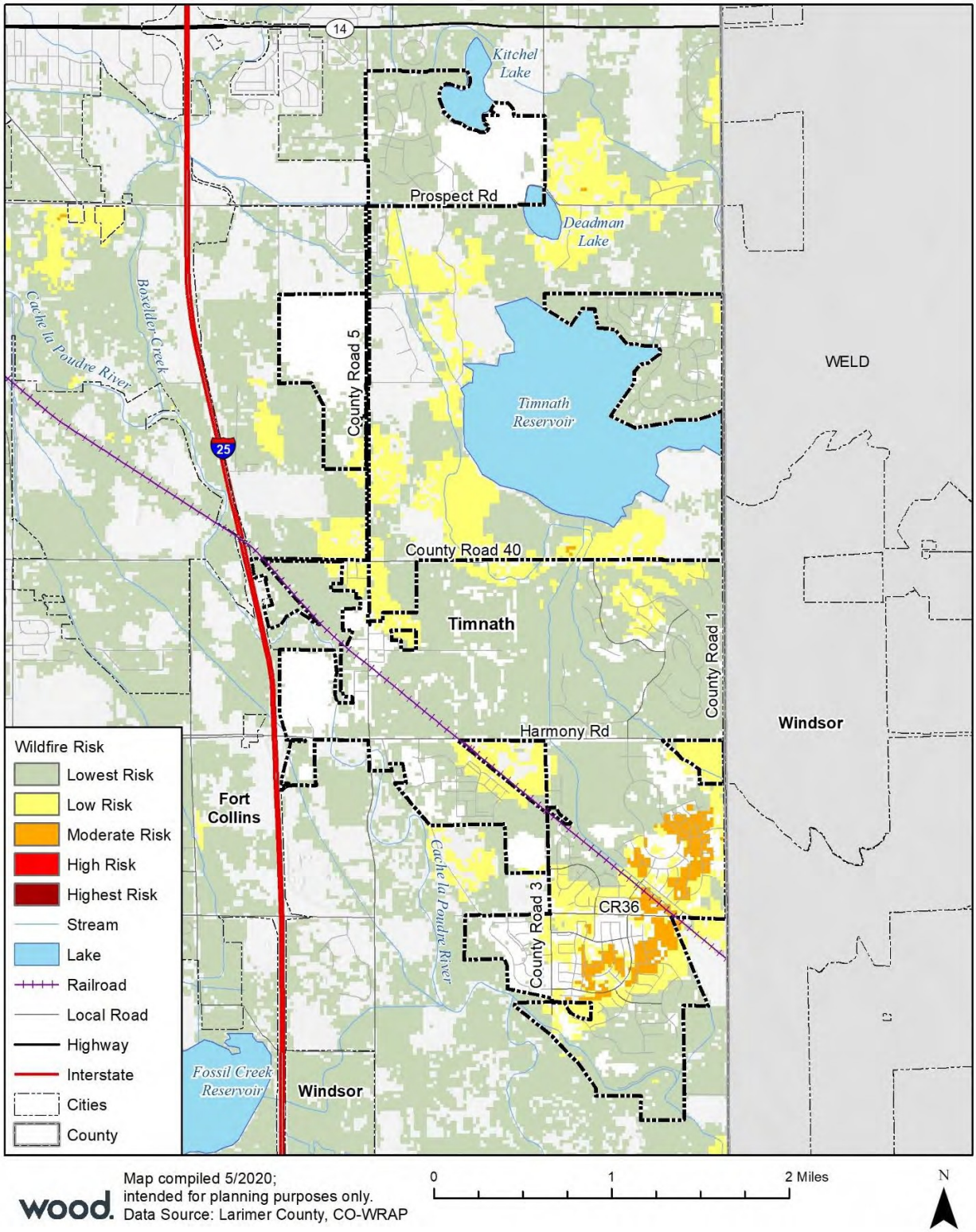
Areas in and around the Town of Timnath at risk of wildfire, based on CO-WRAP assessment, are shown in Figure R-8.

Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town has only 281 parcels and 281 buildings at moderate risk of wildfire, with a total value of $142,585,575. An estimated 933 residents live in these at-risk areas. There are not parcels at high or highest risk within Timnath.

The Town has no critical facilities identified at being at risk of wildfires.

A relatively low percentage of the Town's total parcels and structures is at direct risk of wildfire, showing that the overall significance of this hazard for the Town is Low.

Figure R-8 Timnath Wildfire Risk



R.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Town of Timnath to reduce hazard impacts or that could be used to implement hazard mitigation activities.

R.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table R-10 Town of Timnath Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Timnath.org
Zoning ordinance	Yes	Timnath.org
Subdivision ordinance	Yes	Timnath.org
Growth management ordinance	Yes	2020 Comprehensive Plan
Floodplain ordinance	Yes	Timnath.org
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Stormwater
Building codes	Yes	Timnath.org
Fire department ISO rating	Yes	
Erosion or sediment control program	Yes	Timnath.org
Stormwater management program	Yes	Land Use Code/Drainage Master Plan
Site plan review requirements	Yes	Land Use Code
Capital improvements plan	Yes	Budget
Economic development plan	Yes	Economic Development Policy
Local emergency operations plan	Yes	Government Contingency Plan
Other special plans	Yes	Transportation Plan
Flood insurance study or other engineering study for streams	Yes	Cooperation with Larimer County
Elevation certificates (for floodplain development)	Yes	Timnath.org / FEMA - CLOMR/LOMR

Source: Town of Timnath planning team

Table R-11 Town of Timnath Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Planner
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Community Development Planner
Planner/engineer/scientist with an understanding of natural hazards	Yes	Community Development Planner
Personnel skilled in GIS	Yes	Community Development Planner
Full time building official	Yes	Community Development Planner
Floodplain manager	Yes	Community Development Planner
Emergency manager	Yes	Town Manager
Grant writer	No	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Community Development Planner

Personnel Resources	Yes/No	Department/Position/Comments
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Larimer County
Other key personnel	Yes	Public Works

Source: Town of Timnath planning team

Table R-12 Town of Timnath Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	No	No	
Fees for water, sewer, gas, or electric services	No	No	Special Districts Provide
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	No	No	No Voter Authorization
Incur debt through special tax bonds	No	No	
Incur debt through private activities	Yes	No	
Withhold spending in hazard prone areas	No	No	

Source: Town of Timnath planning team

Table R-13 Town of Timnath Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	

Source: Town of Timnath planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Timnath has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

R.5.2 Opportunities for Enhancement

Based on the capability assessment, Timnath has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and Town Council on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

R.6 Mitigation Strategy

The Town of Timnath has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had three mitigation actions in the 2016 Plan. None of these actions have been completed or deleted, and have been carried over into the 2021 Plan, along with two new actions.

The local planning team identified and prioritized the following mitigation actions for the Town of Timnath based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Timnath will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table R-14 Town of Timnath 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
R-1	Goal 1,4 Objectives 1	Hazmat, Spring/Summer Storms, Winter Storms	**Community Outreach Project.** We are a very small but rapidly growing community. We have recently updated our website and other social media, but need to do more public outreach, specifically related to public awareness and preparedness around risk and hazards that affect our community. Create a public outreach program for the Town of Timnath. We will use existing educational materials as well as develop materials specific to the Town of Timnath to increase hazard and risk preparedness, response to educate our citizens.	**Town Manager's Office,** Larimer County OEM, Poudre Fire Authority/City of Fort Collins OEM.	$5,000	Town general fund.	Low	2024	Continue - Not Completed
R-2	Goal 1 Objectives 3	Biological Hazards, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazmat, Landslide/Rock slide, Soil Hazards, Spring/Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Mitigation Assessment.** Timnath is currently updating all of their emergency management plans and programs. An assessment of risk has not been done before this plan. With this data, Timnath needs to conduct an assessment to determine future mitigation opportunities within the Town. A determination of mitigation actions to protect the Town of Timnath is needed. Conduct a mitigation assessment of Timnath to determine key protection and mitigation actions.	**Town of Timnath,** Larimer County OEM, Poudre Fire Authority	Unknown	General operating funds and/or potential grants.	Low	2024	Continue - Not Completed
R-3	Goal 1,2,3,4,5 Objectives 1,2,3,4,5	Flood	**Full Adoption of Updated FEMA Floodplains.** Floodplain mapping is out of date and the 2013 Flood caused extensive changes to current floodplains. Work with FEMA on updating current floodplain mapping in coordination with Larimer County. By 2020, the Cache la Poudre River through Timnath will be mapped and adopted by FEMA.	**Town of Timnath Planning Department,** Larimer County Community Development and Office of Emergency Management	$300,000	Colorado State Flood Hazard Mapping Project	High	2020?	Continue - Not Completed

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
R-4	Goals Objectives	Hazmat	**Upgrade railroad crossings.** Working in concert with Great Western Railroad to upgrade and improve railroad crossings and lines and to ensure trains traveling through town maintain a minimum speed. Company seldom transports hazards materials, crossings are improved, and operating functionally. Law enforcement for proper traffic control. 2016 Great Western railroad train derailment at or near the rail intersection with Summerfields Parkway. Nine cars derailed and damaged track. Non-hazardous materials present. All impacts were within the railroad ROW. The Town could see potential issues with trains at the three existing railroad crossings in Timnath. These areas have the potential of impacting emergency services and vehicle traffic. There is an added potential of hazardous materials being transported through town.	**Engineering/ Public Works,** Planning, Police, Poudre Fire Authority, Larimer County Sheriff's Office, Timnath Administration	TBD. Great Western will be responsible for improvements to their infrastructure.	Town general fund and Town of Timnath Development Authority (urban renewal authority), development obligations	Low	2024	New in 2021. Three Bell to be completed in 2021; Main Street to be completed by 2024.
R-5	Goals Objectives	Flooding	**Cache la Poudre River Flooding.** 1% storm event occurs in the Poudre River drainage basin causing flooding of the Poudre River and overtopping of the river banks impacting adjacent properties and roads. Poudre River trail becomes inundated during storm events or spring runoff. Gates have been installed to prohibit public access to flood prone areas. Harmony Road bridge has been constructed to withstand these types of events. Monitoring floodplain and restricting development.	Public Works/Engineering, Planning, Police, Poudre Fire Authority, Larimer County Sheriff's Office, Timnath Administration	TBD	Town of Timnath general fund and Timnath Development Authority (urban renewal authority). FEMA for major event cleanup and repairs.	Medium		New in 2021.

R.7 Plan Maintenance and Implementation

The Town of Timnath has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

R.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Timnath's implementation strategy included:

- We will schedule annual review by staff and adoption by the Town Council.
  - The Town's 2016 "Emergency Operations Plan" was adopted by the Timnath Town Council on July 12, 2016.
- We have a robust website and will post comment pages, surveys and the plans on the site.
  - This has not been necessary although we do have a website and will use it in the event that something will manifest itself.
- Upon the update of our comprehensive plan, we will include discussion of hazard mitigation as well as any recommended action items such as necessary amendments to our zoning or building codes.
  - The Town recently completed an update to the Town's Comprehensive Plan. That document was adopted by Town Council on February 25, 2020. The document does include goals, objectives, and action items to guide the growth of the Town. Portions of the plan reference emergency services and emergency services partners. There is no specific topic related to hazard mitigation. However, the Town's Land Use Code and Building Codes are up to date and inclusive of certain standards related to hazard mitigation as they pertain to residential and commercial developments related to flooding, soils, and fire protection.

R.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Town Manager will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Town Manager will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town and relevant departments, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Timnath Town Council.

Integration Into Other Planning Mechanisms

The Town of Timnath will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the Town will:

- Town of Timnath and their service providers will make an effort to meet annually to discuss items that need to be updated and look at progress of action items.
- Work toward incorporating information from the HMP into public education & outreach programs.

- Post information on the Town's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning as appropriate.
- Will consider the applicable information from the HMP and incorporate as necessary into the next update of the Town's comprehensive plan/zoning code/etc.

Continued Public Involvement

The Town will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

R.8 Letter of Intent to Participate

TOWN OF TIMNATH

LETTER OF INTENT TO PARTICIPATE

December 7, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Timnath is submitting this letter of intent to confirm that the Town of Timnath has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Timnath agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The Town of Timnath understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, April D. Getchius, commit The Town of Timnath to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 7th day of December, 2018

April D. Getchius
Town Manager

Phone: (970) 224-3211 Fax: (970) 224-3217 www.timnath.org
4800 Goodman Street • Timnath, CO 80547

S. Upper Thompson Sanitation District

The Upper Thompson Sanitation District is fully committed to managing the natural resources with which the District is entrusted; to provide reliable, high quality, cost effective wastewater collection and treatment services; to promote a quality of life that all citizens in the Estes valley may benefit from. Our staff strives to deliver prompt and friendly customer service, while ensuring the preservation, protection, and enhancement of our environment for future generations.

– Mission Statement, Upper Thompson Sanitation District

S.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Upper Thompson Sanitation District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section S.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

S.2 Community Profile

The Upper Thompson Sanitation District was formed in 1971 to provide wastewater treatment service to the areas surrounding the Town of Estes Park and to improve the water quality of the Big Thompson River. The plant and collection lines were built with Federal, State and local funding and the plant was brought on-line in 1976, providing service to areas of the Estes Valley which were previously without adequate sewage treatment. The District policies and operations are overseen by a Board of Directors elected by the voters within the District.

The Upper Thompson Sanitation District Treatment Facility (or Plant) is a Tertiary (or three stage), Advanced Treatment Facility. This facility was built to handle a flow of 1.5 Million Gallons per Day (MGD), and a peak hydraulic flow of 3.75 MGD. This corresponds to an equivalent population of 15,000 people. Over 99% of the solids and pollutants in the wastewater are removed and disposed of. In the fall of 2000, Phase 1 (of a 3 Phase expansion) was completed, raising the plant capacity to 2.0 MGD by adding a new secondary clarifier.

S.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table S-1 Hazard Identification and Risk Assessment Summary for the Upper Thompson Sanitation District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Significant	Significant	Medium
Civil Disturbance	Unlikely	Limited	Significant	Low
Dam Inundation	Occasional	Limited	Significant	Low
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Extensive	Catastrophic	Medium
Flood	Likely	Extensive	Critical	High
Hazardous Materials	Unlikely	Limited	Significant	Medium
Landslide/Rockslide	Occasional	Limited	Significant	Low
Soil Hazards	Likely	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Significant	Significant	High
Tornado	Unlikely	Limited	Negligible	Low
Utility Disruption	Likely	Significant	Significant	Medium
Wildfire	Likely	Significant	Significant	Medium
Winter Storm	Highly Likely	Extensive	Significant	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

S.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Upper Thompson Sanitation District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials
- Spring/Summer Storm
- Tornado
- Utility Disruption

- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

S.4.1 Dam Inundation

Section 4.3.3 of the Base Plan and Section D.4.2 of Annex D (Town of Estes Park) show minimal potential dam inundation areas in the Upper Thompson Sanitation District. The overall significance of this hazard for the District is Low.

S.4.2 Flood

Section 4.3.6 of the Base Plan and Section D.4.3 of Annex D (Town of Estes Park) show significant areas at 1% annual risk and/or 0.2% annual risk of flooding in the Upper Thompson Sanitation District. The overall significance of this hazard for the District is High.

S.4.3 Landslide/Rockslide

Section 4.3.8 of the Base Plan and Section D.4.5 of Annex D (Town of Estes Park) show no identified areas in the Upper Thompson Sanitation District at risk of landslide, but significant areas at risk of rockslide. The overall significance of this hazard for the District is Low.

S.4.4 Soil Hazards

There are no identified areas in the Upper Thompson Sanitation District potentially at risk of expansive or collapsible soils or land subsidence. The overall significance of this hazard for the District is Low.

S.4.5 Wildfire

Section 4.3.13 of the Base Plan and Section D.4.8 of Annex D (Town of Estes Park) show are several locations in the Upper Thompson Sanitation District classified as being at Moderate or High risk of wildfires, particularly in the areas west of Berthoud. The overall significance of this hazard for the District is High.

S.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Upper Thompson Sanitation District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

S.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table S-2 Upper Thompson Sanitation District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	In the form of a Wastewater Utility Master Plan
Zoning ordinance	No	Town/County
Subdivision ordinance	No	Town/County
Growth management ordinance	No	Town/County
Floodplain ordinance	No	Town/County
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	Town/County/State

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Building codes	Yes	UTSD Rules and Regulations sewer construction standards
Fire department ISO rating	No	Town/County/State
Erosion or sediment control program	No	
Stormwater management program	No	Town/County/State
Site plan review requirements	Yes	UTSD Rules and Regulations
Capital improvements plan	Yes	UTSD CIP
Economic development plan	No	
Local emergency operations plan	Yes	UTSD Emergency
Other special plans	No	
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	

Source: Upper Thompson Sanitation District planning team

Table S-3 Upper Thompson Sanitation District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	No	Town/County
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	All Depts. Specific to sewer infrastructure and construction.
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	Collection Dept
Full time building official	No	Town/County
Floodplain manager	No	Town/County
Emergency manager	No	
Grant writer	Yes	Contracted
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Collection Dept, Critical asset data
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	WWTF. SCADA / alarms / exterior alarm lighting at lift stations, emergency after-hours call numbers.

Source: Upper Thompson Sanitation District planning team

Table S-4 Upper Thompson Sanitation District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	No	None currently
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	System Development Fees (Taps)
Incur debt through general obligation bonds	Yes	No	None currently
Incur debt through special tax bonds	NA	No	

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Incur debt through private activities	Yes	No	None currently
Withhold spending in hazard prone areas	N/A	No	

Source: Upper Thompson Sanitation District planning team

Table S-5 Upper Thompson Sanitation District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	See below
Firewise	No	
StormReady	No	

Source: Upper Thompson Sanitation District planning team

UTSD utilizes Facebook, its website, in-person personnel, presentations, flyers, public events, and open houses to educate customers on water and wastewater related topics and District activities/future projects and challenges. All UTSD Board Meetings are open to public and major planning processes are open to public comment per state statutes.

The COVID-19 outbreak, and subsequent shortage of toilet paper, has also presented other challenges for the UTSD—and all wastewater authorities for that matter. Alternatives to toilet paper are wipes (both "flushable" and non-flushable) and other paper products, of which none are designed for use or conveyance in sewers. These products can clog lines and pumps resulting in overflows, and they can severely disrupt downstream treatment processes. UTSD has increased efforts in public education on these issues and will continue to do so.

S.5.2 Opportunities for Enhancement

Based on the capability assessment, Upper Thompson Sanitation District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

Enhancements underway or being considered include:

- Expansion of in-house emergency management capabilities (i.e., detailed asset inventory/assessment, expansion of emergency operations plan, etc…) would be beneficial.
- UTSD does well with developing projects but can always benefit from expanding project prioritization and implementation techniques. Perhaps through development of more comprehensive and District-specific decision matrices and criticality factors to objectively ensure the most critical projects are being implemented first.

S.6 Mitigation Strategy

The Upper Thompson Sanitation District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had three mitigation actions in the 2016 Plan, and has completed two of them:

- District and Inter-Jurisdictional Communications Improvement
- FLCS Force Main Evaluation and Rehabilitation

The remaining action has been carried over into the 2021 Plan, along with two new actions.

The District planning team identified and prioritized the following mitigation actions for the Upper Thompson Sanitation District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table S-6 Upper Thompson Sanitation District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
S-1	Goals 1,2,3,4,5 Objectives 2,3,4,5	Extreme Temperatures, Flood, Severe Storm, Biological, Hazmat	**Sewer Main Cleaning and Inspection.** The most common threat to the District's sanitary sewer system is sanitary sewer overflows resulting from a blockage in the pipe. Blockages can be caused by many things including tree root intrusion, grease build-up, grit/debris, and broken or collapsed pipe. Sanitary sewer overflows always have the potential to reach surface water, storm sewer systems, and State receiving waters, posing a threat to public health and stream health. A large portion of the District's system is located in "off road" and "back yard" easements. Access to sewer lines and manholes is often blocked by trees, fences, structures, and other landscaping. The ability to gain entry to these system components is crucial to both preventive maintenance, as well as emergency response. Routine cleaning and CCTV inspection of the District's sanitary sewer lines and manholes. Maintain, and keep current, relations with mutual aid organizations and contractors. Continue repairing and rehabilitating system components. Known problem areas will be cleaned and inspected at least once a year. The rest of the District's system will continue to be routinely cleaned and inspected with the goal of completing these tasks on at least 10 percent of the District's system yearly. During this maintenance cycle, identified problem areas will be noted and incorporated into the District's capital improvement plan for repair or rehabilitation to reduce the risk of a sanitary sewer overflow or loss of proper utility function due to natural and man-made disasters. Continue to evaluate, mitigate, and reinforce system components located within the floodplain, next to rivers, and in drainage areas. Continue to assess and enforce District easements and access; keeping these easements clear of obstructions, ensuring staff and equipment can gain entry to manholes and sewer lines in the event of an emergency or for routine maintenance. Continue public outreach efforts to increase awareness and stress the importance of access of these critical locations. Continue cooperative efforts with other agencies and organizations overseeing new development. Ensuring optimum placement of new sewer mains and	**Upper Thompson Sanitation District**, Town of Estes Park, Larimer County, Estes Park Sanitation District, COWARN.	Tasks covered by annual District Operations Budget	District's annual budget	High	Ongoing	Annual Implementation. UTSD has maintained and achieved yearly sewer system inspection goals and will continue to do so. Condition assessment occurs throughout this process, from which projects are identified, prioritized, and sequentially implemented. These operations have resulted in projects (e.g., UTSD Sewer River Crossing Repair Project) that increase resiliency of systems in high risk areas.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			manholes to reduce risk or damage caused by potential disasters.						
S-2	Goals 1,2,5 Objectives 3,4,5	Flood, Soil Hazards, Spring/Summer Storm, Utility Disruption, Winter Storm.	**Big Thompson Interceptor Assessment / Construction Improvements.** The Big Thompson Sanitary Sewer Interceptor begins in the heart of downtown Estes Park and extends gravity sewer flow 5.5 miles southwest, ending near the Rocky Mountain National Park boundary on Tunnel Road. This interceptor ranges in size from 8-inch to 24-inch and is composed primarily of aged vitrified clay pipe (VCP). VCP is especially vulnerable to damage resulting from root intrusion, ground movement, settling, erosion, and natural disaster events such as flooding. Since the entire Big Thompson Interceptor follows the Big Thompson River drainage corridor (including 20 river crossings), erosion and flood/severe wet weather events are the primary hazards of concern for the District. Damage or incapacitation to this interceptor could ultimately result in threats both public health and the surrounding environment. This project, step number one, will include a comprehensive condition assessment of this aging interceptor: to identify and prioritize areas for further assessment, planning, and/or corrective and preventative measures. Resulting future mitigation may include actions such as stream channel work, rip rap armoring, sewer main/manhole rehabilitation, concrete encasement, and/or full replacement with the goal of increasing system resiliency for both long-term hazards and disaster events. Benefits: Assessment and possible subsequent mitigation actions would aim to reduce the occurrence and severity of system infrastructure loss and/or incapacitation resulting from time-sustained erosion, ground movement, and wet weather disaster events. This benefits and protects the District's underground assets, public health, downstream water users, and the aquatic environment.	**Upper Thompson Sanitation District**	$75,000 (condition assessment phase)	District Capital Improvement Plan (CIP) budget.	High	2021-2022	New in 2021
S-3	Goals 1,2,3,4,5 Objectives	Spring/Summer Storm, Utility Disruption, Biological Hazards	**New Upper Thompson Sanitation District Wastewater Treatment Facility (WWTF).** The District is in the planning level stages for a project to build a new WWTF. The following represent the key drivers for this project with respect to the existing WWTF. 1. Facility Age: The existing WWTF was constructed in the mid-1970s with upgrades provided in the 2000s. The WWTF will	**Upper Thompson Sanitation District**	$46,000,000	District capital, Long-term low interest loans, Grants.	High	2020 (planning) - 2024 (project completion)	New in 2021

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			reach its 50-year design life in 2025. Although the staff have maintained the facility in excellent condition, the WWTF lacks operational flexibility; does not meet 2019 codes (building, electrical, and fire), standards, and regulations; and is approaching the end of its useful life with deteriorating structures/equipment, and replacement parts hard to find. As WWTF flow and loadings continue to approach rated capacity, it will become increasingly difficult to remove structures from service for maintenance. The cost to maintain as well as retrofit existing structures for new purposes will require significant investment. 2. Increased Wastewater Flow: Population expansion and associated increases in wastewater flow in the WUSA are expected to continue. The WWTF is unable to hydraulically pass and provide treatment to future wastewater flow and loadings beyond 2.0 mgd and 4,450 pounds of five-day biochemical oxygen demand per day (lbs BOD5/day) without significant modifications that require site expansion. 3. Future Regulations: The WWTF is unable to reduce nutrients (total phosphorus (TP) and total nitrogen (TN)), metals, and temperature to the anticipated future water quality standard effluent levels without significant modification of the existing treatment process that require site expansion or de-rating of the WWTF below 2.0 mgd. 4. CDPHE Requirements: The WWTF discharge permit requires that the District "initiate engineering and financial planning for expansion… wherever throughput reaches eighty (80) percent of the treatment capacity" and "… commence construction of… expansion wherever throughput reaches ninety-five (95) percent of the treatment capacity." The District's 80% and 95% flow throughput is 1.6 and 1.9 mgd, respectively. The peak month flow in May 2015 was 1.7 mgd. The District's 80% and 95% influent organic loading throughput is 3,560 and 4,228 ppd, respectively. The WWTF has not exceeded the 80% peak month organic loading. The highest peak month loading between January 2014 and December 2019 was in June 2017 at 2,540 ppd. 5. Limited Aerobic Digester Capacity: The aerobic digesters were constructed for the original facility capacity of 1.5 mgd. Digester capacity is limited during peak loading events and will be						

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			further limited as the influent flow and loadings approach the permitted and projected flow and loading capacities. The enclosed digester roof and walls experience severe corrosion and were replaced in 1997. The digester roof will likely require replacement in the next five (5) years. 6. Limited Filtration Capacity: The WWTF filters were constructed for the original facility capacity of 1.5 mgd. The filters capture solids sloughed from the nitrification towers during normal operation and are operated without polymer addition. Both the filter beds and surface wash arms need to be replaced. The filters require significant upgrades to operate at a higher flow rate for the WWTF capacity of 2 mgd. Currently at a flow rate of 100 gallons per minute (gpm) into the filters, nearly constant backwashing is required. The filter capacity will be limited for TP removal/polishing with the addition of alum and/or polymer as the influent flow and loadings approach the permitted and projected flow and loading capacities."						

S.7 Plan Maintenance and Implementation

The Upper Thompson Sanitation District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

S.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- District staff will actively monitor and manage the plan, with Board of Directors review at least quarterly.
  - This was not accomplished quarterly but was reviewed, and will continue to be reviewed, annually.
- Status updates and changes to the plan will be posted on District social media outlets/website - and will be topics of public discussion."
  - This was accomplished; the District reviewed the plan and our mitigation actions during public Board meetings. Updates were also provided during subsequent Board meetings regarding the progress of mitigation actions being implemented.
- We will integrate mitigation actions into our Capital Improvement Plan.
  - This was accomplished in the completion of the District's Fish Creek Lift Station and dual force main capital project completion in 2019. Other realized 2016 mitigation actions included completion of the District's communications improvement project.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include integrating planning and mitigation steps incorporated in this plan to develop and complete other hazard-mitigating capital improvement projects such as sewer river crossing replacement projects in 2018, 2019, and 2020. These projects added resiliency to previously vulnerable segments of sanitary sewer mains traversing under and/or along major drainage basins in the Estes Valley.

S.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Collection System Superintendent will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Collection System Superintendent will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District, Town of Estes Park, and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

The Upper Thompson Sanitation District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- The District and other Estes Valley jurisdictions will meet annually to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.
- Post information on the District's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement and operations planning.
- Incorporate information from the HMP into the next update of the District's Wastewater Utility Master Plan update.
- Minimum annual review of plan and mitigation action information for District staff and Board of Directors.

Continued Public Involvement

The Upper Thompson Sanitation District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

S.8 Letter of Intent to Participate

UPPER THOMPSON SANITATION DISTRICT

Environmental Protection Through Wastewater Collection and Treatment

December 11, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Upper Thompson Sanitation District is submitting this letter of intent to confirm that Upper Thompson Sanitation District has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Upper Thompson Sanitation District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

Upper Thompson Sanitation District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Chris Bieker, District Managerl, commit Upper Thompson Sanitation District to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 11th day of December, 2018

Chris Bieker, District Manager

T. TOWN OF WELLINGTON

"The citizens of Wellington choose to deal with the issue of growth proactively in order to maintain the quality of life in the community. Over the past fifteen years, the Town has witnessed a significant amount of residential growth. Wellington residents want to continue to investigate the development of innovative land uses that provide a sound tax base, preserve the quality of life, and balance residential and commercial development.

Citizens want to ensure that new development does not overburden existing infrastructure and services and does not detract from the community's existing character. The valued aspects of the Town's character include: friendly and accessible downtown, seeing familiar faces around town, a safe and relaxed environment, and diverse community programs and activities."

– Community Vision Statement, Town of Wellington Comprehensive Plan, 2014

T.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Wellington participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section T.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

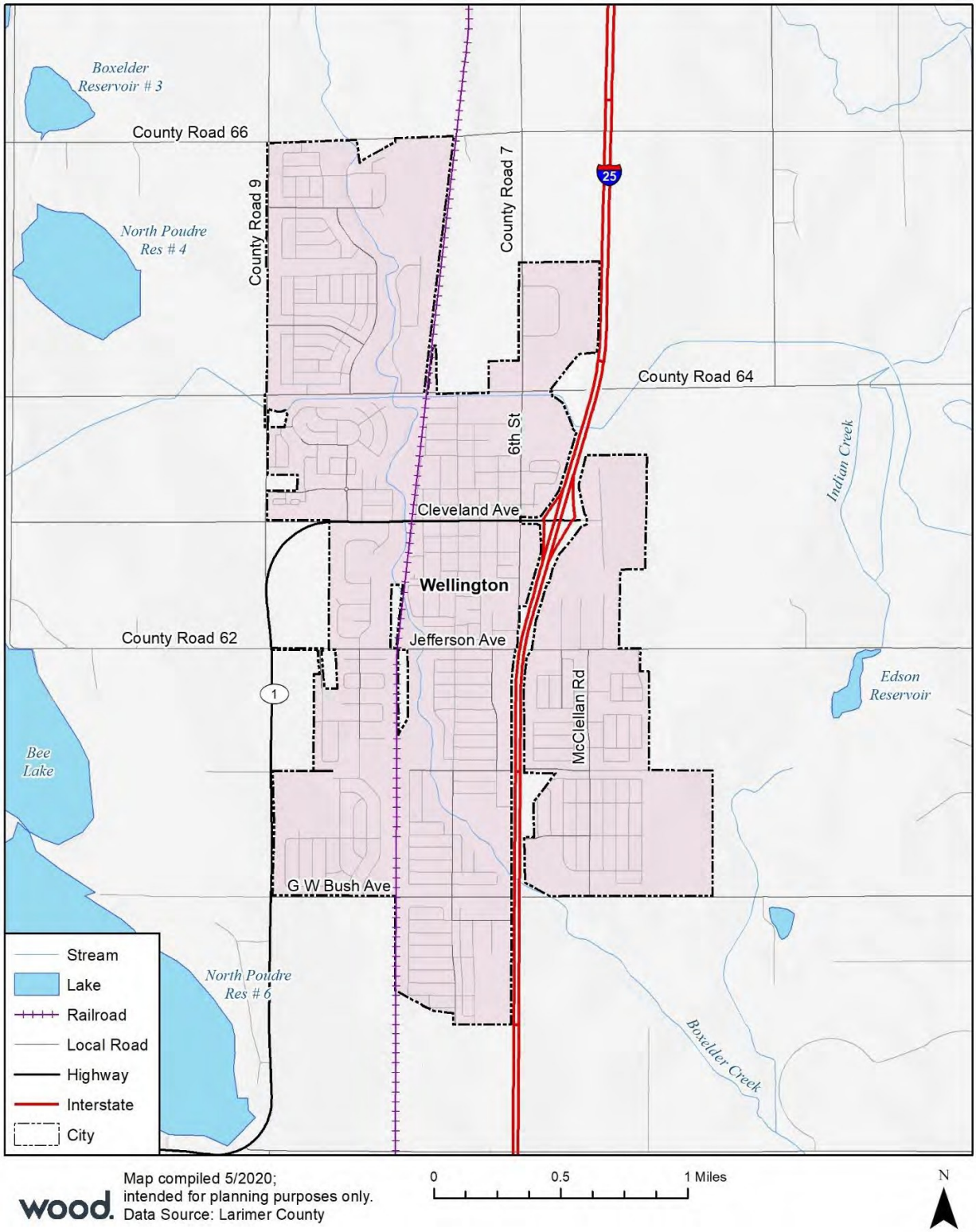
T.2 Community Profile

Wellington, also referred to as "Colorado's Northern Gateway," is located along the northern Front Range, 11 miles north of Fort Collins and 34 miles south of Cheyenne on I-25. The town's location has long made it a crossroads of those travelling both north/south from Colorado to Wyoming and east/west from the farming and ranching communities east to Fort Collins and the Rocky Mountains.

Wellington was founded in 1905, spurred by agricultural development, the Union Pacific Railroad and the presence of the North Poudre Land & Reservoir Co. The town boomed in the early 20th century but its population did not reach 1,000 until 1980. From 2000 until 2010 the town grew rapidly from 2,672 residents to 6,289 residents. As of 2018 the population was 8,571, indicating continued steady growth. With new developments and a booming population in the early 21st century, downtown anchor businesses are beginning to thrive once again, and a community vision for a vibrant downtown commercial district along Cleveland Avenue has become a community priority.

Figure T-1 shows a map of the Town of Wellington.

Figure T-1 Map of the Town of Wellington



T.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Wellington.

Table T-1 Town of Wellington Statistics

Town of Wellington	2014	2018	% Change
Population	6,634	8,571	29.20%
Median Age	33	31.5	-4.5%
Total Housing Units	2,478	2,820	13.8%
Housing Occupancy Rate	95.6%	100.0%	4.6%
% of Housing Units with no Vehicles Available	2.50%	2.80%	12.0%
Median Home Value	$204,100	$280,700	37.5%
Unemployment Rate	2.1%	3.0%	42.9%
Mean Travel Time to Work (minutes)	33.2	25.9	-22.0%
Median Household Income	$73,658	$88,978	20.8%
Per Capita Income	$31,970	$30,703	-4.0%
% of Individuals Below Poverty Level	5.0%	5.7%	14.0%
% Without Health Insurance	8.1%	3.8%	-53.1%
# of Households	2,370	2,820	19.0%
Average Household Size	2.8	3.0	8.6%
% of Population Over 25 with High School Diploma	95.0%	94.9%	-0.1%
% of Population Over 25 with bachelor's degree or Higher	27.7%	35.7%	28.9%
% with Disability	8.5%	8.7%	2.4%
% Speak English less than "Very Well"	1.1%	1.0%	-9.1%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table T-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Wellington	County	Colorado
Median Age	31.5	35.9	36.6
Housing Occupancy Rate	100.0%	91.7%	89.8%
% of Housing Units with no Vehicles Available	2.8%	4.1%	5.2%
Median Home Value	$280,700	$336,200	$313,600
Unemployment	3.0%	5.0%	4.7%
Mean Travel Time to Work (minutes)	25.9	23.2	25.5
Median Household Income	$88,978	$67,664	$68,811
Per Capita Income	$30,703	$35,390	$36,415
% of Individuals Below Poverty Level	5.7%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Wellington	County	Colorado
% Without Health Insurance	3.8%	6.3%	8.1%
Average Household Size	3.0	2.5	2.6
% of Population Over 25 with High School Diploma	94.9%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	35.7%	46.3%	40.1%
% with Disability	8.7%	9.8%	10.6%
% Speak English less than "Very Well"	1.0%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table T-3 Demographics by Race and Sex

Wellington	Population	%
Total Population	8,571	100%
Male	4,319	50.4%
Female	4,252	49.6%
White, not Hispanic	6,872	80.2%
Hispanic or Latino	1,347	15.7%
Black	60	0.7%
Asian	13	0.2%
American Indian and Alaska Native	26	0.3%
Native Hawaiian and Other Pacific Islander	0	0.0%
Some other race	497	5.8%
Two or more races	323	3.8%

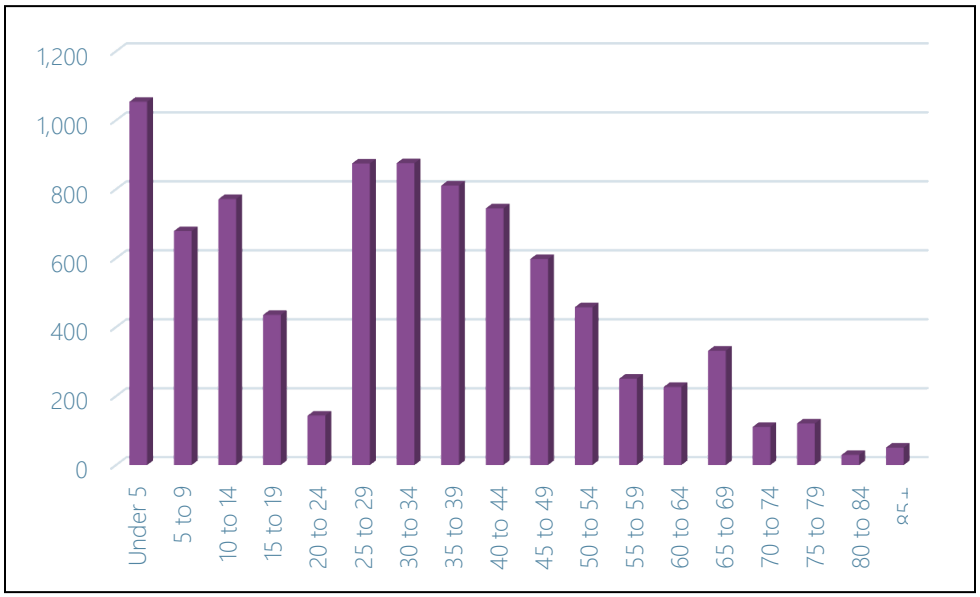
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table T-4 Types and Total Amounts of Housing Units in Wellington

Type of Housing Units	Total	%
Total housing units	2,820	100%
1-unit detached	2,581	91.5%
1-unit attached	38	1.3%
2 units	45	1.6%
3 or 4 units	41	1.5%
5 to 9 units	33	1.2%
10 to 19 units	82	2.9%
20 or more units	0	0.0%
Mobile home	0	0.0%
Boat, RV, van, etc.	0	0.0%

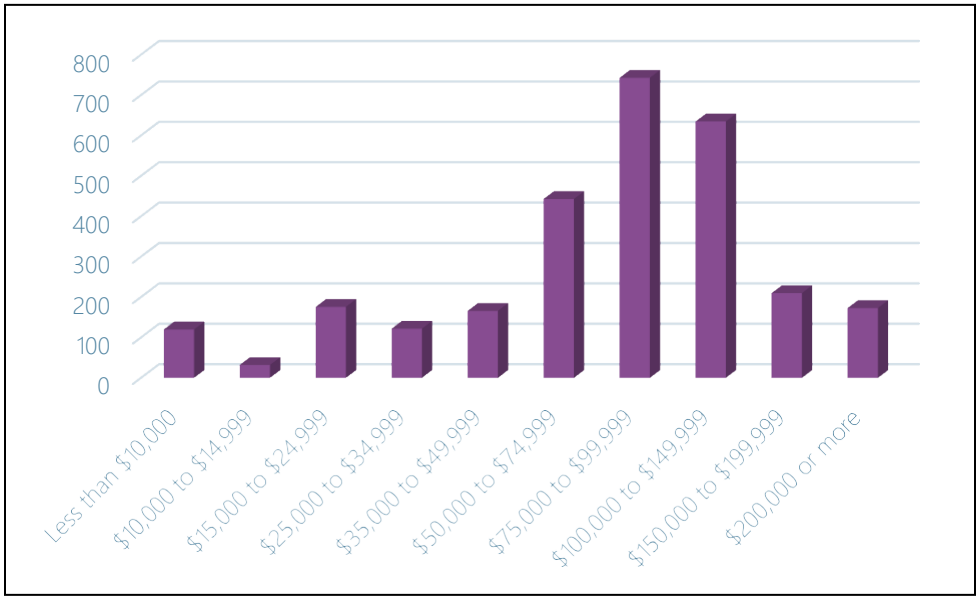
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure T-2 Town of Wellington Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure T-3 Town of Wellington Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

T.2.2 Social Vulnerability

Social vulnerability scores for the Town of Wellington can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Wellington's overall social vulnerability is below average compared to the rest of Larimer County and Colorado as a whole. In particular, Wellington's vulnerability ranks below average in the minority status and language vulnerability, as well as housing and transportation vulnerability. However, the Town's vulnerability ranks above average in the household composition and disability vulnerability category. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in

order to reduce vulnerability. Over time, the town should continue to monitor their local social vulnerability as demographic, economic, and housing related conditions change.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

T.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table T-5 Hazard Identification and Risk Assessment Summary for the Town of Wellington

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Significant	Medium
Dam Inundation	Occasional	Extensive	Catastrophic	High
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Likely	Limited	Critical	High
Hazardous Materials	Likely	Significant	Significant	Medium
Landslide/Rockslide	Likely	Limited	Negligible	Low
Soil Hazards	Likely	Limited	Limited	Low
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Likely	Limited	Significant	Medium
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

T.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Wellington, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Tornado
- Utility Disruption

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

T.4.1 Community Asset Inventory

Table T-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Wellington. See Section 4.2.2 of the Base Plan for details and methodology.

Table T-6 Total Exposure of Improved Properties within the Town of Wellington

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	2	2	$741,938	$741,938	$1,483,876
Commercial	92	97	$55,485,546	$55,485,546	$110,971,092
Exempt	28	216	$38,870,816	$38,870,816	$77,741,632
Industrial	3	3	$4,017,637	$6,026,455	$10,044,092
Mobile Home	7	9	$118,866	$59,433	$178,299
Multiple Unit	5	66	$7,131,790	$7,131,790	$14,263,580
Residential	3,637	3,652	$1,005,900,758	$502,950,309	$1,508,851,067
Total	**3,774**	**4,045**	**$1,112,267,351**	**$611,266,287**	**$1,723,533,638**

Source: Larimer County GIS/Assessor's Office, Wood analysis.

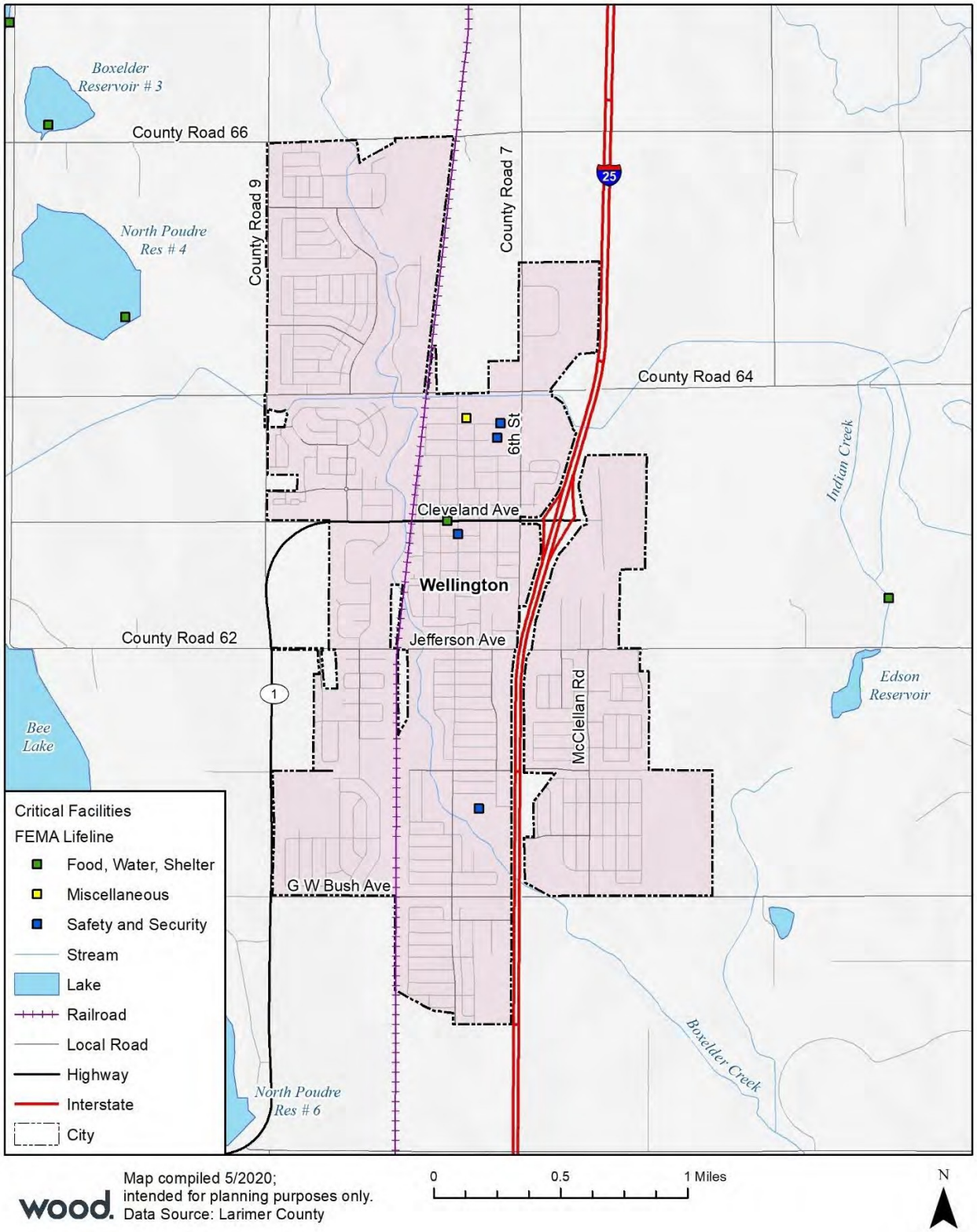
Table T-7 lists summary information about the 16 critical facilities and other community assets identified by the Town as important to protect or that provide critical services in the event of a disaster. These facilities are mapped in Figure T-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table T-7 Town of Wellington Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Food, Water, Shelter	1
Miscellaneous	1
Safety and Security	4
Total	**6**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure T-4 Town of Wellington Critical Facilities and Infrastructure



T.4.2 Dam Inundation

Potential dam inundation areas in and around the Town of Wellington are shown in Figure T-5.

Figure T-5 Dam Inundation Areas for the Town of Wellington

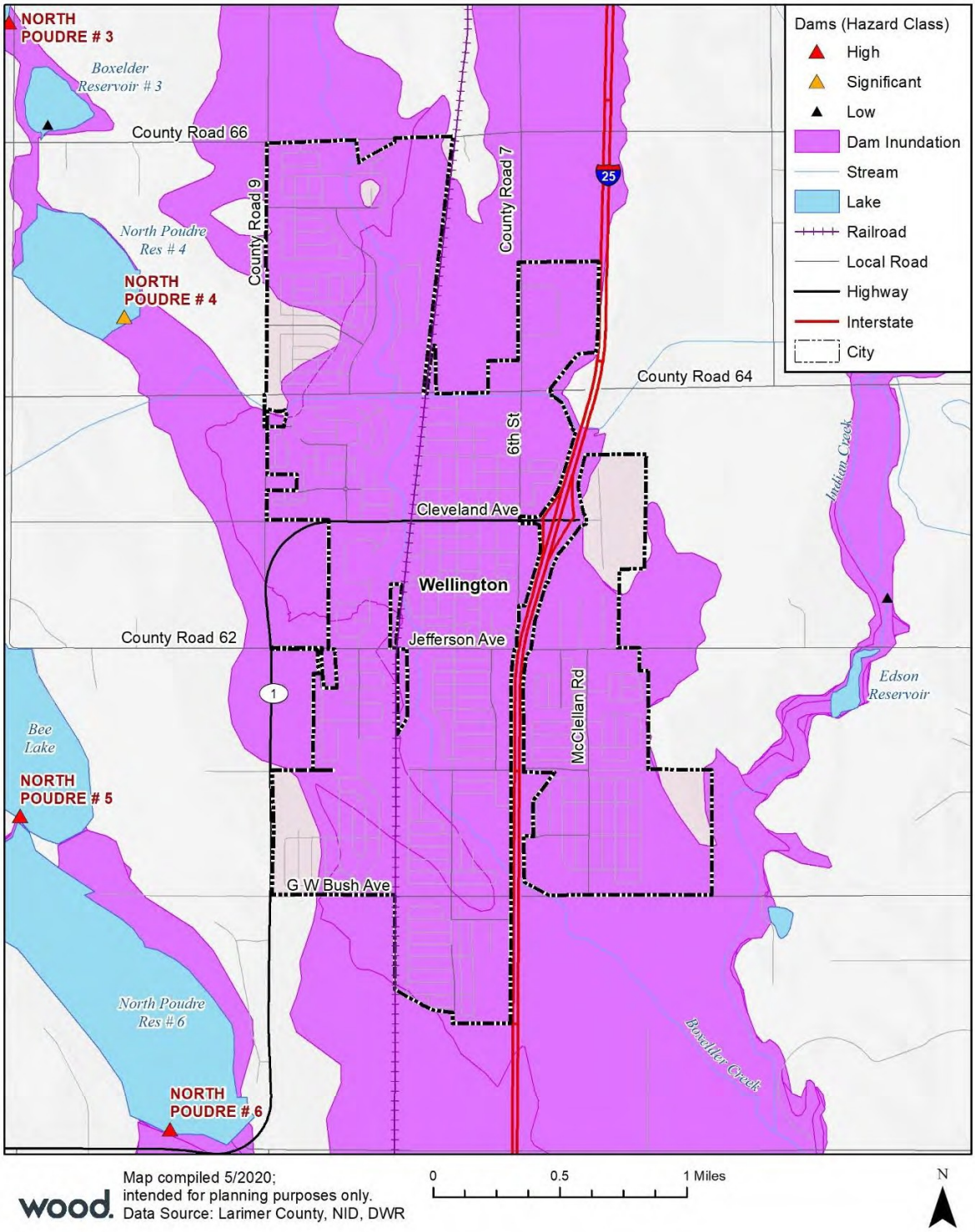


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. High Hazard classified dams upstream of the Town of Wellington are:

- Floodwater Ret. B-2
- Floodwater Ret. B-3
- Floodwater Ret. B-4
- North Poudre # 3
- Rawhide

Table T-8 shows that Wellington has 3,621 parcels potentially at risk of dam inundation, valued at $1.6B; This constitutes 95% of the total improved parcels in the Town. An estimated 9,855 residents live in those parcels.

Table T-8 Town of Wellington Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Agricultural	1	1	$224,784	$224,784	$449,568	
Commercial	92	97	$55,485,546	$55,485,546	$110,971,092	
Exempt	28	216	$38,870,816	$38,870,816	$77,741,632	
Industrial	3	3	$4,017,637	$6,026,455	$10,044,092	
Mobile Home	7	9	$118,866	$59,433	$178,299	25
Multiple Unit	5	66	$7,131,790	$7,131,790	$14,263,580	
Residential	3,485	3,498	$958,955,772	$479,477,817	$1,438,433,589	9,829
Total	**3,621**	**3,890**	**$1,064,805,211**	**$587,276,641**	**$1,652,081,852**	**9,855**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

All six of the critical facilities identified in the Town of Wellington are located in areas at risk of dam inundation, as shown in Table T-9.

Table T-9 Town of Wellington Critical Facilities at Risk of Dam Inundation

FEMA Lifeline	Count
Food, Water, Shelter	1
Miscellaneous	1
Safety and Security	4
Total	**6**

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

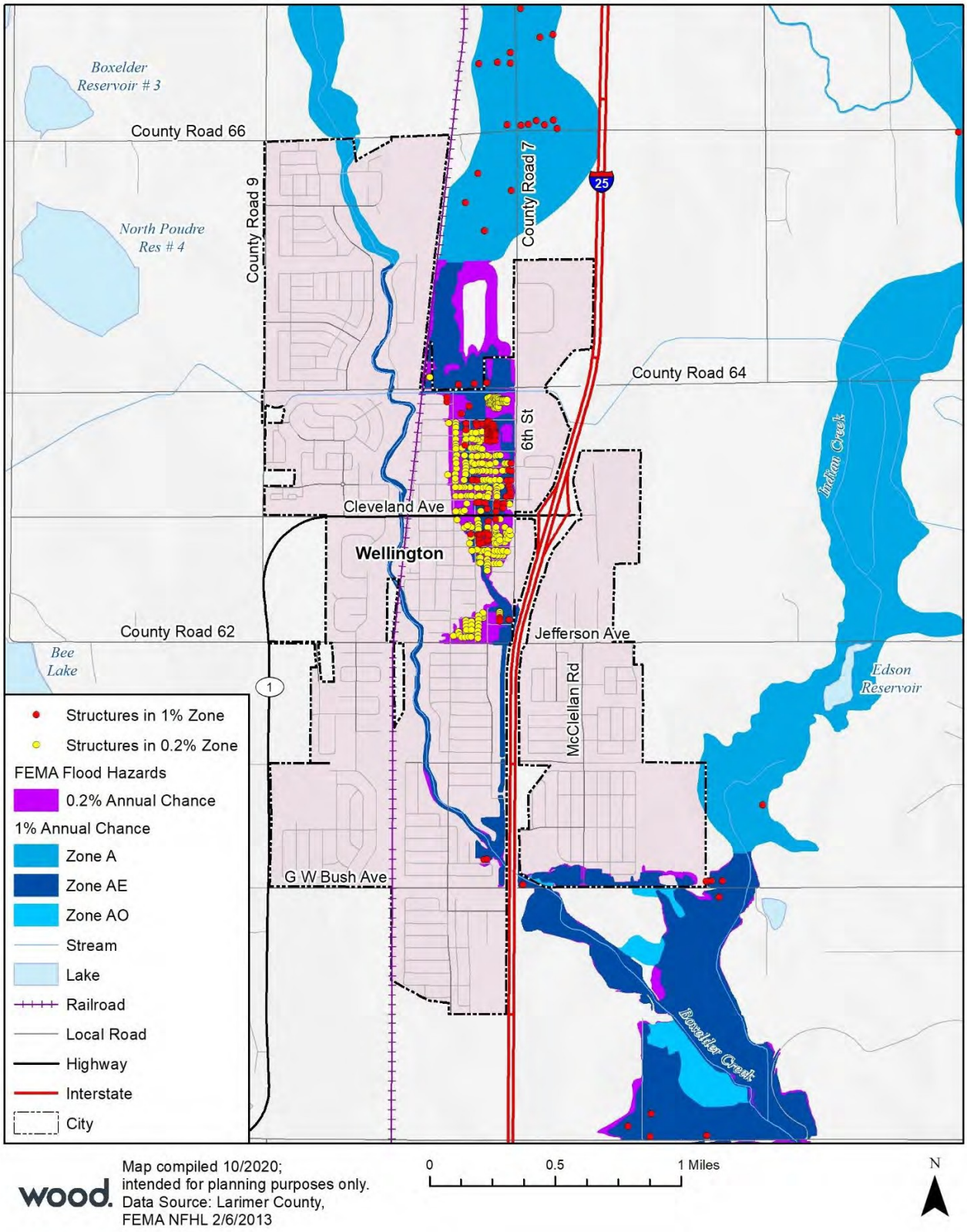
Based on the above analysis, the spatial extent and severity of the dam inundation hazard in the Town of Wellington is significantly higher than that of Larimer County as a whole. The overall significance of this hazard for the Town is High.

T.4.3 Flood

FEMA mapped floodplains in and around the Town of Wellington are shown in Figure T-6.

As shown in Table 4-34 of Section 4.3.6 of the Base Plan, the Town of Wellington has 43 parcels, 52 buildings, and 112 residents in areas at 1% annual chance of flooding, with total estimated losses of $10,014,666. There are an additional 191 parcels, 328 buildings, and 541 residents located in the 0.2% annual chance flood hazard area, with total estimated losses of $28,257,120.

Figure T-6 FEMA Special Flood Hazard Areas for the Town of Wellington



The Town has three critical facility identified in FEMA mapped floodplains, as shown in Table T-10.

Table T-10 Wellington Critical Facilities Exposed to Risk of Flooding

FEMA Lifeline	1% Annual Flood Risk	0.2% Annual Flood Risk	Protected by Levee	Total
Miscellaneous	0	1	0	1
Safety and Security	1	1	0	2
Total	**1**	**2**	**0**	**3**

Source: Cascarta

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Wellington is higher than that of Larimer County as a whole. The overall significance of this hazard for the Town is High.

National Flood Insurance Program Policy Analysis

Wellington has participated in the National Flood Insurance Program (NFIP) since 1979. NFIP insurance data shows that as of January 2021 there were 30 flood insurance policies in force in the Town with $10,578,400 of coverage. There have been 10 historical claims for flood losses, totaling $52,161. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The Town of Wellington does not participate in the Community Rating System (CRS) program.

T.4.4 Hazardous Materials Incident

Designated hazardous materials routes passing through or near the Town of Wellington include I-25 and one rail line. None of the County's Risk Management Plan (RMP) facilities are located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes just three hazardous materials incidents in or near the Town of Wellington from 1987 through 2019. This averages out to one hazardous materials incident every ten years. None of those incidents reported any deaths, injuries, or significant property damage. It should also be noted that a portion of the Town's drinking water supply is supplied with raw water from 3 shallow alluvial aquifers.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Wellington is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

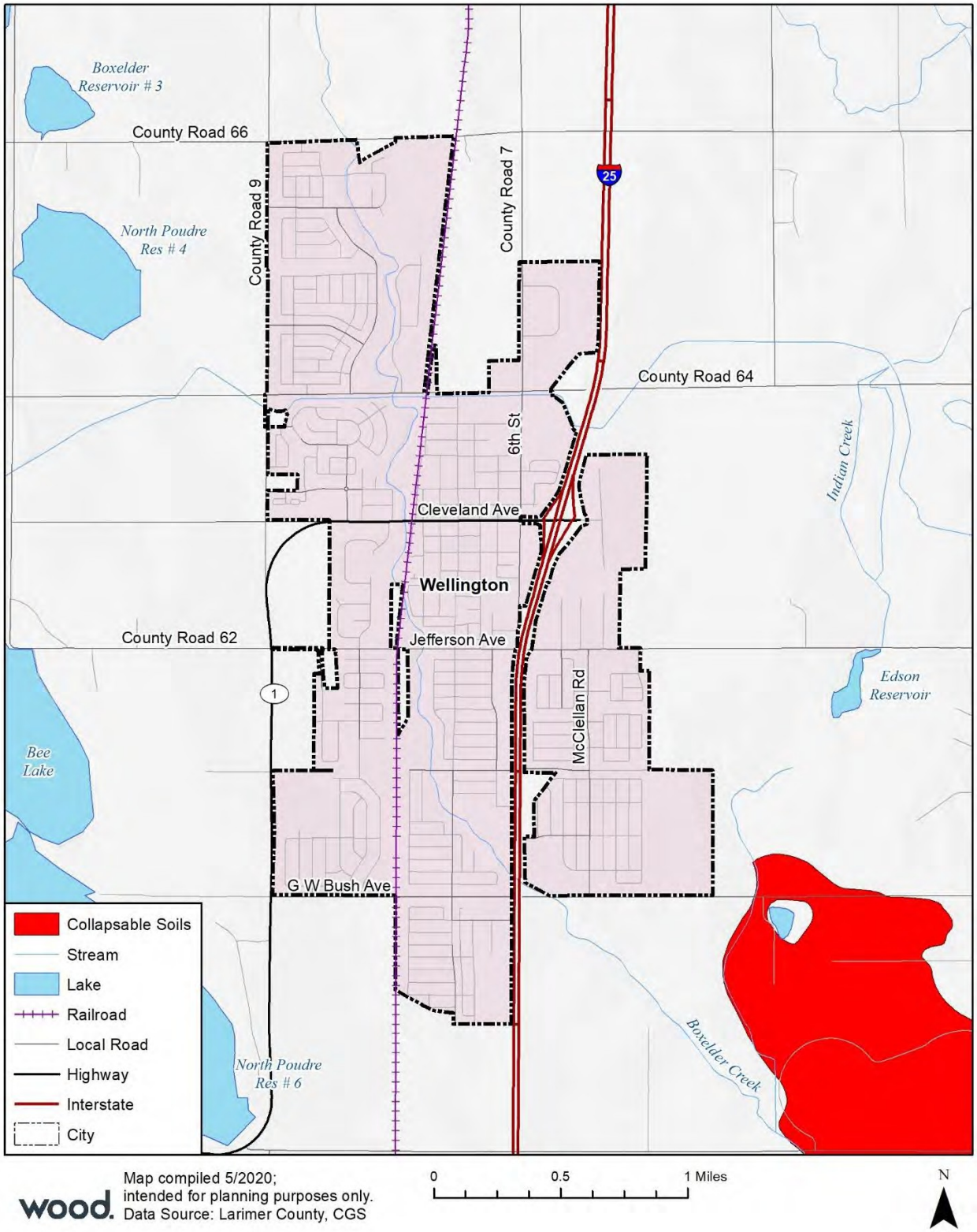
T.4.5 Landslide/Rockslide

There are no identified areas of landslide or rockslide risk in the Town of Wellington. The overall significance of this hazard for the Town is Low.

T.4.6 Soil Hazards

There are no historically undermined areas or areas at risk of land subsidence or collapsible or expansive soils that have been identified in the Town of Wellington. However, a significant area or potential collapsible soils has been identified southeast of the Town, as shown in Figure T-7. The overall significance of this hazard for the Town is Low.

Figure T-7 Potential Collapsible Soils Areas – Town of Wellington



T.4.7 Wildfire

Areas in and around the Town of Wellington at risk of wildfire, based on CO-WRAP assessment, are shown in Figure T-8. Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town does not have any parcels at moderate, high, or highest risk of wildfire.

The Town has one critical facility identified at being at risk of wildfires, as shown in Table T-11.

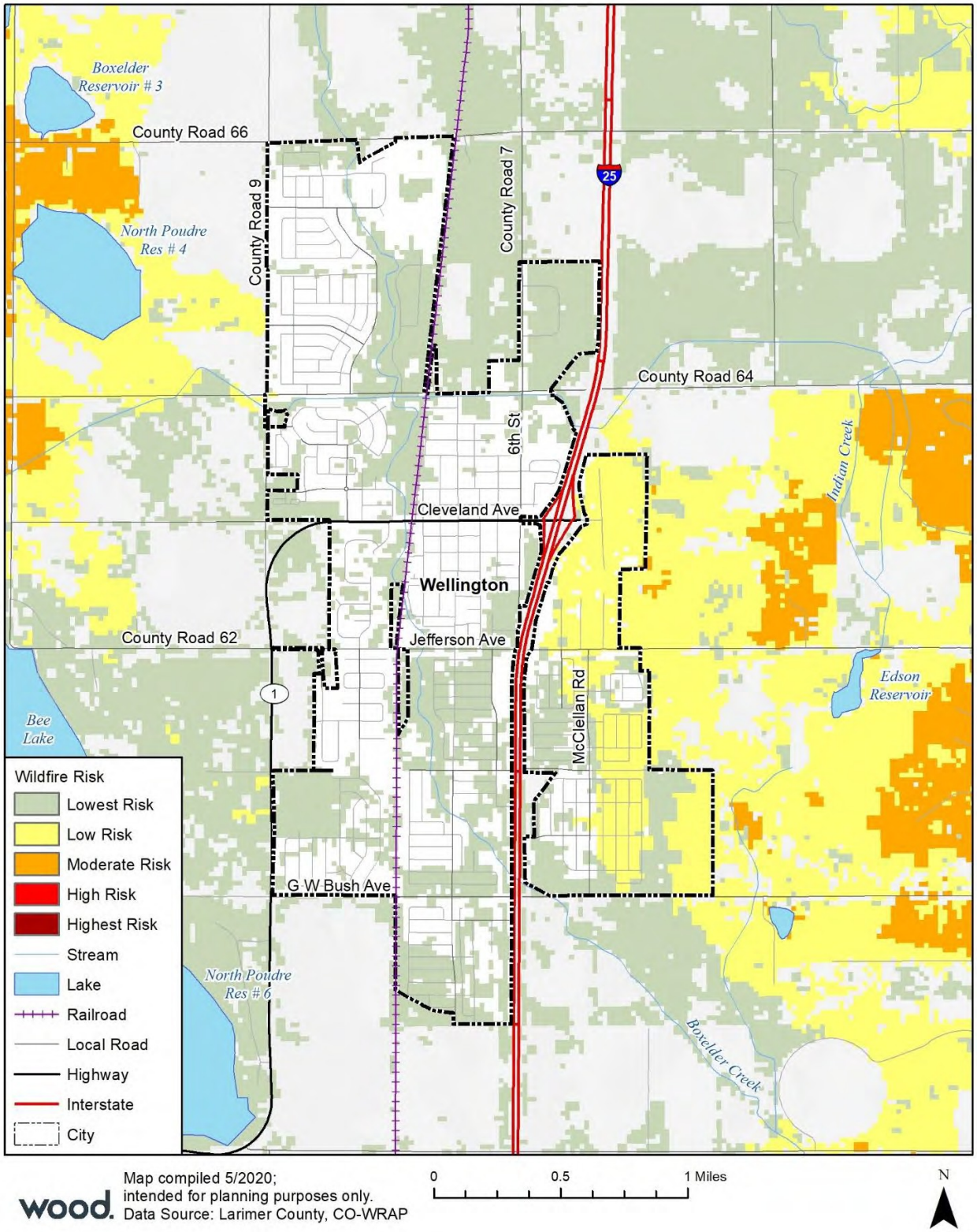
Table T-11 Wellington Critical Facilities Exposed to Wildfire Risk

FEMA Lifeline	Lowest Risk	Low Risk	Moderate Risk	High Risk	Highest Risk	Total
Safety and Security	1					1
Total	**1**	**0**	**0**	**0**	**0**	**1**

Source: Cascarta, CO-WRAP

The overall significance of wildfire for the Town is Medium.

Figure T-8 Wellington Wildfire Risk



T.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Town of Wellington to reduce hazard impacts or that could be used to implement hazard mitigation activities.

T.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table T-12 Town of Wellington Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	No	
Floodplain ordinance	Yes	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Adopted infrastructure design standards
Building codes	Yes	
Fire department ISO rating	Yes	ISO rating 3, as provided by Wellington Fire Protection District
Erosion or sediment control program	Yes	
Stormwater management program	Yes	
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	Yes	
Local emergency operations plan	No	
Other special plans	No	
Flood insurance study or other engineering study for streams	Yes	
Elevation certificates (for floodplain development)	Yes	

Source: Town of Wellington planning team

Table T-13 Town of Wellington Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning and Building Department
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Public Works Department
Planner/engineer/scientist with an understanding of natural hazards	Yes	Public Works Department
Personnel skilled in GIS	No	GIS services provided by consultant
Full time building official	No	New building official position in approved 2021 budget
Floodplain manager	Yes	Public Works Department
Emergency manager	No	

Personnel Resources	Yes/No	Department/Position/Comments
Grant writer	Yes	Finance Department
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Public Works Department
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	

Source: Town of Wellington planning team

Table T-14 Town of Wellington Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	
Impact fees for new development	Yes	Yes	
Incur debt through general obligation bonds	Yes	Yes	
Incur debt through special tax bonds	Yes	No	
Incur debt through private activities	Yes	No	
Withhold spending in hazard prone areas	Yes	No	

Source: Town of Wellington planning team

Table T-15 Town of Wellington Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	No	
Firewise	No	
StormReady	No	
Other: Communications Specialist on staff	Yes	

Source: Town of Wellington planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Wellington has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

T.5.2 Opportunities for Enhancement

Based on the capability assessment, Wellington has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and Town Council on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the

Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

Another capability enhancement would be to consider joining the CRS, which would require enhancements to the Town's floodplain management program; however the low number and value of flood insurance policies in the Town of Wellington means this would not significantly affect flood insurance affordability in the Town.

Although there are specific emergency response plans for critical facilities such as treatment plants, an overall adopted Emergency Action Plan is a probable future improvement.

T.6 Mitigation Strategy

The Town of Wellington has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had two mitigation actions in the 2016 Plan, and has completed one of them:

- North Old Town Drainage Improvements – completed in 2017

The remaining action has been carried over into the 2021 Plan, along with three new actions.

Wellington has used FEMA Pre Disaster Mitigation funding for the Coal Creek Flood Mitigation Project, which removed flood hazard designation from most of the designated properties in the Town of Wellington and north of Wellington along Coal Creek. It reduced the acreage designated by FEMA as a floodplain by approximately 700 to 850 acres. It also reduced the flood hazard and damages for approximately 200 homes, dozens of businesses, and two schools, a community center, and commercial structures. A Letter of Map Revision (LOMR) was filed with FEMA and approved in February 2013.

The local planning team identified and prioritized the following mitigation actions for the Town of Wellington based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included. These actions are also captured in Table 6-2 in the Base Plan.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Wellington will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table T-16 Town of Wellington 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
T-1	Goals 1,2,5 Objectives 3,5	Tornado	**Tornado Warning System.** Town of Wellington has no Tornado Warning System. Provide Tornado Warning System. Tornado Sirens or Reverse 911 type phone notification	**Town of Wellington,** Wellington Fire District, Larimer County Sheriff	TBD	Grants, Annual Budget	Medium	2024	Not completed/deferred.
T-2	Goals 1,2,3,5 Objectives 3,5	Drought, Fire, Hazardous Material	**Source Water Protection Plan.** Plan and implement various strategies for protecting source water for the drinking water system, such as natural and man-made pollutants, hazardous material and other contaminants. Benefits: Damage or loss of human life.	**Town of Wellington**, Larimer County, NPIC	TBD	Grant funding, Town utility funding	High	TBD	New in 2021
T-3	Goals 1,2,5 Objectives 3,5	Flood	**Stormwater Masterplan.** Plan and implement various drainage and stormwater management programs and improvements throughout the Town.	**Town of Wellington**	TBD	Grant funding, Town drainage funds	High	2021-2026	New in 2021
T-4	Goals 1,2,5 Objectives 3,5	Dam Inundation, Flood	**B-Dam Emergency Response Plan and Flood Warning System.** The B-Dams flood control structures located just upstream of the Town and have been reclassified as high hazard dams. These improvements are intended to provide early warning and a coordinated plan in the event of an overtopping event.	Town of Wellington, Larimer County, Town of Timnath, City of Fort Collins, North Poudre Irrigation Company	TBD	Grant funding, various funding from participating jurisdictions	High	2021 - 2026	New in 2021

T.7 Plan Maintenance and Implementation

The Town of Wellington has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

T.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Wellington's implementation strategy included:

- The Town Board will review the plan annually in a work session.
  - This was not accomplished, because of extensive staff turnover.
- We will post mitigation plan on town website and update when mitigation actions are completed.
  - This was accomplished.
- We will integrate mitigation actions into our capital improvements plan.
  - This was partially accomplished. The North Old Town Drainage Improvements project was included in the CIP plan, and has been completed. The Tornado Warning System project was deferred.

Additional ways in which the Town incorporated information from the 2016 HMP into other plans and processes include:

- The lessons learned from the Old Town Drainage Improvements project led directly into a new town-wide Stormwater Masterplan project, which was included in the Town budget for 2021. That budget has been approved and adopted by the Board of Trustees.

T.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Town Administrator or their designee will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Town Administrator, or their designee, will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Board of Trustees.

Integration Into Other Planning Mechanisms

The Town of Wellington will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the Town will:

- Incorporate information from the HMP into the Comprehensive Plan and Land Use update projects, which are currently underway and scheduled for completion in mid-2021, as appropriate.
- Incorporate information from the HMP into various infrastructure masterplans which are either currently underway or included in the adopted 5-year CIP plan, as appropriate.
- Incorporate information from the HMP into existing public education & outreach programs.

- Post information on the Town's website and utilize internal communications staff to get information to citizens and businesses.
- Mitigation actions will be incorporated into the 5-year capital improvement plan, beginning in 2021.
- Appropriate town departments and staff will meet annually to discuss items that need to be updated and look at progress of action items.

Continued Public Involvement

The Town will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

DRAFT

T.8 Letter of Intent to Participate

TOWN OF WELLINGTON
3735 CLEVELAND AVENUE
P.O. BOX 127
WELLINGTON, CO 80549
TOWN HALL (970) 568-3381
FAX (970) 568-9354
www.wellingtoncolorado.gov

LETTER OF INTENT TO PARTICIPATE

December 1, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, Town of Wellington is submitting this letter of intent to confirm that Town of Wellington has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Wellington agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

Town of Wellington understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Troy Hamman, Mayor, commit Town of Wellington to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 1st day of December, 2018

Troy Hamman, Mayor Town of Wellington

U. WELLINGTON FIRE PROTECTION DISTRICT

"Essential community partners serving as a cohesive team of highly skilled, professional responders exceeding expectations with courage, confidence, and uncompromising safety."

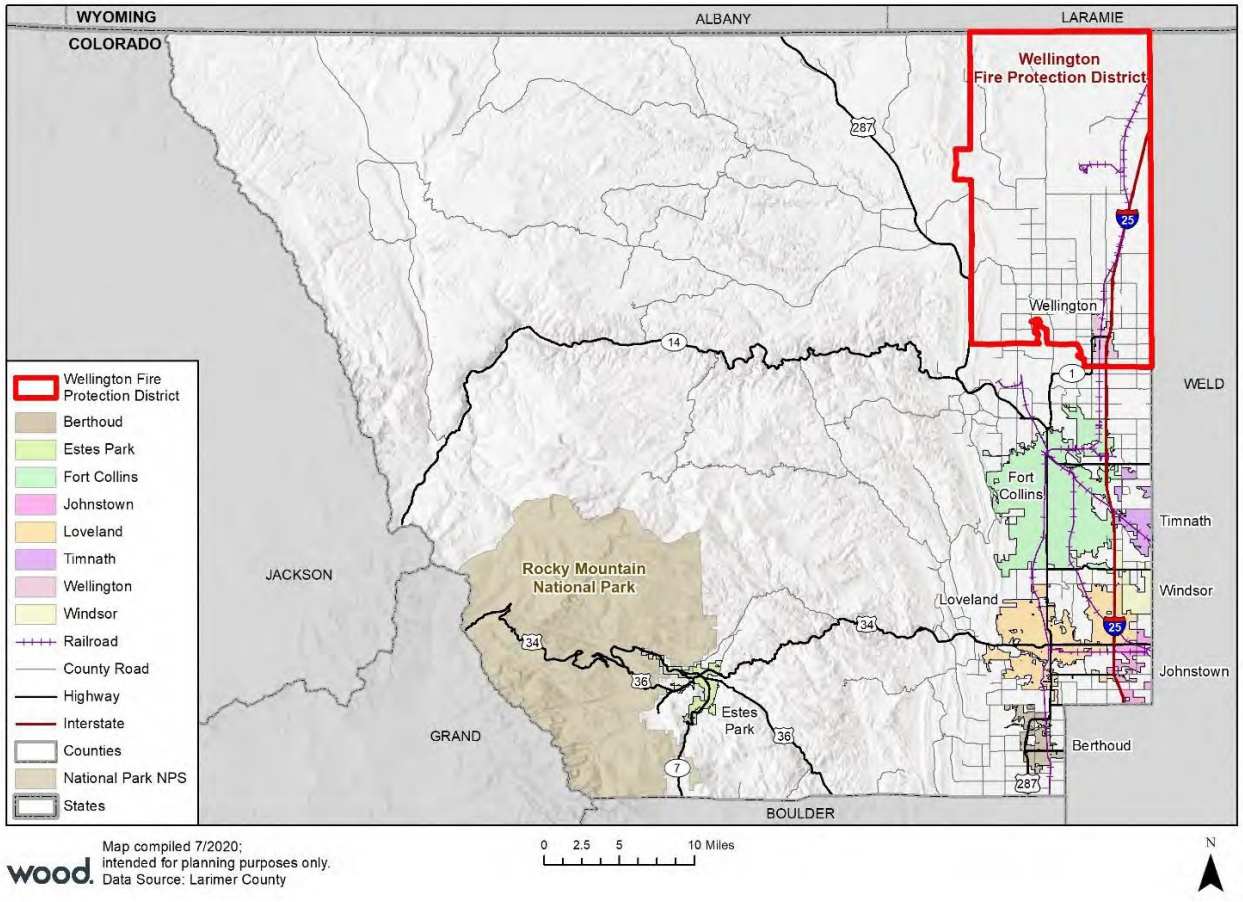
— Vision Statement, Wellington Fire Protection District

U.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Wellington Fire Protection District participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section U.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

Figure U-1 Map of the Wellington Fire Protection District



U.2 Community Profile

The Wellington Fire Protection District (WFPD) serves over 15,000 residents living throughout an area of 288 square miles in Northern Colorado. The members respond to over 900 calls per year ranging from medical emergencies to hazardous material incidents. Along with major transportation and rail corridors, the WFPD also includes significant regional utility transmission infrastructure and natural resources.

U.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table U-1 Hazard Identification and Risk Assessment Summary for the Wellington Fire Protection District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Likely	Extensive	Catastrophic	High
Civil Disturbance	Occasional	Limited	Negligible	Low
Dam Inundation	Occasional	Extensive	Critical	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Occasional	Extensive	Catastrophic	High
Soil Hazards	Occasional	Limited	Negligible	Low
Flood	Highly Likely	Significant	Critical	High
Hazardous Materials	Highly Likely	Significant	Catastrophic	High
Landslide/Rockslide	Occasional	Limited	Negligible	Low
Spring/Summer Storm	Highly Likely	Extensive	Critical	Medium
Tornado	Likely	Extensive	Catastrophic	High
Utility Disruption	Highly Likely	Significant	Critical	High
Wildfire	Highly Likely	Significant	Significant	High
Winter Storm	Highly Likely	Extensive	Critical	Medium

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

U.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Wellington Fire Protection District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Drought
- Earthquake
- Hazardous Materials Incident
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

U.4.1 Civil Disturbance

There is no significant history of civil disturbance risk in the Wellington Fire Protection District. The overall significance of this hazard for the District is Low.

U.4.2 Dam Inundation

Figure 4-5 in Section 4.3.3 of the Base Plan shows potential dam inundation areas in the Wellington Fire Protection District, including a number of High Hazard dams. The overall significance of this hazard for the District is Medium.

U.4.3 Flood

Figure 4-19 in Section 4.3.6 of the Base Plan shows mapped flood hazard areas within the Wellington Fire Protection District boundaries. The overall significance of this hazard for the District is High.

U.4.4 Landslide/Rockslide

Figure 4-27 in Section 4.3.8 of the Base Plan shows little potential landslide or rockslide risk in the Wellington Fire Protection District. The overall significance of this hazard for the District is Low.

U.4.5 Soil Hazards

Section 4.3.9 in the Base Plan shows several historically undermined areas in the Wellington Fire Protection District, but few areas at risk of collapsible or expansive soils. The overall significance of this hazard for the District is Low.

U.4.6 Wildfire

As seen in Section 4.3.13 of the Base Plan, significant portions of the District are classified as being at Moderate or High risk of wildfires. The overall significance of this hazard for the District is High.

U.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Wellington Fire Protection District to reduce hazard impacts or that could be used to implement hazard mitigation activities.

U.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table U-2 Wellington Fire Protection District Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	Actively participating in the Town of Wellington Comprehensive Master Plan process
Zoning ordinance	Yes	Included with the Town of Wellington zoning ordinance
Subdivision ordinance	No	
Growth management ordinance	Yes	Included with the Town of Wellington
Floodplain ordinance	No	
Other special purpose ordinance (stormwater, steep slope, wildfire)	No	
Building codes	Yes	Adopted the 2018 Fire Code in 2019
Fire department ISO rating	Yes	3 in Town and 5/10 in the unincorporated areas
Erosion or sediment control program	No	
Stormwater management program	Yes	Included with the Town of Wellington
Site plan review requirements	Yes	
Capital improvements plan	Yes	Adopted a 5 +1 Capital improvement plan in 2020
Economic development plan	No	
Local emergency operations plan	Yes	Incorporated with Larimer County
Other special plans	No	
Flood insurance study or other engineering study for streams	No	
Elevation certificates (for floodplain development)	No	

Source: Wellington Fire Protection District planning team

Table U-3 Wellington Fire Protection District Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Included with the Town of Wellington
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Included with the Town of Wellington
Planner/engineer/scientist with an understanding of natural hazards	No	
Personnel skilled in GIS	Yes	Deputy District Manager
Full time building official	Yes	Included with the Town of Wellington
Floodplain manager	No	
Emergency manager	Yes	Included with Larimer County
Grant writer	Yes	Deputy District Manager
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Deputy District Manager and partnership with PFA
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	

Source: Wellington Fire Protection District planning team

Table U-4 Wellington Fire Protection District Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	No	No	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	Yes	No	Implemented in 2019
Incur debt through general obligation bonds	Yes	No	
Incur debt through special tax bonds	Yes	No	
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Wellington Fire Protection District planning team

Table U-5 Wellington Fire Protection District Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	
Firewise	No	
StormReady	No	
Other?	No	

Source: Wellington Fire Protection District planning team

U.5.2 Opportunities for Enhancement

Based on the capability assessment, the Wellington Fire Protection District has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

U.6 Mitigation Strategy

The Wellington Fire Protection District has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had two mitigation actions in the 2016 Plan, and has completed one of them:

- Completed implementing a Homeowner Fire Mitigation program through community risk reduction practices, open house opportunities and extensive social media engagement.

The remaining action has been carried over into the 2021 Plan, along with three new actions.

The District planning team identified and prioritized the following mitigation actions for the Wellington Fire Protection District based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table U-6 Wellington Fire Protection District 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
U-1	Goals 1,2,3,5 Objectives 3,5	Hazmat	**Railroad Pre-Incident Planning.** Interagency communication, information sharing, initial response and evacuation planning. Interagency coordinated development of a pre-incident plan and regional exercise. Development of a Pre-Incident Response and Evacuation Plan	**Wellington Fire Protection District,** Colorado State Patrol, Colorado Department of Transportation, BNSF, Larimer County Emergency Management, Larimer County Sheriff's Office, Poudre Fire Authority.	$8,000 (inclusive of estimated personnel time and exercise supplies)	Grant funding, private sector investment, interagency training funds	High	2024	In progress. Work and planning toward this 2015 objective are ongoing. The District is process of preparing hazard mapping and developing a hazard system warning plan
U-2	Goals 1,2,3,4,5 Objectives 1,3,4,5	Hazmat	**H-3 Occupancy Hazard Preparedness.** The District received building plans for an H3 occupancy extraction facility. This is the first of this classification within the Fire District and preventative and educational action are planned to be taken. Benefit: The benefit of this is to prevent significant property damage to a commercial park closely located to a community park. Strengthen our Fire Prevention office with the addition of hazardous material training and public education opportunities around the ground marijuana and hemp industry in northern Colorado.	**Wellington Fire Protection District**, Larimer County, Fire Marshall Association, and surrounding fire jurisdictions	$3,000 (inclusive of estimated personnel time and exercise supplies)	General fund and scholarship opportunities	Medium	2022	New in 2021.
U-3	Goals 1,2,3,4,5 Objectives 3,5	Drought	**Drought Mitigation Planning and Public Outreach.** Interagency communication, information sharing, initial response, and redundancy planning. Interagency coordinated development of a pre-incident plan for emergency access points for water. The District is process of preparing hazard mapping to target key areas of concern. The project will include acquiring above ground storage for water as well as stocking bottled water for consumption. The District will then conduct a robust public outreach program to educate the public on the new planning efforts, and address conservation efforts to help mitigate loss of property or life from drought conditions.	**Wellington Fire Protection District,** Town of Wellington, and Larimer County Emergency Management	$100,000	General fund, community partnerships and grant funding	Medium	2024	New in 2021. A PIO position was recently added to the District to support community awareness.

U-4	Goals 1,2,3,5 Objectives 3,5	Wildfire	**Homeowner Fire Mitigation Program.** The District has a high risk of large-scale grassfires that can move quickly and cause damage and destruction. This project will inform homeowners and property owners of best practices in mitigating properties against wildfire and grassfire hazards, and encourage implementation of mitigation activities. Present at community meetings, provide written recommendations and actions to homeowners and provided one-on-one assessments regarding wildfire/grassfire risk.	**Wellington Fire Protection District,** Larimer County Emergency Management, Larimer County Sheriff's Office, Poudre Fire Authority.	$2,500 (inclusive of estimated personnel time and exercise supplies)	Grant funding, private sector investment, interagency training funds	Medium	2024	New in 2021. A PIO position was recently added to the District to support community awareness.

U.7 Plan Maintenance and Implementation

Wellington Fire Protection District has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the district will continue public participation in the plan maintenance process.

U.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- The plans and our mitigation actions will be reviewed and updated with County, Town, and mutual aid agencies on an annual basis.
  - This wasn't accomplished, because of prioritization and staffing availability.
- We will work cooperatively with the County, Town and other local agencies to seek input and share in public communication efforts.
  - This was accomplished through shared coordination and public information.
- Plans and actions will be integrated into fire district SOP's, Strategic Planning, Annual Budget Development, and coordinated with County and Town efforts.
  - This wasn't accomplished but is currently in progress. It was not completed due to limitations of staffing and prioritization.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes included integrating 2016 HMP information into the adopted 2020 Capital Improvement Plan.

U.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

Integration Into Other Planning Mechanisms

The Wellington Fire Protection District will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- WFPD and relevant entities will meet annually to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.
- Post information on the Town's and WFPD's website and utilize community partnerships to get information to citizens and businesses.
- Mitigation actions will continue to be incorporated in capital improvement planning.
- Incorporate information from the HMP into the current update of the Town's comprehensive plan/zoning code/etc.]

Continued Public Involvement

The Wellington Fire Protection District will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

U.8 Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE
WELLINGTON FIRE PROTECTION DISTRICT

December 14, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Wellington Fire Protection District (District) is submitting this letter of intent to confirm that the District has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the District agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

The District understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Gary L. Green, Fire Chief, commit the District to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 14th day of December, 2018

Gary L. Green
Fire Chief

V. TOWN OF WINDSOR

"Windsor is the hub of Northern Colorado; a safe, unique and special town that offers diverse cultural and recreation opportunities. Windsor is recognized as a regional leader that demonstrates fiscal responsibility, environmental stewardship and strategic excellence. A town that thinks big and embraces its hometown pride. The Town of Windsor promotes community and hometown pride through sustainable, excellent and equitable delivery of services in a fiscally responsible manner."

–Town of Windsor Strategic Plan, 2018

V.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. The Town of Windsor participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section V.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the Town on the Planning Team are listed in Appendix B.

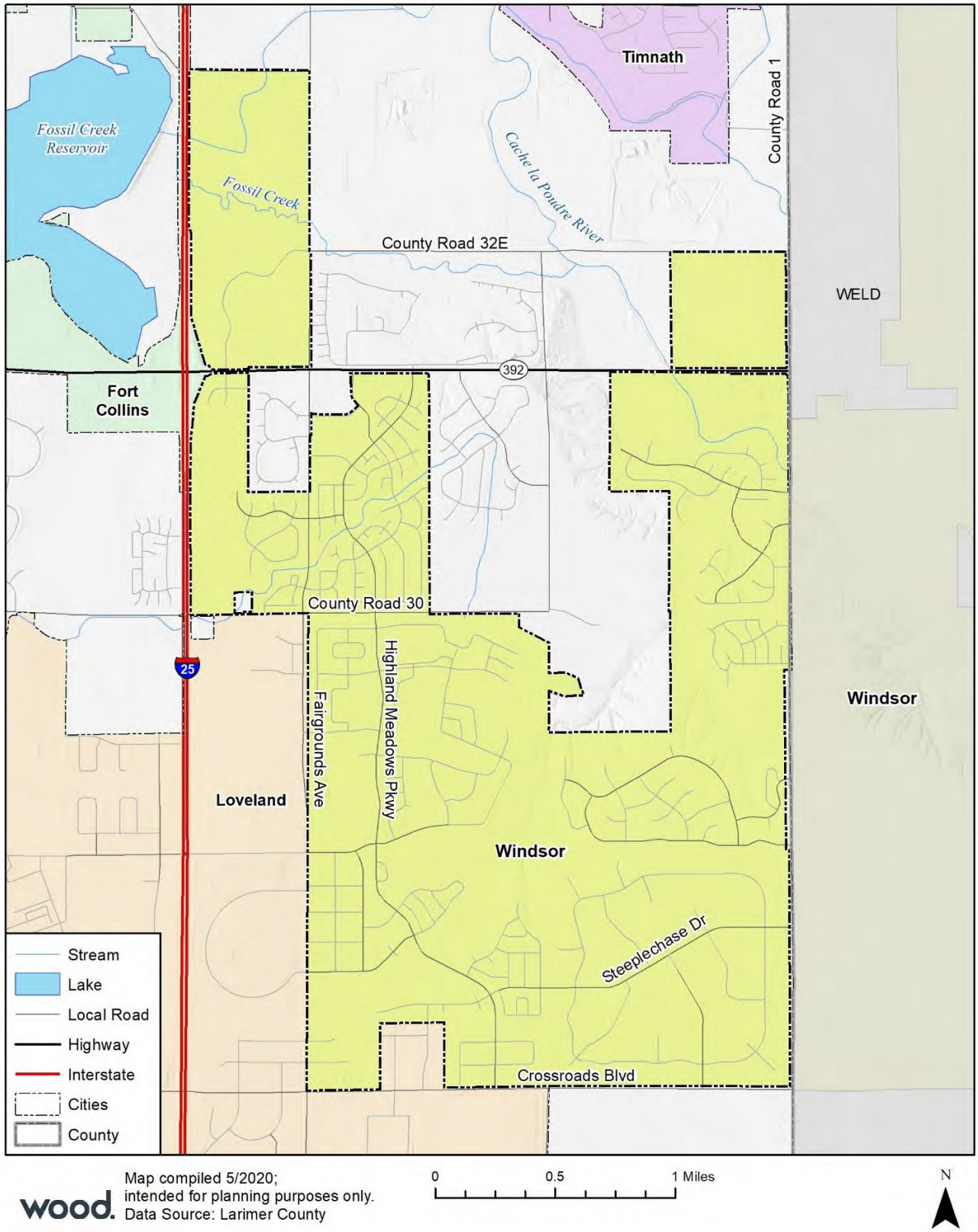
More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

V.2 Community Profile

Windsor was founded in 1882 and was incorporated on April 2, 1890. The Town's location in the fertile Cache la Poudre River Valley, the introduction of irrigation, and the development of the railroad through the area each contributed to the early development of the Town and Region. Windsor's early economy was centered largely on agriculture. As compared to the dramatic population increases of the 1970s, Windsor experienced only moderate growth between 1980 and 1990. During this time period, population growth in the Region was concentrated mainly in the larger cities of Fort Collins and Loveland, where large employers such as the Colorado State University and the Hewlett-Packard Corporation are located.

Figure V-1 shows a map of the Town of Windsor.

Figure V-1 Map of the Town of Windsor



V.2.1 Demographics

The following tables and graphs summarize key demographic and social characteristics of the Town of Windsor.

Table V-1 Town of Windsor Statistics

Town of Windsor	2014	2018	% Change
Population	19,865	25,232	27.0%
Median Age	38	38.8	2.1%
Total Housing Units	7,530	9,207	22.3%
Housing Occupancy Rate	95.8%	97.2%	1.5%
% of Housing Units with no Vehicles Available	4.10%	2.50%	-39.0%
Median Home Value	$276,400	$374,700	35.6%
Unemployment Rate	4.4%	3.0%	-31.8%
Mean Travel Time to Work (minutes)	23.7	24.8	4.6%
Median Household Income	$82,724	$96,710	16.9%
Per Capita Income	$36,082	$41,262	14.4%
% of Individuals Below Poverty Level	4.8%	4.3%	-10.4%
% Without Health Insurance	6.4%	3.3%	-48.4%
# of Households	7,210	8,952	24.2%
Average Household Size	2.7	2.8	2.6%
% of Population Over 25 with High School Diploma	96.8%	97.2%	0.4%
% of Population Over 25 with bachelor's degree or Higher	44.6%	44.9%	0.7%
% with Disability	7.7%	7.5%	-2.6%
% Speak English less than "Very Well"	1.1%	1.6%	45.5%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table V-2 Demographic and Social Characteristics Compared to the County and State

Demographic & Social Characteristics (as of 2018)	Windsor	County	Colorado
Median Age	38.8	35.9	36.6
Housing Occupancy Rate	97.2%	91.7%	89.8%
% of Housing Units with no Vehicles Available	2.5%	4.1%	5.2%
Median Home Value	$374,700	$336,200	$313,600
Unemployment	3.0%	5.0%	4.7%
Mean Travel Time to Work (minutes)	24.8	23.2	25.5
Median Household Income	$96,710	$67,664	$68,811
Per Capita Income	$41,262	$35,390	$36,415
% of Individuals Below Poverty Level	4.3%	12.0%	10.9%

Demographic & Social Characteristics (as of 2018)	Windsor	County	Colorado
% Without Health Insurance	3.3%	6.3%	8.1%
Average Household Size	2.8	2.5	2.6
% of Population Over 25 with High School Diploma	97.2%	95.8%	91.4%
% of Population Over 25 with bachelor's degree or Higher	44.9%	46.3%	40.1%
% with Disability	7.5%	9.8%	10.6%
% Speak English less than "Very Well"	1.6%	2.6%	5.9%

Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table V-3 Demographics by Race and Sex

Windsor	Population	%
Total Population	25,232	100%
Male	12,241	48.5%
Female	12,991	51.5%
White, not Hispanic	21,852	86.6%
Hispanic or Latino	2,007	8.0%
Black	100	0.4%
Asian	603	2.4%
American Indian and Alaska Native	106	0.4%
Native Hawaiian and Other Pacific Islander	9	0.0%
Some other race	224	0.9%
Two or more races	737	2.9%

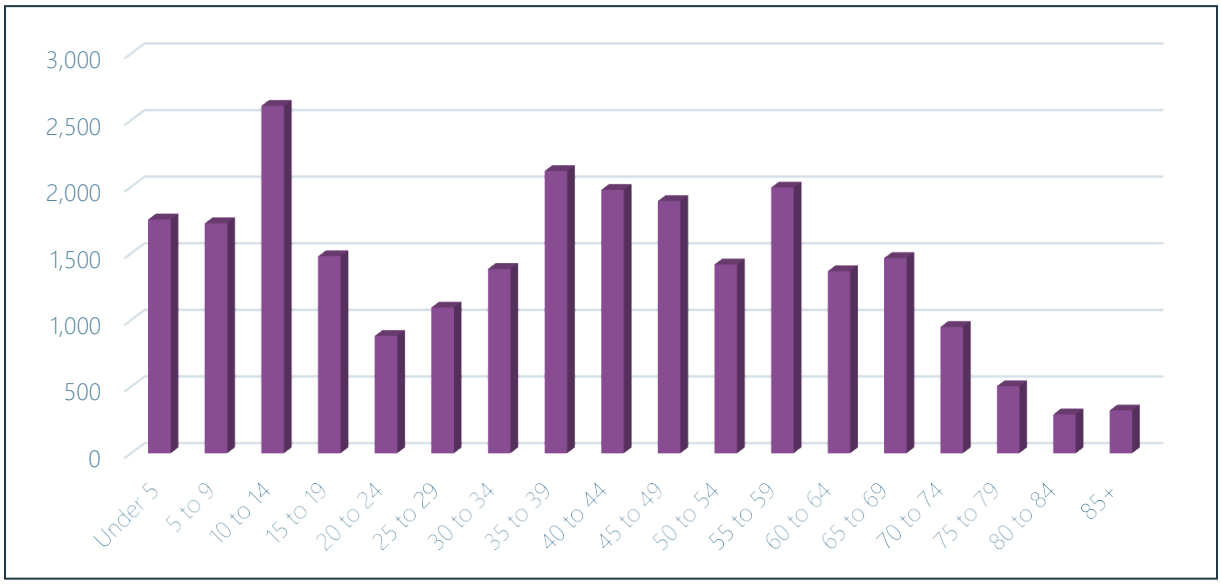
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Table V-4 Types and Total Amounts of Housing Units in Windsor

Type of Housing Units	Total	%
Total housing units	9,207	100%
1-unit detached	7,812	84.8%
1-unit attached	337	3.7%
2 units	119	1.3%
3 or 4 units	128	1.4%
5 to 9 units	417	4.5%
10 to 19 units	88	1.0%
20 or more units	278	3.0%
Mobile home	28	0.3%
Boat, RV, van, etc.	0	0.0%

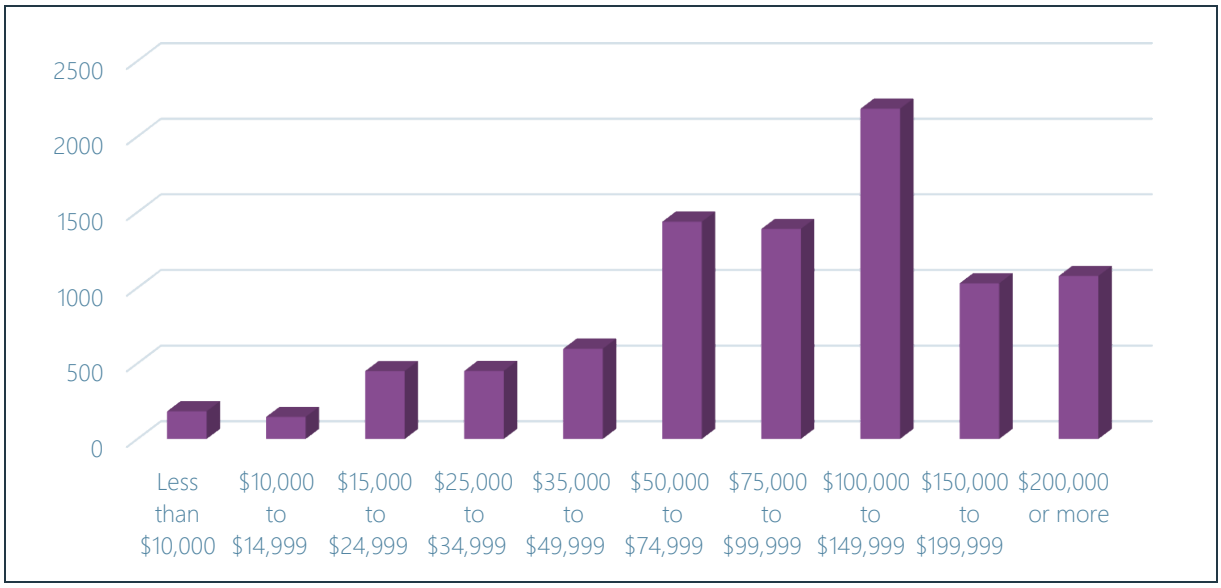
Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure V-2 Town of Windsor Population Distribution by Age



Source: U.S. Census Bureau American Community Survey, www.census.gov/

Figure V-3 Town of Windsor Income Distribution



Source: U.S. Census Bureau American Community Survey, www.census.gov/

V.2.2 Social Vulnerability

Social vulnerability scores for the Town of Windsor can be seen in Figures 2-4 through 2-8 in Section 2 of the Base Plan. Windsor's overall social vulnerability is below average compared to the rest of Larimer County and Colorado as a whole. In particular, Windsor's vulnerability ranks below average in the minority status and language vulnerability, as well as housing and transportation vulnerability. However, the Town's vulnerability ranks above average in the household composition and disability vulnerability category. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in order

to reduce vulnerability. Over time, the town should continue to monitor their local social vulnerability as demographic, economic, and housing related conditions change.

For more discussion of Social Vulnerability, see Section 2.7 of the Base Plan.

V.3 Hazard Identification and Risk Assessment

The Town of Windsor is situated in both Larimer and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the town that lie specifically within Larimer County. The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table V-5 Hazard Identification and Risk Assessment Summary for the Town of Windsor

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Significant	Medium
Dam Inundation	Occasional	Limited	Significant	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Likely	Limited	Critical	High
Hazardous Materials	Likely	Limited	Significant	Medium
Landslide/Rockslide	Likely	Limited	Significant	Low
Soil Hazards	Highly Likely	Significant	Significant	Medium
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	Medium
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

V.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Windsor, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the Town's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Tornado
- Utility Disruption

For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

V.4.1 Community Asset Inventory

Table V-6 shows the total number of improved parcels, properties, and their improvement and content values for the Town of Windsor. See Section 4.2.2 of the Base Plan for details and methodology.

Table V-6 Total Exposure of Improved Properties within the Town of Windsor

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value
Agricultural	2,183	2,587	$848,882,468	$848,882,468	$1,697,764,936
Commercial	1,077	1,753	$542,488,008	$542,488,008	$1,084,976,016
Exempt	310	1,178	$282,034,786	$282,034,786	$564,069,572
Industrial	91	117	$77,906,548	$116,859,834	$194,766,382
Mobile Home	257	3,059	$242,398,985	$121,199,488	$363,598,473
Multiple Unit	46	134	$18,812,653	$18,812,653	$37,625,306
Residential	25,361	27,742	$9,199,343,297	$4,599,671,632	$13,799,014,929
Total	29,325	36,570	$11,211,866,745	$6,529,948,869	$17,741,815,614

Source: Larimer County GIS/Assessor's Office, Wood analysis.

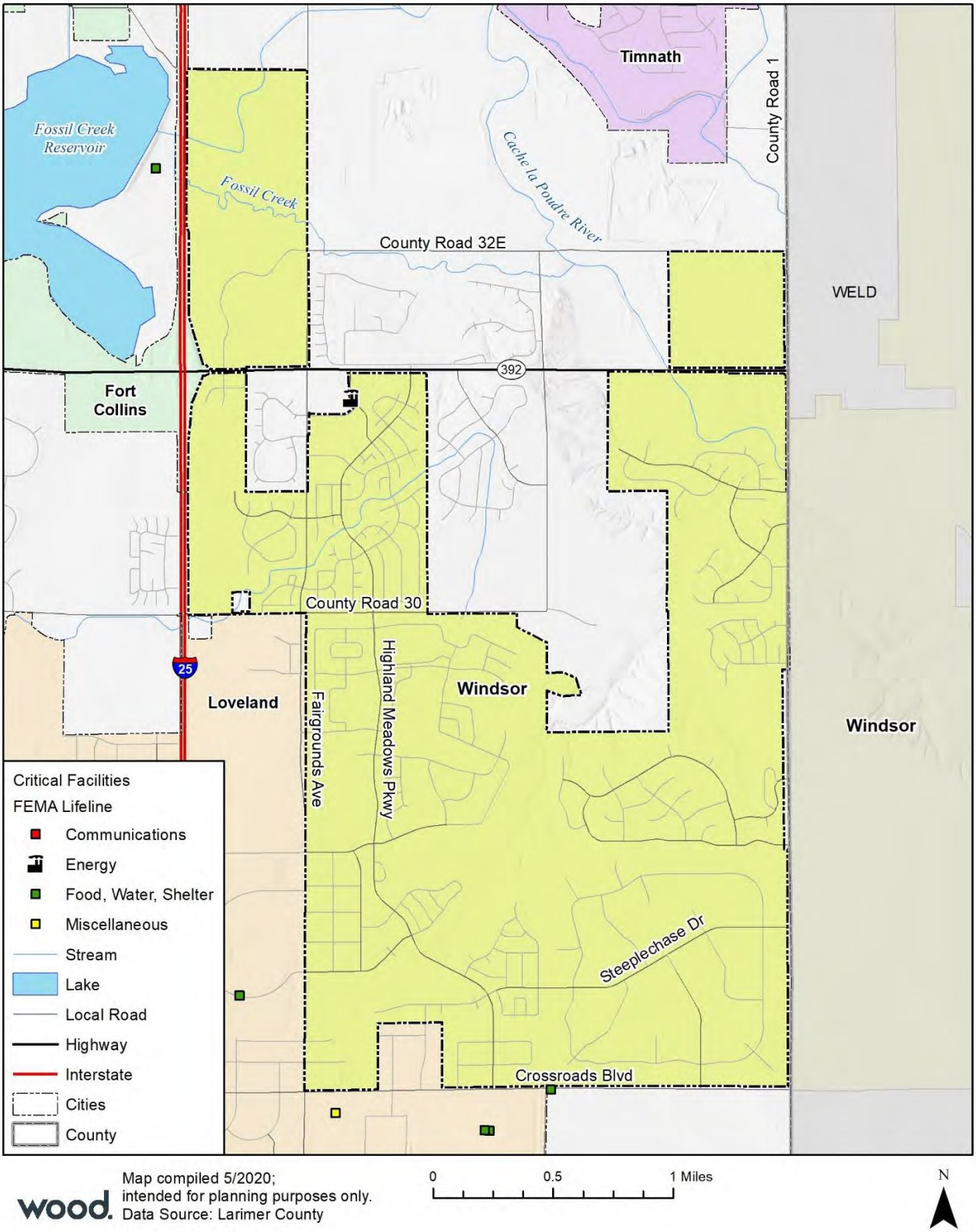
Table V-7 lists summary information for the one critical facility identified by the Town as important to protect or that provide critical services in the event of a disaster. This facility is mapped in Figure V-4. For additional information on the definitions behind each critical facility category, source, and other details refer to Section 4.2 of the Base Plan.

Table V-7 Town of Windsor Critical Facilities and Infrastructure Summary

FEMA Lifeline	Count
Energy	1
Total	1

Source: Cascarta, Larimer County Assessor's Office, Wood analysis.

Figure V-4 Town of Windsor Critical Facilities and Infrastructure



V.4.2 Dam Inundation

Potential dam inundation areas in and around the Town of Windsor are shown in Figure V-5.

Figure V-5 Dam Inundation Areas for the Town of Windsor

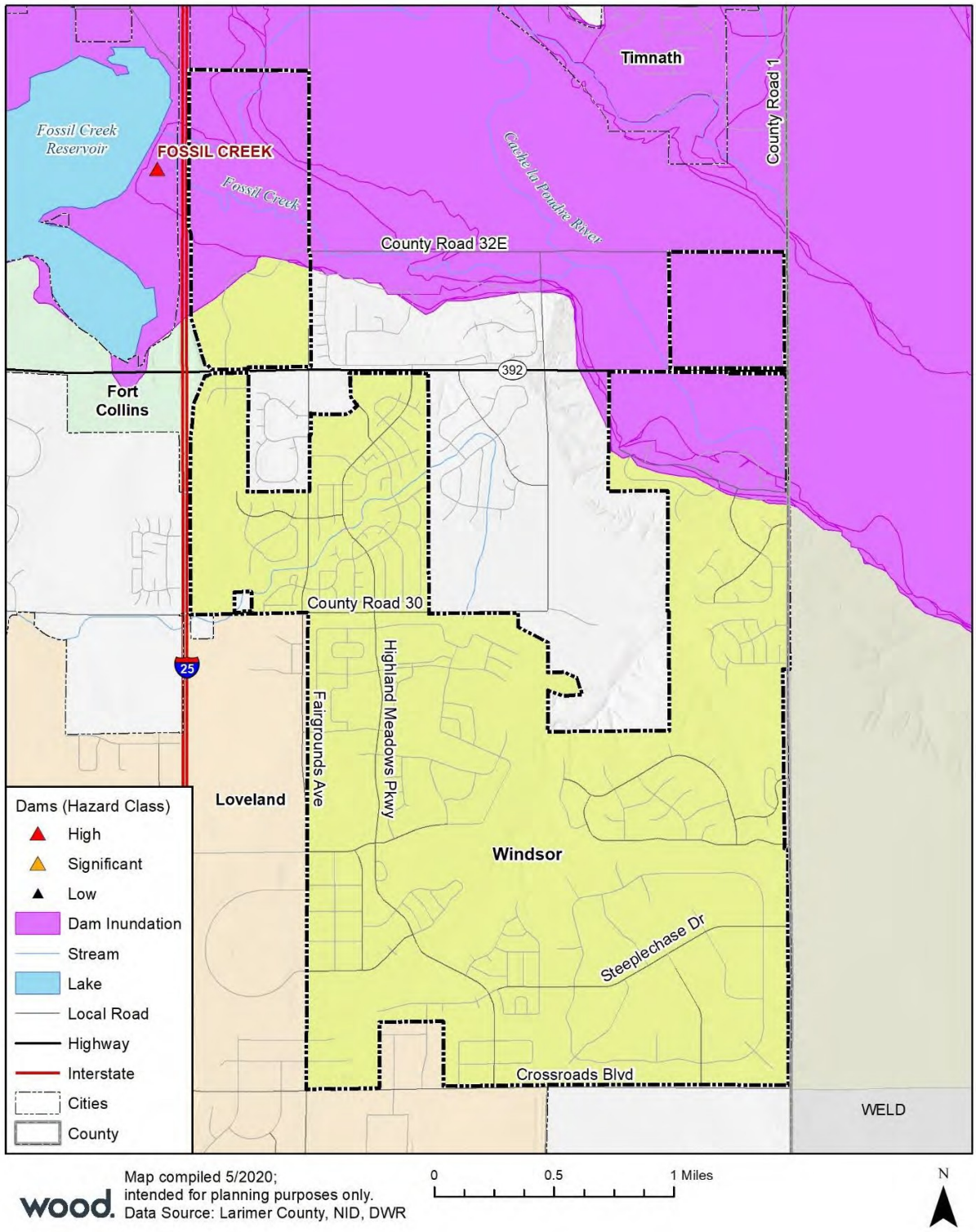


Table 4-17 in Section 4.3.3 of the Base Plan lists dams of concern for Larimer County. Dams upstream of the Town of Windsor are:

- Cobb Lake
- Fossil Creek
- Warren Lake

Table V-8 shows that Windsor has 147 parcels potentially at risk of dam inundation, valued at $93M; This constitutes 5% of the total improved parcels in the Town. An estimated 364 residents live in those parcels.

Table V-8 Town of Windsor Parcels Potentially at Risk of Dam Inundation

Property Type	Improved Parcels	Building Count	Improved Value	Content Value	Total Value	Population
Agricultural	1	1	$140,720	$140,720	$281,440	
Commercial	146	148	$61,844,668	$30,922,334	$92,767,002	364
Total	**147**	**149**	**$61,985,388**	**$31,063,054**	**$93,048,442**	**364**

Source: USACE National Inventory of Dams 2018, Colorado Dam Safety Program, Larimer County GIS, U.S. Census Bureau, Wood analysis

None of the critical facilities identified in the Town of Windsor are located in areas at risk of dam inundation.

Based on the above analysis, the spatial extent and severity of the dam inundation hazard in the Town of Windsor is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

V.4.3 Flood

FEMA mapped floodplains in and around the Town of Windsor are shown in Figure V-6.

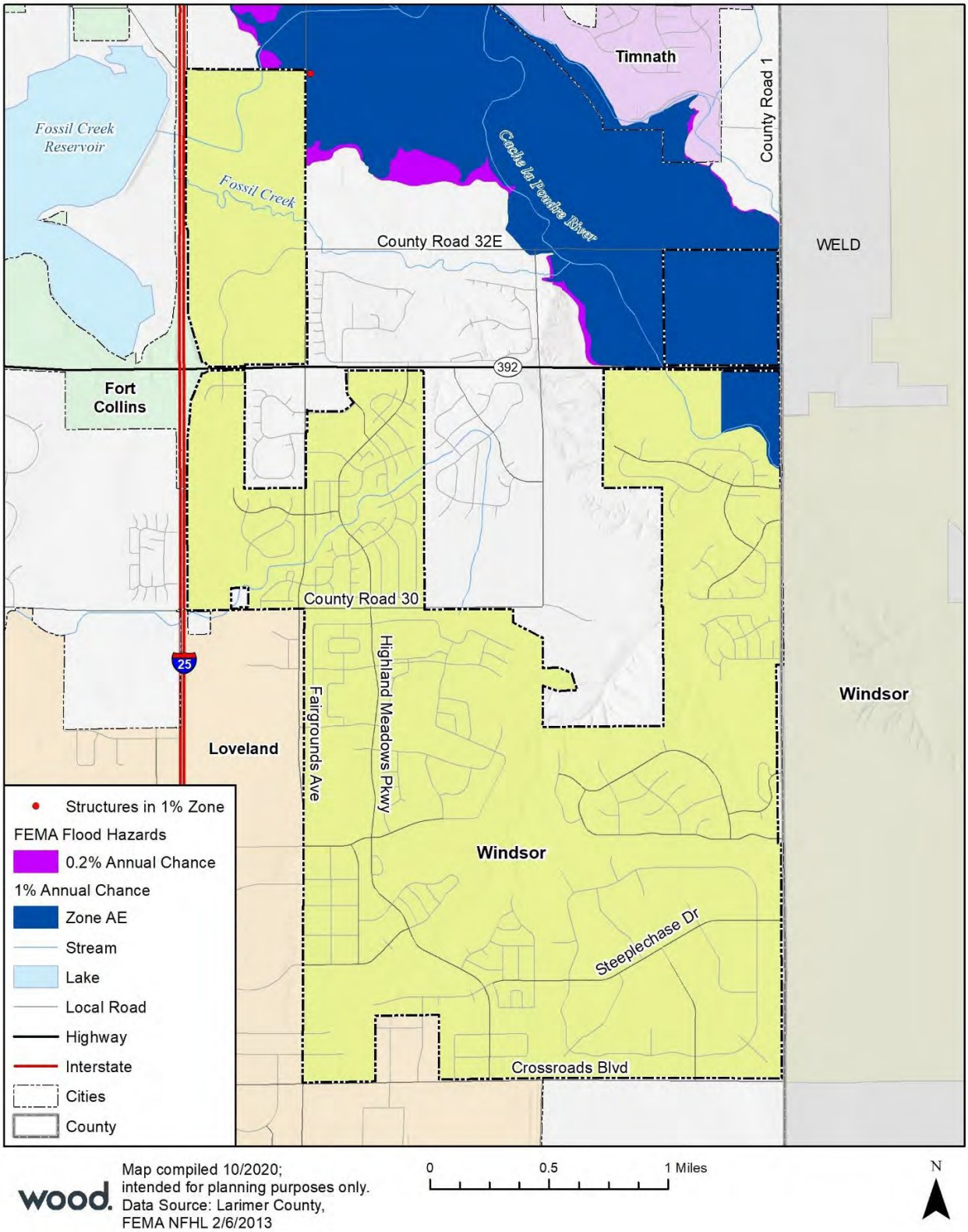
The Town of Windsor does not have any parcels, buildings, or critical facilities in either the 1% or 0.2% annual chance of flooding areas.

Based on the above analysis, the spatial extent and severity of the flood hazard in the Town of Windsor is lower than Larimer County as a whole. The overall significance of this hazard for the Town is Low.

National Flood Insurance Program Policy Analysis

Windsor has participated in the National Flood Insurance Program (NFIP) since 1991. NFIP insurance data shows that as of January 2021 there were 63 flood insurance policies in force in the Town with $19,820,000 of coverage, although the majority of these are on the Weld County side of town. There have been 11 historical claims for flood losses, totaling $6,932. There are no repetitive or severe repetitive loss structures as defined by the NFIP. The Town of Windsor does not participate in the Community Rating System (CRS) program.

Figure V-6 FEMA Special Flood Hazard Areas for the Town of Windsor



V.4.4 Hazardous Materials Incident

The only designated hazardous materials route passing through or near the Town of Windsor is I-25. None of the County's Risk Management Plan (RMP) facilities are located within the Town limits.

The National Response Center (NRC) data cited in Section 4.3.7 of the Base Plan includes just two hazardous materials incidents in or near the Town of Windsor from 1987 through 2019. This averages out to one hazardous materials incident every fifteen years. None of those incidents reported any deaths, injuries, or significant property damage.

Based on the above analysis, the frequency and spatial extent of hazardous materials incidents in the Town of Windsor is lower than that of Larimer County as a whole. The overall significance of this hazard for the Town is Medium.

V.4.5 Landslide/Rockslide

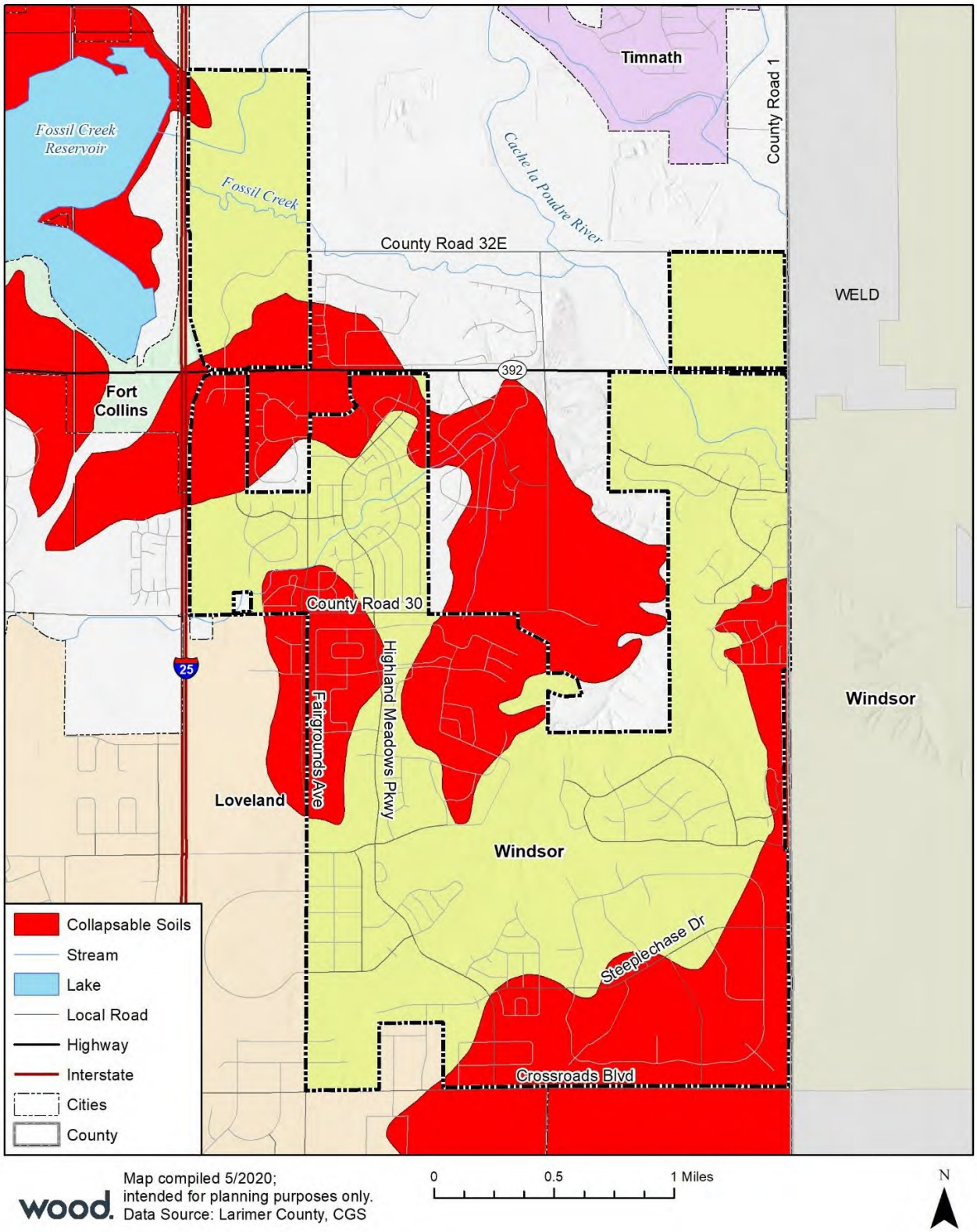
There are no identified areas of landslide or rockslide risk in the Town of Windsor. The overall significance of this hazard for the Town is Low.

V.4.6 Soil Hazards

No historically undermined areas or areas at risk of land subsidence or expansive soil have been identified in the Town of Windsor; however, portions of the Town are at risk of collapsible soil, as shown in Figure V-7. There are no critical facilities at risk of land subsidence, collapsible soil, or expansive soil within the Town.

Table 4-49 in Section 4.3.9 of the Base Plan shows 1,019 parcels and 1,032 buildings at risk to collapsible soils, with a total value of $777,079,621; this represents 35% of the total parcels in Windsor. The overall significance of this hazard for the Town is Medium.

Figure V-7 Potential Collapsible Soils Areas – Town of Windsor



V.4.7 Tornado

The Town of Windsor has had a significant history of tornadoes. There have been six recorded tornadoes in Windsor between 1954 and 2020, although all six were in the Weld County side of Town.

The most severe event occurred on May 22, 2008. This EF3 tornado traveled in a north westerly direction and reached speeds of over 165 miles per hour. This tornado event consisted of a formation of several combined tornadoes forming a wedge that was between a half and three quarters of a mile wide. The tornado caused damage to not only the Town of Windsor but also the towns of Milliken, Platteville, Gilchrest, and the City of Greeley. One person was killed at the Missile Silo Campground near Greeley. The tornado impacted area received a Presidential Major Disaster Declaration, and received $420 million in FEMA Individual Assistance. The Rocky Mountain Insurance Information Association (RMIIA) reported that there was an estimated $193.5 million in insured damages and approximately 24,000 auto and homeowners claims. Additional details concerning this damaging event can be found in the post- event reports posted on the Town's website.

The overall significance of this hazard for the Town is High.

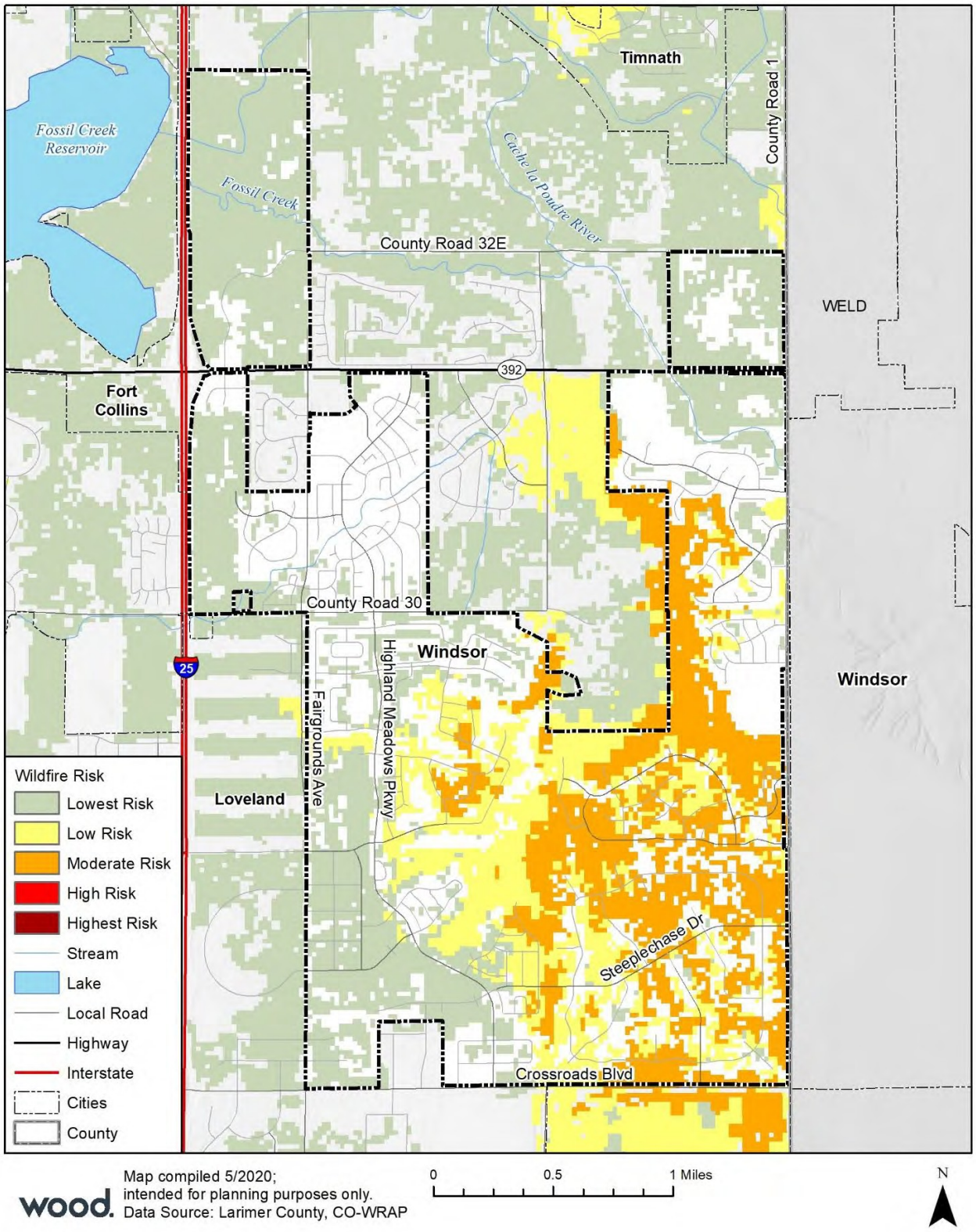
V.4.8 Wildfire

Areas in and around the Town of Windsor at risk of wildfire, based on CO-WRAP assessment, are shown in Figure V-8. Tables 4-72, 4-73, and 4-74 in the Wildfire profile of the Base Plan shows that the Town has 366 parcels and 368 buildings at moderate, high, or highest risk of wildfire, worth an estimated $276,220,525. An estimated 1,034 residents live in areas at moderate, high, or highest risk of wildfire.

The Town has no critical facilities identified at being at risk of wildfires.

The overall significance of this hazard for the Town is Medium.

Figure V-8 Windsor Wildfire Risk



V.5 Capabilities Assessment

This section profiles the programs and policies currently in use by the Town of Windsor to reduce hazard impacts or that could be used to implement hazard mitigation activities.

V.5.1 Existing Capabilities

The following tables summarize the Town's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table V-9 Town of Windsor Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	Yes	
Floodplain ordinance	Yes	
Other special purpose ordinance	Yes	Stormwater ordinance
Building codes	Yes	
Fire department ISO rating	Yes	ISO Rating 2/10 and 3/10
Erosion or sediment control program	No	
Stormwater management program	Yes	
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	Yes	
Local emergency operations plan	No	Yes-Strategic Econ Plan
Other special plans	Yes	Transportation Master Plan, Roadway improvement Plan and others
Flood insurance study or other engineering study for streams	Yes	
Elevation certificates (for floodplain development)	Yes	

Source: Town of Windsor planning team

Table V-10 Town of Windsor Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position/Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community Development Department/4 Licensed Civil Engineers/5 AICP certified Planners
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Community Development Department/5 Civil Engineers/4 P.E.'s and 1 E.I.T.
Planner/engineer/scientist with an understanding of natural hazards	Yes	Community Development Department/2 Licensed Civil Engineers with floodplain experience
Personnel skilled in GIS	Yes	IT Department/2 GIS Specialists Engineering Division/2 GIS data technicians
Full time building official	Yes	Contract with SAFEbuilt to perform building plan review and building inspection services
Floodplain manager	Yes	Community Development Department/1-Certified Floodplain Manager
Emergency manager	Yes	Shared jointly with other departments
Grant writer	No	

Personnel Resources	Yes/No	Department/Position/Comments
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	NOCO Alerts/Reverse 911

Source: Town of Windsor planning team

Table V-11 Town of Windsor Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	
Capital improvements project funding	Yes	Yes	
Authority to levy taxes for specific purposes	Yes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Yes	Fees for water and sewer. Third party gas and electric providers
Impact fees for new development	Yes	Yes	Impact fees for roads, parks, drainage, and fire
Incur debt through general obligation bonds	Yes	No	
Incur debt through special tax bonds	Yes	Yes	
Incur debt through private activities	Yes	No	
Withhold spending in hazard prone areas	Yes	No	

Source: Town of Windsor planning team

Table V-12 Town of Windsor Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Water & Sewer Board, Town Board
Firewise	No	
StormReady	No	

Source: Town of Windsor planning team

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities.

Building codes are another tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Windsor has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

V.5.2 Opportunities for Enhancement

Based on the capability assessment, Windsor has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the Town to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform Town staff and Town Council on how best to integrate hazard information and mitigation projects into the Town policies and ongoing duties of the

Town. Continuing to train Town staff on mitigation and the hazards that pose a risk to the Town will lead to more informed staff members who can better communicate this information to the public.

Another capability enhancement would be to consider joining the CRS, which would require enhancements to the Town's floodplain management program; however the low number and value of flood insurance policies in the Town of Windsor means this would not significantly affect flood insurance affordability in the Town. The benefits of joining the StormReady program should also be explored.

V.6 Mitigation Strategy

The Town of Windsor has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The Town had six mitigation actions in the 2016 Plan, and has completed one of them:

- Flood Mitigation Project

The remaining actions have been carried over into the 2021 Plan, along with two new actions.

The local planning team identified and prioritized the following mitigation actions for the Town of Windsor based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

National Flood Insurance Program

Recognizing the importance of the National Flood Insurance Program (NFIP) in mitigating flood losses, the Town of Windsor will place an emphasis on continued compliance with the NFIP. As an NFIP participant, the Town has and will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain zoning ordinance as well as review of any potential development in special flood hazard areas.

Table V-13 Town of Windsor 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
V-1	Goals 1 Objectives 3,5	Flood	**NFIP Promotion and Administration. As** participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status. The benefits are to flood-prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses. Continued administration of floodplain regulations and updates to town ordinances.	**Floodplain Management Officials**, PW Department	Existing budget	NA	Medium	Ongoing	Annual Implementation. The Town reviews and permits any development within the floodplain. Floodplain information is posted on the Town of Windsor's website. Updates are performed to Town ordinances with regard to changing floodplain regulations.
V-2	Goals 1,2,3 Objectives E	Civil Disturbance, Dam Inundation, Earthquake, Flood, Landslide/ Rockslide, Spring/ Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Emergency Power.** In Colorado, there are numerous events that could knock out power to Town offices. In case of emergency, there are several Town employees who need to stay connected to serve our residents. The Town plans on purchasing a backup generator. Purchase a backup generator.	**Town of Windsor**	Existing budget	NA	Medium	2022	In Progress. Windsor has purchased a backup generator for Town Hall and will work on placing one at the Town Shops.
V-3	Goals 2,3,4 Objectives 1,5	Biological Hazards, Civil Disturbance, Dam Inundation, Drought, Earthquake, Flood, Hazardous Materials, Landslide/ Rockslide,	**LETA 911.** Residents need to be informed in case emergency situations arise. The Town continuously partners with LETA 911 to provide emergency communications to our residents. We will provide LETA 911 each year and encourage residents to sign-up for this great service. Continue to provide 911 services and related outreach.	**Larimer County**, Town of Windsor and other jurisdictions	Existing budget	Already funded	Medium	Ongoing	Annual Implementation. We will continue to work with LETA for emergency communications.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
		Soil Hazards, Spring/ Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm							
V-4	Goals 1,2 Objectives 5	Flood	**Flood Prevention on CR 13.** CR 13 is vulnerable to flooding each year. The Town invests $50,000 annually to prevent flooding by removing excess gravel.	**Town of Windsor**	Existing budget	Already funded	Medium	Ongoing	Annual Implementation. Town removed gravel and sediment deposits from the river in 2017 to mitigate flooding at CR 13. The Town continues to monitor gravel/sediment deposits and budget $50,000 annually for routine maintenance along the Cache La Poudre River.
V-5	Goals 1,4 Objectives 1,3,5	Flood	**NFIP participation.** Windsor adopted the model flood ordinance in Jan of 2014 as required by the State of Colorado. The Town enforces the floodplain regulations in accordance with FEMA's requirements.	**Town of Windsor**	Existing budget	Already funded	Medium	Ongoing	Annual Implementation. The Town continues to participate in the NFIP by enforcing floodplain regulations in accordance with FEMA requirements. The Town also reviewed and supports the States recent Floodplain RiskMap update to the Cache La Poudre River.
V-6	Goals 1,2,5 Objectives 3,4,5	Flood	**Flood Mitigation.** Update Town ordinances regarding floodplain regulations. Benefits: identify areas of possible flooding and reduce losses from future flooding.	**Community Development**	Unknown	Staff Time	High	2022	New in 2021
V-7	Goals 1,2,5 Objectives 3,4,5	Flood	**Floodplain.** Enforce floodplain regulations in accordance with FEMA. Benefits: loss of property and life.	**Community Development**	Unknown	CIP	High	Ongoing	New in 2021

V.7 Plan Maintenance and Implementation

The Town of Windsor has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

V.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The Town of Windsor's implementation strategy included:

- The Larimer County (and Weld County Hazard Mitigation Plan) will be reviewed annually by Town Board and review by Engineering/Public Work/ Police Department Staff to ensure items are up to date.
  - This was accomplished
- The public will have the opportunity to voice their opinions during Town Board meetings.
  - This was accomplished,
- We will integrate mitigation actions into our capital improvements plan
  - This was accomplished

V.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the Town to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Chief of Police will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Chief of Police will also be responsible for representing the Town on future Larimer County Planning Team meetings, and for coordination with town staff and departments during plan updates. The Town, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the Town Board of Trustees.

Integration Into Other Planning Mechanisms

The Town of Windsor will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the Town will:

- Risk Manager and Department Heads will meet annually to discuss items that need to be updated and look at progress of action items.
- Incorporate information from the HMP into existing public education & outreach programs.
- Post information on the Town's website and utilize the marketing and communications firm to get information to citizens and businesses.
- Mitigation actions will be incorporated in capital improvement planning.
- Incorporate information from the HMP into the next update of the Town's comprehensive plan/zoning code/etc.]

Continued Public Involvement

The Town will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

V.8 Letter of Intent to Participate

TOWN OF WELLINGTON
3735 CLEVELAND AVENUE
P.O. BOX 127
WELLINGTON, CO 80549
TOWN HALL (970) 568-3381
FAX (970) 568-9354
www.wellingtoncolorado.gov

LETTER OF INTENT TO PARTICIPATE

December 1, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, Town of Wellington is submitting this letter of intent to confirm that Town of Wellington has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Wellington agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

Town of Wellington understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Troy Hamman, Mayor, commit Town of Wellington to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 1st day of December, 2018

Troy Hamman, Mayor Town of Wellington

W. WINDSOR SEVERANCE FIRE RESCUE

"Providing professional service and compassionate care from our family to yours."
– Mission, Windsor Severance Fire Rescue

W.1 Background and Planning Process

This Annex was updated during the development of the 2021 Larimer County Hazard Mitigation Plan. Windsor Severance Fire Rescue participated in the 2016 Larimer County Hazard Mitigation Plan, and has been active in implementing that plan as described in Section W.7.1. A review of jurisdictional priorities found no significant changes in priorities since the last update. Individuals who participated in the update process and represented the District on the Planning Team are listed in Appendix B.

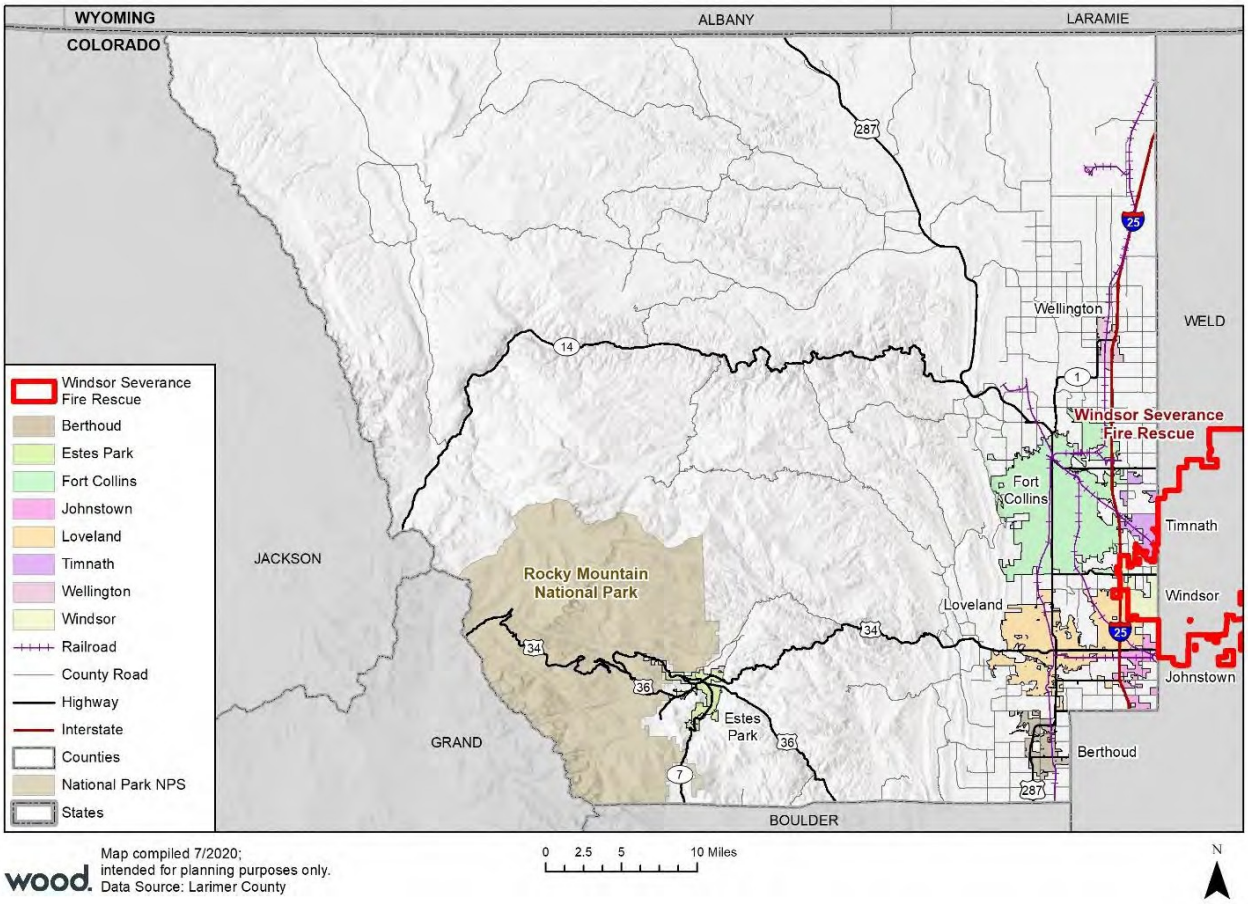
More details on the planning process and how the jurisdictions, special districts, and stakeholders participated, as well as how the public was involved, can be found in Chapter 3 of the Base Plan.

W.2 Community Profile

Windsor Severance Fire Rescue (WSFR) provides fire and rescue services to the towns of Windsor and Severance as part of the 110 square mile area it protects. The fire district employs 80 firefighters utilizing full-time, part-time and volunteer staffing. WSFR has three fire stations that are staffed 24 hours a day. Station 1 is located in downtown Windsor at 100 7th Street and serves as the department's headquarters. Station 2 is located at 9 Timber Ridge Parkway in Severance. Station 3 is located at 7790 REA Parkway in west Windsor.

WSFR is an all-hazards organization. It handles fires, emergency medical services, hazardous materials response, specialized rescue, and wildland firefighting. Fire prevention is heavily promoted through business inspections, school presentations, carbon monoxide and fire detector programs and proactive relationships with town and county officials. Mutual aid and automatic aid agreements with surrounding fire agencies ensures a high level of resources are available for all types of events.

Figure W-1 Map of the Windsor Severance Fire Rescue District



W.3 Hazard Identification and Risk Assessment

The following Hazard Identification and Risk Assessment Summary table is based on jurisdiction-specific responses to the risk factor exercise and differs from the County-wide risk factors reported in Section 4.1.1 of the Base Plan.

Table W-1 Hazard Identification and Risk Assessment Summary for the Windsor Severance Fire Rescue District

Hazard	Frequency	Spatial Extent	Severity	Overall Significance
Biological Hazards	Highly Likely	Extensive	Catastrophic	High
Civil Disturbance	Likely	Limited	Significant	Medium
Dam Inundation	Occasional	Limited	Significant	Medium
Drought	Likely	Significant	Significant	Medium
Earthquake	Unlikely	Significant	Catastrophic	Medium
Flood	Likely	Limited	Critical	High
Hazardous Materials	Likely	Limited	Significant	Medium
Landslide/Rockslide	Likely	Limited	Significant	Low
Soil Hazards	Highly Likely	Significant	Significant	Medium
Spring/Summer Storm	Highly Likely	Extensive	Critical	High
Tornado	Likely	Limited	Critical	High
Utility Disruption	Likely	Significant	Critical	Medium
Wildfire	Highly Likely	Significant	Critical	Medium
Winter Storm	Highly Likely	Extensive	Critical	High

Frequency of Occurrence:
Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Spatial Extent:
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Potential Severity:
Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Significant: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

W.4 Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Windsor Severance Fire Rescue District, for those hazards where the risk is significantly different from that of Larimer County overall, or where sufficient data exists to conduct mapping and analysis at the local level. For the following hazards, the District's risk does not differ significantly from the rest of the County, and they are not profiled further:

- Biological Hazards
- Civil Disturbance
- Drought
- Earthquake
- Hazardous Materials Incident
- Spring/Summer Storm

- Utility Disruption
- Winter Storm

For the purpose of this plan, only the parts of the District that lie specifically within Larimer County have been assessed for vulnerability data. For more information about how hazards affect Larimer County, see Section 4 (Risk Assessment) of the Base Plan.

W.4.1 Dam Inundation

Section 4.3.3 of the Base Plan and V.4.2 in Annex V (Town of Windsor) show potential dam inundation areas in the Windsor Severance Fire Rescue District. The overall significance of this hazard for the District is Medium.

W.4.2 Flood

Section 4.3.6 of the Base Plan and V.4.3 in Annex V (Town of Windsor) show significant areas within the Windsor Severance Fire Rescue District boundaries at 1% annual chance and 0.2% annual chance of flooding. The overall significance of this hazard for the District is High.

W.4.3 Landslide/Rockslide

There are no identified areas of landslide or rockslide risk in the Windsor Severance Fire Rescue District. The overall significance of this hazard for the District is Low.

W.4.4 Soil Hazards

Section 4.3.9 of the Base Plan and V.4.6 in Annex V (Town of Windsor) show no historically undermined areas or areas at risk of land subsidence or expansive soil have been identified in the Windsor Severance Fire Rescue District; however, portions of the District are at risk of collapsible soil. The overall significance of this hazard for the District is Medium.

W.4.5 Tornado

The Windsor Severance Fire Rescue District has had a significant history of tornadoes. There have been six recorded tornadoes in the Town of Windsor between 1954 and 2020, although all six were in the Weld County side of the District. The overall significance of this hazard for the Town is High.

W.4.6 Wildfire

Section 4.3.13 of the Base Plan and V.4.8 in Annex V (Town of Windsor) show significant portions of the District are classified as being at Low to Moderate risk of wildfires. The overall significance of this hazard for the District is Medium.

W.5 Capabilities Assessment

This section profiles the programs and policies currently in use by Windsor Severance Fire Rescue to reduce hazard impacts or that could be used to implement hazard mitigation activities.

W.5.1 Existing Capabilities

The following tables summarize the District's current ability to conduct mitigation activities, focused on planning and regulatory capabilities, administrative and technical capabilities, and fiscal capabilities.

Table W-2 Windsor Severance Fire Rescue Planning and Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Comprehensive Plan	Yes	County Planning & Building

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Zoning ordinance	Yes	Windsor, Severance, County Planning & Building
Subdivision ordinance	Yes	Windsor, Severance, County Planning & Building
Growth management ordinance	Yes	Windsor, Severance,
Floodplain ordinance	Yes	Windsor, Severance, County
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Windsor, Severance, County
Building codes	Yes	Windsor, Severance, County Planning & Building
Fire department ISO rating	Yes	ISO Rating 2/10 and 3/10
Erosion or sediment control program	Yes	Windsor, Severance, County Planning & Building
Stormwater management program	Yes	Windsor, Severance,, County Public Works
Site plan review requirements	Yes	Windsor, Severance, County Planning & Building
Capital improvements plan	Yes	Windsor, Severance,
Economic development plan	Yes	Windsor
Local emergency operations plan	Yes	Windsor, Severance, County
Other special plans	Yes	County
Flood insurance study or other engineering study for streams	Yes	Windsor, Severance, County Planning & Building
Elevation certificates (for floodplain development)	Yes	County Planning & Building

Source: Windsor Severance Fire Rescue planning team

Table W-3 Windsor Severance Fire Rescue Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning	Windsor, Severance, County
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Building Department	Windsor, Severance, County
Planner/engineer/scientist with an understanding of natural hazards	Yes	Engineering	Windsor, Severance, County
Personnel skilled in GIS	Yes	GIS Department	Windsor, Severance, County
Full time building official	Yes	Building Department	Windsor, Severance, County
Floodplain manager	Yes	Engineering	Windsor, Severance, County
Emergency manager	Yes	Emergency Managers, Fire Chief	Windsor, Severance, County, Windsor Severance Fire Rescue
Grant writer	Yes	Everbridge, Code Red	Larimer County, Weld County Windsor, Severance
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	Planning	Windsor, Severance, County
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Building Department	Windsor, Severance, County

Source: Windsor Severance Fire Rescue planning team

Table W-4 Windsor Severance Fire Rescue Fiscal Mitigation Capabilities

Financial Resources	Accessible/ Eligible to Use	Has Been Used in the Past	Comments
Community Development Block Grants	Yes	Yes	Equipment and Staffing
Capital improvements project funding	Yes	Yes	Stations and Apparatus

Authority to levy taxes for specific purposes	No	No	
Fees for water, sewer, gas, or electric services	No	No	
Impact fees for new development	No	No	
Incur debt through general obligation bonds	No	No	
Incur debt through special tax bonds	Yes	Yes	Stations
Incur debt through private activities	No	No	
Withhold spending in hazard prone areas	No	No	

Source: Windsor Severance Fire Rescue planning team

Table W-5 Windsor Severance Fire Rescue Education and Outreach Mitigation Capabilities

Education & Outreach	Yes/No	Comments
Local Citizen Groups That Communicate Hazard Risks	Yes	Social Media - Nextdoor
Firewise	No	
StormReady	No	
Fire Safety, Disaster Preparedness, CPR First Aid, CarSeat Installation, Smoke Detectors, Bike Helmet Safety, SafeSitter,	Yes	

Source: Windsor Severance Fire Rescue planning team

W.5.2 Opportunities for Enhancement

Based on the capability assessment, Windsor Severance Fire Rescue has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the District to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and DHSEM. Additional training opportunities will help to inform District staff on how best to integrate hazard information and mitigation projects into the District policies and ongoing duties of the District. Continuing to train District staff on mitigation and the hazards that pose a risk to the District will lead to more informed staff members who can better communicate this information to the public.

W.6 Mitigation Strategy

Windsor Severance Fire Rescue has adopted the hazard mitigation goals and objectives developed by the Planning Team and described in Section 6.2 of the Base Plan.

The District had three mitigation actions in the 2016 Plan, and has completed 2 of them:

- Mitigation Assessment
- Mitigation Code Changes

The remaining action has been carried over into the 2021 Plan, along with two new actions.

The District planning team identified and prioritized the following mitigation actions for Windsor Severance Fire Rescue based on the risk assessment. Information on how each action will be implemented and administered, such as ideas for implementation, responsible agency, potential funding, estimated cost, and timeline also are included.

Table W-6 Windsor Severance Fire Rescue 2021 Mitigation Action Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
W-1	Goals 1,4 Objectives 1,5	Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Spring/ Summer Storm, Wind & Tornado, Wildfire, Winter Storm, Biological, Hazmat	**Community Emergency Preparedness.** There is a need for increased public awareness regarding emergency preparedness for hazards common to our area. Information on websites, social media, community events, more collaboration with government entities. Establish and implement plan for continuous community education.	**Windsor Severance Fire Rescue**, Town of Windsor, City of Fort Collins, RE-4 School District, Library District	Minimal	Existing Budget	Medium	Ongoing	Annual implementation. WSFR has established and implemented a plan for continuous education utilizing information on the department's website, social media, community events, as well as collaboration with local and state government agencies and local businesses.
W-2	Goals 1,2,3,5 Objectives 2,3,4,5	Hazmat	**Tactical Response Plans (TRPs).** There are roughly 1,627 oil and gas wells within the Windsor Severance Fire Protection District (WSFPD). There are also approximately 446 active pipelines overseen by the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) within the District. These pipelines transport natural gas and liquid petroleum products for local utility use, from oil and gas sites to regional gas plants and refineries for processing and as part of the interstate pipeline transportation system. In addition to the number of oil and gas wells, WSFPD also has about 56 industrial facilities operating with its response area, most of which utilize and store hazardous materials. Many are in the vicinity of the Poudre River. Potential exists for a severe environmental impact in the event of a catastrophic event. After performing a vulnerability assessment, WSFPD evaluated the current response plans and determined it was necessary to update and improve our emergency response plans with the hiring of a Life Safety Specialist, the purchase of computer software that will automatically aggregate critical information, and the development	**Windsor Severance Fire Rescue,** Mutual/auto-aid partners in Larimer and Weld Counties Local, county, state and federal emergency management divisions • Third party incident response organizations	Approximately $50,000 in wages and $7,500 for software.	General operating fund.	Medium	Industrial high hazard facilities: 2021. Other high hazard occupancies: 2022.	New in 2021. Initial implementation has begun and will be ongoing an updated annually.

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
			of Tactical Response Plans (TRPs). Tactical Response Plans (TRPs) are designed to help emergency response agencies and the oil/gas industry proactively collaborate on emergency planning and response at industry sites. WSFPD is going to expand this document for use at permanent, high hazard facilities that currently include manufacturing and hazardous materials storage sites within its District. The TRP will give responding agencies a strategic view of a specific site that helps them and facility staff to understand their emergency response roles during an incident. This document will distill information from a company's emergency planning document(s) and any required hazard mitigation plans (Tier II, RCRA, etc.) into a visual format that can be used for short and long-term incident response. The TRPs will include maps and descriptions of: • Contact information for site operators, emergency response agencies, utility owners and third-party incident response contractors (if applicable). • Facility operations • Specific site hazards (HAZMAT and non-HAZMAT) • Nearby critical receptors (neighboring commercial and residential development, schools, water sources, transportation infrastructure, etc.) • Hazardous materials storage and use areas • A summary of largest quantity and highest hazard materials stored on-site. Reduction of unnecessary exposures of emergency response personnel, industry staff and nearby communities (local and regional) to hazardous materials and environments during an incident. • Increasing the effectiveness of incident response through proactive emergency planning and information sharing between WSFPD, industry and our emergency response partners • Developing relationships and strengthening communication between WSFPD and our industry partners during normal and emergency response conditions • Creating more training opportunities for our crews to work with our industry partners • Minimize negative economic impact to community in the event of disaster						

ID	Related Goal(s)	Hazard(s) Mitigated	Description / Background / Benefits	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status / Implementation Notes
W-3	Goals 1,2,3,5 Objectives 4,5	Biological Hazards, Civil Disturbance Dam Inundation, Earthquake, Flood, Hazardous Materials, Landslide/ Rockslide, Soil Hazards, Spring/ Summer Storm, Tornado, Utility Disruption, Wildfire, Winter Storm	**Windsor Severance Fire Protection District Station 4.** Station 4 will be strategically located to serve a large area of WSFPD that is currently underserved by our current 3 fire stations. Our projection is that not only our response area nearest station 4 would see a reduction in response times, but the existing 3 stations would also realize average response time reductions. Emergency response to fire and medical emergencies as well as to emergencies at oil and gas sites are time sensitive and labor-intensive endeavors. The quicker we can arrive on scene with the adequate personnel to handle an emergency, the better the outcome will be for that incident. Currently our response times to the immediate area does not meet national standards. Additionally, the area immediately adjacent to this proposed station is a 2,800+ residential unit subdivision that is currently being built at a rapid pace. The construction of station 4 will take 8 – 10 months once construction starts and we want to be able to provide effective emergency services as soon as possible. There are many operational efficiencies that will be realized by the addition of station 4, the most critical one will be the reduction of moving apparatus to station 1 during incidents by outlying stations. Currently, when certain conditions are met, an outlying station and apparatus are relocated to the "center of town'. This leaves the outlying areas without fire or EMS protection and creates a longer response time if there is a subsequent call occurs in an outlying area. With the addition of Station 4, our call modeling software shows the units will be better able to respond from their respective location on a much higher frequency. The data shows we will assure better and quicker service for incidents when they occur utilizing historic data. As illustrated by the population data and the 5-year projections, WSFPD has experienced considerable growth. This is further illustrated by the incident response demands. In 2010, WSFPD responded to 1,474 incidents and in 2019 WSFPD responded to 3,466 incidents. This is more than a 135% increase for emergency incidents while only experiencing a 56% increase in population. As we continue to expect a significant increase in population, we can also expect an even greater increase in our demands for service. Specifically, with respect to the impacts related to processing or energy conversion of minerals and mineral fuels, we have a large presence of oil and gas with WSFPD. The ability to better serve those sites are an immediate need and benefit.	**Windsor Severance Fire Rescue**, Town of Windsor, Third party incident response organizations	Approximately $8,000,000 for construction and $1,200,000 to staff	Capital Fund and DOLA grant	High	Fall 2021	New in 2021. WSFPD has identified an appropriate location for station 4 and in early 2020 purchased 12.94 acres of land for this purpose. The property is located at the intersection of New Liberty and Hilltop Dr. in Windsor, Weld Co. WSFPD has met with the Town of Windsor and have full support of the project as designed and planned. This site is adjacent to 2 large oil and gas sites operated by Great Western and Extraction. This station will have immediate response to 293 oil and gas sites and WSFPD has over 1,600 sites in our fire coverage area.

W.7 Plan Maintenance and Implementation

Windsor Severance Fire Rescue has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the organization will continue public participation in the plan maintenance process.

W.7.1 Implementation and Maintenance of the 2016 Plan

The 2016 Plan discussed a number of strategies that Larimer County and its jurisdictions would use to integrate the plan into other planning mechanisms and processes. The District's implementation strategy included:

- Our mitigation actions will be reviewed by staff on an annual basis.
  - This was accomplished.
- Any major changes will be relayed to the community via social media, Everbridge, and our district's website.
  - This was accomplished.
- We will implement a hazardous materials inspection and permitting process for businesses in our jurisdiction.
  - This was accomplished.

Additional ways in which the District incorporated information from the 2016 HMP into other plans and processes include:

W.7.2 Monitoring, Evaluation and Updating the Plan

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the District to help inform updates and the development of local plans, programs and policies, as described in Section 7 of the Base Plan.

The Operations Chief will be responsible for monitoring, evaluating, and updating this plan using the process outlined in Section 7 of the Base Plan. The Operations Chief will also be responsible for representing the District on future Larimer County Planning Team meetings, and for coordination with District staff and departments during plan updates. The District, Fire District and Sheriff's Department will meet at a minimum annually to discuss items that need to be updated and look at progress of action items. All items with budgetary requirements would need to be approved by the District's Board of Directors.

Integration Into Other Planning Mechanisms

Windsor Severance Fire Rescue will work to incorporate the updated HMP into other plans, procedures, and programs as described in Section 7.3 of the Base plan. Specifically, the District will:

- Incorporate information from the HMP into existing public education & outreach programs.
- Mitigation actions will be incorporated in capital improvement planning.

Continued Public Involvement

Windsor Severance Fire Rescue will also continue to involve the public in mitigation, as described in Section 7.4 of the Base Plan. This will include posting information on the website and utilize the marketing and communications firm to get information to citizens and businesses.

W.8 Letter of Intent to Participate

Windsor Severance Fire Rescue
100 N. 7th Street • Windsor • Colorado • 80550
970-686-2626

LETTER OF INTENT TO PARTICIPATE

December 14, 2018

Larimer County Office of Emergency Management
200 W. Oak Street
Fort Collins CO 80522
Attn: Lori Hodges, Director of Emergency Management

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Ms. Hodges,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Windsor Severance Fire Protection District (WSFPD) is submitting this letter of intent to confirm that WSFPD has agreed to participate in the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, WSFPD agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to Larimer County to complete the plan in conformance with FEMA requirements.

WSFPD understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of

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participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Michael E. Blackwill, commit WSFPD to the Larimer County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 14 day of December, 2018

Michael E. Blackwill, Interim Chief

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APPENDIX A: PLANNING TEAM

As noted in Section 3.4, two distinct but related groups were formed to direct and inform the update of this plan. The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the multi-jurisdictional hazard mitigation plan. An All Hazards Planning Team was created that includes representatives from each participating jurisdiction, departments of the County, and other local, state, and federal organizations responsible for making decisions in the plan and agreeing upon the final contents. Kickoff meeting attendees discussed potential participants and made decisions about additional stakeholders to invite to participate on the Planning Team. The Planning Team contributed to this planning process by:

- Providing facilities for meetings,
- Attending meetings,
- Collecting data,
- Managing administrative details,
- Making decisions on plan process and content,
- Submitting mitigation action implementation worksheets,
- Reviewing and editing drafts, and
- Coordinating and assisting with public involvement and plan adoptions.

Within the All Hazards Planning Team, a Floodplain Management Steering Committee (FMSC) was formed to lead the floodplain management planning effort. The FMSC was composed of staff from those community departments that implement or have expertise in floodplain mitigation activities including land use and comprehensive planning, and also included members of the public and other stakeholders. All decisions pertaining to floodplain management efforts and CRS activities were made by the FMSC, with information and advice being provided by the rest of the All Hazards Planning Team and other stakeholders. All FMSC members were also members of the All Hazards Planning Team, and participated in Planning Team meetings. The FMSC contributed to the floodplain management planning process by:

- Providing facilities for meetings,
- Attending meetings,
- Collecting data,
- Managing administrative details,
- Making decisions on plan process and content,
- Submitting mitigation action implementation worksheets,
- Reviewing and editing drafts, and
- Coordinating and assisting with public involvement and plan adoptions.

Membership in the All Hazards Planning Team is listed in Table A-1. Members of the Floodplain Management Steering Committee are listed in Table A-2. Expertise of FMSC members in each of the six mitigation categories defined by the CRS program is listed in Table A-3.

Finally, Table A-4 lists outside stakeholders who were invited to participate in the planning process or otherwise coordinated with.

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Danielle	May	Banner Health	Emergency Management	Emergency Management Program Manager, Western Division		x		
Steve	Charles	Berthoud Fire Protection District	Berthoud Fire Protection District	Chief				x
Doug	Race	Berthoud Fire Protection District	Berthoud Fire Protection District	Representative				x
Robert	Stumpf	Berthoud Fire Protection District	Berthoud Fire Protection District	Operations Chief	x			
Will	Davis	Big Thompson Watershed Coalition	Big Thompson Watershed Coalition	Program Manager	x	x		
Courtney	Gutman	Big Thompson Watershed Coalition	Big Thompson Watershed Coalition	Director	x	x	x	
Rich	Anderson	City of Fort Collins	Building Services	Chief Building Official		x	x	
Scott	Benton	City of Fort Collins	Planning	Environmental Planner		x	x	
Jim	Byrne	City of Fort Collins	Office of Emergency Preparedness & Security	Dept. Head		x	x	
Jason	Graham	City of Fort Collins	Utilities – Wastewater	Water Reclamation and Biosolids Manager		x	x	
Heidi	Hansen	City of Fort Collins	Floodplain Management	Engineer	x	x	x	
Errin	Henggeler	City of Fort Collins	Utilities Division	Sr. Environmental Regulatory Specialist	x	x	x	
Marsha	Hilmes-Robinson	City of Fort Collins	Floodplain Management	Floodplain Administrator				x
Mark	Kempton	City of Fort Collins	Utilities – Water Production	Interim Deputy Director		x		
Katy	McLaren	City of Fort Collins	Social Sustainability	Sr. Environmental Planner	x	x	x	
Tim	Morales	City of Fort Collins	GIS	Programmer/Analyst		x	x	

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Claudia	Quezada	City of Fort Collins	Floodplain Management	Civil Engineer	x	x		
Lisa	Rostintoski	City of Fort Collins	Utilities	PIO		x		
Nick	Sporer	City of Fort Collins	Office of Emergency Preparedness & Security	Senior Emergency Management Specialist	x	x	x	
Gretchen	Stanford	City of Fort Collins	Utilities	PIO		x	x	
Gregg	Stonecipher	City of Fort Collins	Utilities – Water Production	Technical Services Supervisor		x	x	
Matt	Zoccali	City of Fort Collins	Utilities – Water Production	Environmental Regulatory Affairs Manager	x		x	
Kevin	Gingery	City of Loveland	Floodplain Management	Senior Civil Engineer	x			
Pat	Mialy	City of Loveland/LFRA	Office of Emergency Management	Emergency Manager	x	x		
Daniel	Bowker	Coalition for the Poudre River Watershed	Coalition for the Poudre River Watershed	Forest & Fire Project Manager	x	x		
Jen	Kovecses	Coalition for the Poudre River Watershed	Coalition for the Poudre River Watershed	Executive Director	x	x	x	
Thomas	Hickey	Colorado State University	Office of Emergency Management	Assistant Emergency Coordinator	x	x	x	
Ken	Quintana	Colorado State University	Office of Emergency Management	Emergency Manager	x	x		
Marian	Kelly	Crystal Lakes Fire Protection District	Crystal Lakes Fire Protection District	Assistant Chief/EMR				x
Mark	Rode	Crystal Lakes Fire Protection District	Crystal Lakes Fire Protection District	Chief				x
Cheryl	Poage	Crystal Lakes Road & Rec Association	Crystal Lakes Road & Rec Association	Member at Large			x	
Gary	Hall	Estes Park Health	Estes Park Health	Chief Information Officer			x	

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Kevin	Sullivan	Estes Valley Fire Protection District	Estes Valley Fire Protection District	Division Chief Prevention Fire Marshal		x	x	
David	Wolf	Estes Valley Fire Protection District	Estes Valley Fire Protection District	Chief	x			
Tom	Carosello	Estes Valley Recreation & Park District	Estes Valley Recreation & Park District	Executive Director	x	x	x	
Wilynn	Formeller	Estes Valley Watershed Coalition	Estes Valley Watershed Coalition	Development & Program Coordinator	x			
Jennifer	Waters	Estes Valley Watershed Coalition	Estes Valley Watershed Coalition	Director	x	x	x	
Warren	Jones	Glacier View Fire Protection District	Glacier View Fire Protection District	Chief	x		x	
Kelli	Curl	Larimer County	Public Health & Environment	Health Educator		x		
Jason	Eisenbach	Larimer County	Public Health & Environment	EPR Coordinator	x	x	x	
Lesli	Ellis	Larimer County	Community Development Department	Director	x			
Eric	Fried	Larimer County	Building Department	Chief Building Official	x	x	x	
Lori	Hodges	Larimer County	Office of Emergency Management	Director		x	x	
Tina	Kurtz	Larimer County	Floodplain Management	Environmental Coordinator Specialist	x	x		
Rusty	McDaniel	Larimer County	Engineering	Assistant Engineer	x			
Katie	O'Donnell	Larimer County	Public Health & Environment	PIO		x		
Kohl	Parrott	Larimer County	Office of Emergency Management	Emergency Management Coordinator				x
Mark	Peterson	Larimer County	Engineering	Engineer	x	x		

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Derek	Rosenquist	Larimer County	LCSO Emergency Services	Emergency Services Specialist		x	x	
Shayle	Sabo	Larimer County	Office of Emergency Management	Emergency Management Coordinator	x	x	x	
Devin	Traff	Larimer County	Floodplain Management	Engineer	x	x	x	
Matt	Lafferty	Larimer County	Community Development Department	Principle Planner		x	x	
Keith	Dunn	Livermore Fire Protection District	Livermore Fire Protection District	Captain		x	x	
Donn	Maynard	Livermore Fire Protection District	Livermore Fire Protection District	Chief	x	x		
Eddie	Taylor	Livermore Fire Protection District	Livermore Fire Protection District	Assistant Chief	x	x		
Bernie	Lodge	Northern Colorado Water Conservancy District	Northern Colorado Water Conservancy District	Emergency Manager				x
Jim	Struble	Northern Colorado Water Conservancy District	Northern Colorado Water Conservancy District	Emergency Coordinator	x			
Heather	Schinkel	Peaks to People Water Fund	Peaks to People Water Fund	Executive Director		x		
Ted	Plank	Pinewood Springs Fire Protection District	Pinewood Springs Fire Protection District	Chief	x	x	x	
Hugh	Collins	Poudre Canyon Fire Protection District	Poudre Canyon Fire Protection District	Chief	x			
Tom	DeMint	Poudre Fire Authority	Poudre Fire Authority	Chief		x	x	
Chris	Wolf	Poudre Fire Authority	Poudre Fire Authority	Emergency Management Specialist	x	x	x	

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Kallie	Bauer	State of Colorado	Colorado Division of Water Resources, Dam Safety	Engineer	x		x	
Dan	Escobedo	State of Colorado	Division of Fire Prevention and Control (DFPC)	Battalion Chief		x	x	
Patricia	Gavelda	State of Colorado	Colorado Division of Homeland Security & EM	State and Local Mitigation Program Planning Manager	x	x		
Jean	Lever	State of Colorado	Colorado Division of Water Resources	Commissioner		x	x	
Bill	McCormick	State of Colorado	Colorado Division of Water Resources, Dam Safety	Chief	x		x	
Matt	Norville	State of Colorado	Colorado State Forest Service	Forester			x	
Mark	Thompson	State of Colorado	Colorado Division of Homeland Security & EM	Mitigation Planning Specialist	x	x	x	
Tim	Seidel	Thompson Valley EMS District	Thompson Valley EMS District	Battalion Chief				x
Mark	Turner	Thompson Valley EMS District	Thompson Valley EMS District	Battalion Chief	x	x		
Adam	Olinger	Town of Berthoud	Planning	Planner		x	x	
Christian	Samora	Town of Berthoud	Town of Berthoud	Clerk		x		
Rick	Life	Town of Estes Park	Police	Administrative Lieutenant	x			
Eric	Rose	Town of Estes Park	Office of Emergency Management	Emergency Manager	x		x	
Marco	Carani	Town of Johnstown	Public Works	Director			x	

Table A-1 All Hazards Planning Team

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Other [1]
Brian	Phillips	Town of Johnstown	Police Department	Chief	x	x		
Terry	Jones	Town of Timnath	Police	Chief		x		
Melissa	Peters-Garcia	Town of Timnath	Emergency Management	Town/Court Clerk				x
Bob	Gowing	Town of Wellington	Public Works	Director	x		x	
Rick	Klimeck	Town of Windsor	Police Department	Chief	x	x		
Robert	Shainline	Town of Windsor	Police Department	Sergeant	x			
Terry	Walker	Town of Windsor	Public Works	Director	x	x		
Matt	Allen	Upper Thompson Sanitation District	Upper Thompson Sanitation District	Collection Department Supervisor		x	x	
Chris	Bieker	Upper Thompson Sanitation District	Upper Thompson Sanitation District	District Manager	x		x	
Gary	Green	Wellington Fire Protection District	Wellington Fire Protection District	Chief	x	x		
Ashley	Macdonald	Wellington Fire Protection District	Wellington Fire Protection District	Government Affairs/Management Director	x	x	x	
Everitt	Pettit	Wellington Fire Protection District	Wellington Fire Protection District	Captain		x	x	
William	Vieth	Wildland Restoration Volunteers	Wildland Restoration Volunteers	Program Manager			x	
Mike	Blackwill	Windsor Severance Fire Protection District	Windsor Severance Fire Protection District	Operations Chief			x	

[1] Those that are not listed as attending a meeting participated in the planning process in other ways such as emails, phone calls and virtual meetings with the County Project Manager and consultants.

Table A-2 Floodplain Management Steering Committee

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Public/ Stakeholder
Danielle	May	Banner Health	Emergency Management	Emergency Management Program Manager, Western Division		x		x
Will	Davis	Big Thompson Watershed Coalition	Big Thompson Watershed Coalition	Program Manager	x	x		x
Courtney	Gutman	Big Thompson Watershed Coalition	Big Thompson Watershed Coalition	Director	x	x	x	x
Heidi	Hansen	City of Fort Collins	Floodplain Management	Engineer	x	x	x	
Errin	Henggeler	City of Fort Collins	Utilities Division	Sr. Environmental Regulatory Specialist	x	x	x	
Nick	Sporer	City of Fort Collins	Office of Emergency Preparedness & Security	Senior Emergency Management Specialist	x	x	x	
Pat	Mialy	City of Loveland/LFRA	Office of Emergency Management	Emergency Manager	x	x		
Daniel	Bowker	Coalition for the Poudre River Watershed	Coalition for the Poudre River Watershed	Forest & Fire Project Manager	x	x		x
Jen	Kovecses	Coalition for the Poudre River Watershed	Coalition for the Poudre River Watershed	Executive Director	x	x	x	x
Thomas	Hickey	Colorado State University	Office of Emergency Management	Assistant Emergency Coordinator	x	x	x	x
Ken	Quintana	Colorado State University	Office of Emergency Management	Emergency Manager	x	x		x
Cheryl	Poage	Crystal Lakes Road & Rec Association	Crystal Lakes Road & Rec Association	Member at Large			x	x
Jennifer	Waters	Estes Valley Watershed Coalition	Estes Valley Watershed Coalition	Director	x	x	x	x
Jason	Eisenbach	Larimer County	Public Health & Environment	EPR Coordinator	x	x	x	

Table A-2 Floodplain Management Steering Committee

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Public/ Stakeholder
Lesli	Ellis	Larimer County	Community Development Department	Director	x			
Tina	Kurtz	Larimer County	Floodplain Management	Environmental Coordinator Specialist	x	x		
Mark	Peterson	Larimer County	Engineering	Engineer	x	x		
Shayle	Sabo	Larimer County	Office of Emergency Management	Emergency Management Coordinator	x	x	x	
Heather	Schinkel	Peaks to People Water Fund	Peaks to People Water Fund	Executive Director		x		x
Kallie	Bauer	State of Colorado	Colorado Division of Water Resources, Dam Safety	Engineer	x		x	x
Dan	Escobedo	State of Colorado	Division of Fire Prevention and Control (DFPC)	Battalion Chief		x	x	x
Jean	Lever	State of Colorado	Colorado Division of Water Resources	Commissioner		x	x	x
Bill	McCormick	State of Colorado	Colorado Division of Water Resources, Dam Safety	Chief	x		x	x
Matt	Norville	State of Colorado	Colorado State Forest Service	Forester			x	x
Mark	Thompson	State of Colorado	Colorado Office of Emergency Management	Mitigation Planning Specialist	x	x	x	x
Adam	Olinger	Town of Berthoud	Planning	Planner			x	
Eric	Rose	Town of Estes Park	Office of Emergency Management	Operations Captain	x		x	
Brian	Phillips	Town of Johnstown	Police Department	Chief	x	x		

Table A-2 Floodplain Management Steering Committee

First Name	Last Name	Representing	Organization/ Agency	Title	Kickoff	Meeting #2	Meeting #3	Public/ Stakeholder
Bob	Gowing	Town of Wellington	Public Works	Director	x		x	
Rick	Klimeck	Town of Windsor	Police Department	Chief	x	x		
William	Vieth	Wildland Restoration Volunteers	Wildland Restoration Volunteers	Program Manager			x	x

APPENDIX A: PLANNING TEAM

The following table shows the area of expertise of County and jurisdictional representatives and stakeholders participating on the Floodplain Management Steering Committee (FMSC) in each of the six mitigation categories defined by the CRS program.

Community/Agency	Preventive Measures	Property Protection	Natural Resource Protection	Emergency Services	Structural Flood Control Projects	Public Information
County/City/Town Emergency Management	√	√	√	√	√	√
Larimer County Community Development	√	√	√		√	√
Larimer County Engineering	√	√	√		√	√
Larimer County Floodplain Management	√	√	√		√	√
Larimer County Public Health & Environment	√		√	√		√
Fort Collins Utilities	√	√	√		√	√
Fort Collins Floodplain Management	√	√	√		√	√
Johnstown Police Department				√		√
Wellington Public Works	√	√	√		√	√
Banner Health	√		√	√		√
Crystal Lakes Road & Rec Association	√	√	√			√
Big Thompson Watershed Coalition	√	√	√			√
Coalition for the Poudre River Watershed	√	√	√			√
Estes Valley Watershed Coalition	√	√	√			√
Peaks to People Water Fund	√	√	√			√
Wildland Restoration Volunteers			√			√
Colorado Division of Water Resources	√	√	√		√	√
Colorado Division of Homeland Security & Emergency Management	√	√	√	√	√	√
Colorado State Forest Service	√	√	√	√	√	√
Colorado Division of Fire Prevention and Control	√	√	√	√	√	√

External Stakeholder Coordination

In addition to the members of the All Hazards Planning Team and Floodplain Management Steering Committee listed above, a number of other agencies and organizations outside the community's governmental structure were contacted and coordinated with, asked for information, or invited to participate in the planning process. Documentation for these contacts can be found in Appendix B.

Organization	Name	Date Contacted	Method of Contact
Ace Water	B Anderson	4/25/2020	email
Ace Water	A Hansen	4/25/2020	email
Albany County, WY	Aimee Binning	2/23/2021	email
Allens Park Fire	Leo Touzjian	2/23/2021	email
American Red Cross	Ron Hendrick	4/25/2020	email
Banner Health	Andrew Glendenning	2/1/2021	email
Boulder County	Mike Chard	2/23/2021	email
Carbon County WY	Lenny Layman	2/23/2021	email
CFRI	Brett Wolk	4/30/2020	email
Chamber of Commerce	Ann Hutchinson	4/25/2020	email
Colorado Department of Public Safety	Wilson Branch	2/1/2021	email
Colorado Division of Homeland Security & Emergency Management	Patricia Gavelda	2/1/2021, 4/10/21	email
Colorado Parks & Wildlife	Larry Rogstad	2/1/2021	email
Colorado Water Conservation Board	Chris Sturm	2/1/2021	email
Estes Valley Watershed Coalition	Wilynn Formeller	4/10/2021	email
Front Range Fire	Michael West	2/23/2021	email
Grand County	Joel Cochran	2/23/2021	email
Greeley-Loveland Irrigation Co	Dan Kammezell	6/3/2020	email
Jackson County	Sheriff Jarrod Poley	2/23/2021	email
Laramie County, WY	Jeanine West	2/23/2021	email
Lyons Fire District	John Hoffman	2/23/2021	email
Nunn Fire	Jake Zarra	2/23/2021	email
Peaks to People Water Fund	Sandi Good	2/1/2021	email
Poudre School District	John Holdcomb	4/25/2020	email
Poudre School District	Jerry G	4/25/2020	email
Rocky Mountain National Park	Mark Franklin	4/29/2020	email
Southside Ditch Co.	Bill Wheeler	5/20/2020	email
Sylvan Dale Guest Ranch	Dave Armstrong	2/22/2021	email
TST Inc. Consulting Engineers	Dan Taranto	2/1/2021	email

All-Hazard Working Group

Organization	Name	Date Contacted	Method of Contact
UC Health	Andrew Kamei	6/29/2020	email
Volunteers of America	Carrie Olenick	4/25/2020	email
Weld County	Roy Rudisill	2/23/2021	email

APPENDIX B: PLANNING PROCESS

Larimer County Hazard Mitigation Plan Update CRS Coordination Meeting Agenda

Date: Friday, April 10, 2020 **Time:** 3:00 - 4:00 pm MDT

Webinar Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTdjNDFhYmYtNzY5MS00ZDEwLWE2NzgtOWZlMDc5MzE5OGIy%40thread.v2/0?context=%7b%22Tid%22%3a%220843acec-fd3e-49be-bd54-18c6048a3fd0%22%2c%22Oid%22%3a%221af7d331-902d-4752-9987-ea455d99ec99%22%7d

Toll-free number: 866-670-1764
Conference ID: 867 730 28#

Project: Larimer County HMP Update CRS Coordination Meeting

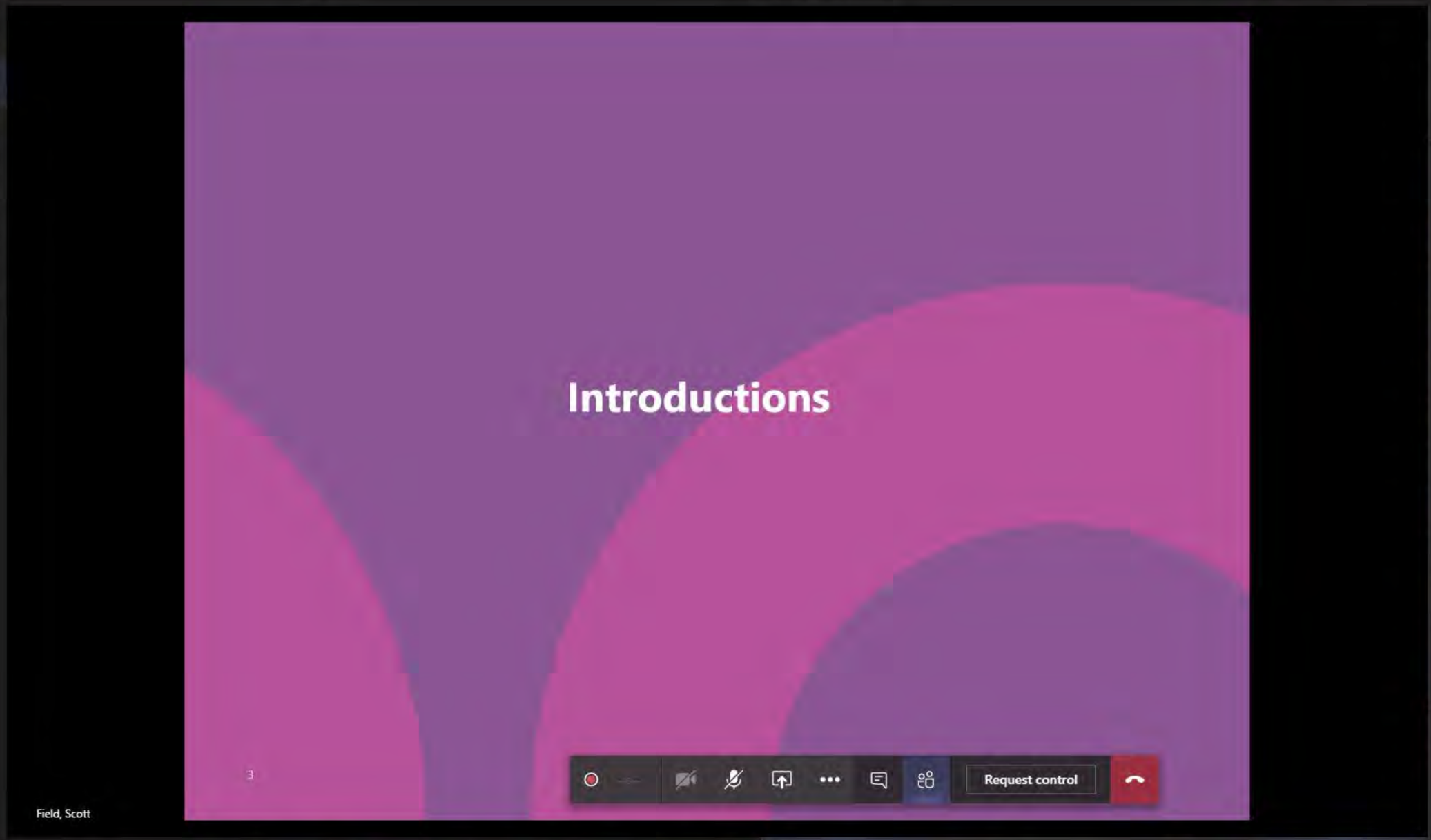
Subject/Purpose

Establish objectives, milestones, and clarify responsibilities for CRS activities during the update of the Larimer County Hazard Mitigation Plan.

Attendees: Larimer County, City of Fort Collins, and City of Loveland Emergency Management and Floodplain Management staff

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1. Introductions
2. Overview of Community Rating System (CRS) Planning Credits
3. Discussion of 2016 HMP Update Process
4. Roles and Responsibilities
5. Project Schedule and Next Steps
6. Questions


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Field, Scott
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Mute all
Carr, Amy
Brislawn, Jeff P
Claudia Quezada
Outside your organization
Devin & Tina
Guest
Field, Scott
Organizer
Heidi Hansen
Outside your organization
Kevin Gingery
Guest
Marsha Hilmes-Robinson
Outside your organization
Nick Sporer
Outside your organization
Shayle Sabo
Guest
Tina Kurtz
Guest
+1 240-393-5425
Invite others from conversation (1)
courtney.gutman@bigthompson.co
Outside your organization
CQ
NS
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KG
MH
TK
Brislawn, Jeff P
Heidi Hansen
Shayle Sabo
Field, Scott

Larimer County Hazard Mitigation Plan Update Kick Off Meeting Agenda

Date: Friday, April 10, 2020 **Time:** 1:00 - 3:00 pm MDT

Webinar Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_NTZmYzEyNjgtNTBmYS00YTJmLTgzMzMtZDljYTM5MjAxZDFm%40thread.v2/0?context=%7b%22Tid%22%3a%220843acec-fd3e-49be-bd54-18c6048a3fd0%22%2c%22Oid%22%3a%221af7d331-902d-4752-9987-ea455d99ec99%22%7d

Toll-free number: 866-670-1764
Conference ID: 839 747 399#

Project: Larimer County Multi-Jurisdictional Mitigation Plan Update

Subject/Purpose

The purpose of the meeting is to initiate the process for updating the County's Multi-Jurisdictional Hazard Mitigation Plan (HMP), introduce the Disaster Mitigation Act of 2000, and summarize the hazard mitigation planning process. The HMP is intended to identify hazards, assets at risk, and ways to reduce impacts through long-term sustainable mitigation projects.

Attendees: Larimer County Hazard Mitigation Planning Committee and Stakeholders

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1. Introductions
2. Hazard Mitigation Overview
3. Mitigation Planning Process and Requirements
4. Overview of 2016 Larimer County Hazard Mitigation Plan
5. Coordination with Other Agencies, Related Planning Efforts, and Recent Studies
6. Planning for Public Involvement
7. Community Rating System (CRS) Requirements
8. Project Schedule and Next Steps
9. Questions

Larimer County
Hazard Mitigation Plan 2020 Update

Kickoff Webinar Summary
1pm - 3 pm
April 10, 2020

Introductions and Opening Remarks

This document summarizes the kickoff webinar for the Larimer County Hazard Mitigation Plan update for 2020. The webinar was facilitated by Wood Environment & Infrastructure Solutions, Inc. (Wood), the consulting firm hired to facilitate the planning process and develop the updated County plan. This type of meeting is ideally conducted in-person, however in this instance the meeting was done in a webinar format in order to comply with social distancing requirements as a result of the COVID-19 Pandemic. Scott Field, Project Manager at Wood, began the meeting with introductions. Scott first introduced the other members of the Wood team along with Mark Thompson of the Colorado Division of Homeland Security & Emergency Management (DHSEM). Fifty-two persons attended the webinar representing a mix of County departments, participating jurisdictions and stakeholders. The key discussion is summarized below; additional details can be found in the meeting PowerPoint presentation and webinar recording.

Hazard Mitigation Overview

Mark (DHSEM) outlined what hazard mitigation is and why mitigation it is important. Mark explained hazard mitigation should be an ongoing effort integrated into both day-to-day operations and long-term planning. Mark noted that FEMA is only concerned with natural hazards being profiled within these plans but explained this does not preclude communities from including human-caused hazards in order to have a one-stop plan for all types of hazards that pose a risk to the community. Mark continued by explaining a hazard mitigation plan is not a regulatory document and is not a set-in-stone commitment of resources. The overall purpose of a local hazard mitigation plan is to prevent knowable hazards from having an impact on the community.

Mark stated there are two main types of benefits a community gains from having a FEMA approved hazard mitigation plan (HMP); (1) bringing people together in the community; (2) eligibility for FEMA mitigation grants (Pre-Disaster Mitigation, Flood Mitigation Assistance, Hazard Mitigation Grant Program-Post-Disaster). He noted that any requests for FEMA mitigation funding need to be based on the hazards and mitigation strategy in the HMP. He added that information from the hazard mitigation plan, specifically the vulnerability assessment and mitigation strategy, can be used in other hazard related plans such as community wildfire protection plans.

FEMA will only fund mitigation projects that will reduce future demand for and the costs of disaster response and recovery, such as retrofitting a critical facility, enforcing building codes, land use planning, or removing a structure from a hazard area. Mitigation funding cannot be used for response actions such as purchasing vehicles for fire or police departments. Mark continued by briefly reviewing the benefit cost relationship of

mitigation projects. He shared statistics from the 2017 National Institute of Building Science Report which showed that mitigation grants funded through select federal government agencies, on average, can save the nation $6 in future disaster costs for every $1 spent on hazard mitigation. Since 2011, Colorado has had 136 projects awarded FEMA funding for mitigation projects. Mark continued by sharing examples of Colorado communities that have successfully used mitigation grant funding through FEMA's Hazard Mitigation Assistance Program to complete projects that have mitigated their risks from existing hazards.

Hazard Mitigation Planning Process and Requirements

Scott continued the meeting with the specific planning requirements the County will have to meet in order to have a FEMA approved plan. Scott reviewed the Disaster Mitigation Act (DMA) of 2000 Requirements and explained that the Larimer County Multi-Jurisdictional Hazard Mitigation Plan (HMP) will be updated in accordance with these requirements. The planning process involves a 4 Phase approach with 9 tasks per FEMA guidance updated in 2013. The kickoff webinar is the first step in the process and also covers tasks 1-3 (Determine the planning area and resources; Build the planning team; Create an outreach strategy).

Role of the Hazard Mitigation Planning Committee (HMPC)

The first step in getting organized is to determine the hazard mitigation planning committee members, which has already started with those in attendance at the kickoff webinar. Scott gave those present additional recommendations of who could also be invited to be on the committee, starting with those who were on the committee for the 2016 planning process. Scott noted that special districts could also be considered jurisdictions and be eligible for FEMA funding on their own or have the option to participate as a stakeholder. As a stakeholder they would not need to adopt the plan but could not apply directly to FEMA for grant funding.

Scott emphasized that local input, and participation from the county, municipalities, and special districts is required for full approval from FEMA. Participation includes the following:

- Attend meetings and participate in the planning process
- Provide requested information to update or develop jurisdictional information
- Review drafts and provide comments
- Identify mitigation projects specific to jurisdiction, provide status
- Assist with and participate in the public input process
- Coordinate formal adoption

Stakeholders include other local, state and federal agencies with a stake in hazard mitigation in the County or may include academic institutions and local business and industry. State and federal stakeholders may include the Colorado Department of Transportation (CDOT), Colorado Department of Public Health (CDPHE), Colorado Water Conservation Board (CWCB) and Colorado Parks and Wildlife (CPW). The HMPC noted the National Parks Service, Front Range Fire Protection District, Peaks to People Water Fund and Colorado Forest Restoration Institute should also be included as stakeholders in their process. Neighboring counties will also be notified about the update and given an opportunity to provide input into the process.

Stakeholders have various options and levels of participation including:

- Attend HMPC meetings or stay in loop via email list
- Provide data/information
- Partner on mitigation efforts
- Review draft plan

Plan Update Requirements, Key Elements and Schedule

Aspects of the planning process include:

- Engage the participants to take part in planning process and efforts
- Raise awareness and engage the public
- Update hazards and baseline development data to reflect current conditions
- Update the mitigation strategy
- Document progress and note changes in priorities

An important requirement of the hazard mitigation planning process is to involve the public in the process. FEMA requires two opportunities for public involvement: once during the drafting stage and once more prior to plan approval. FEMA does not prescribe how to involve the public at either of these steps. There are several advantages to involving the public including developing solutions that fit local needs better, strengthening local support for the plan and ensuring a fair process in the development of the plan. It was acknowledged that it can be challenging to get the public to attend meetings and shared that Wood has had success with using online surveys to receive good feedback. It is also recommended to "piggyback" public meetings and outreach with other related meetings or webinars.

Another requirement of the plan update process is performing a community capability assessment. This is an assessment of the communities existing plans, regulations, fiscal abilities, administrative and technical abilities. Identifying fiscal abilities early on is important because FEMA requires a 25% match of local funds. Early identification will help to understand potential funding sources now that could be used to possibly match the federal funds. Additionally, it is important that participating jurisdictions track any time in which they are engaged in the Hazard Mitigation Process and provide this information to the Project Lead as this time can be used to meet this match requirement.

Conducting a risk assessment is a key aspect of a hazard mitigation plan and involves two components: hazard identification (what can happen here) and the vulnerability assessment (what will be affected). The HMP update will be based on existing documents and studies, with the Larimer County Hazard Mitigation Plan (2016) providing the baseline for identified hazards and the groundwork for goals, policies and actions for hazard mitigation.

The HMP will be updated over the next six months, with at least two more meetings with the Hazard Mitigation Planning Committee. Wood will be updating the Hazard Identification and Risk Assessment (HIRA) in the next couple of months, with input from the HMPC. Three drafts of the HMP will be created: the first for review by HMPC committee, a second for public review, and a third for state and FEMA review. The tentative project schedule is shown below, although these dates may need to be adjusted based on the ongoing pandemic situation.

Project Milestone	Anticipated Timeline
• HMPC Meeting #2 – HIRA Review	May 2020
• HMPC Meeting #3 – Mitigation Strategy	June 2020
• Updated HIRA	July 2020
• HMPC Meeting #4 – Plan Review	August 2020
• HMPC Review Draft	September 2020
• Public Review Draft	September – October 2020
• CO DHSEM Review	October 2020
• FEMA Review (estimated)	October – December 2020
• Final Approved HMP for local adoption	January 2021

Overview of 2016 Larimer County Hazard Mitigation Plan

Based on hazards from the previous plan, the list of potential hazards was reviewed. Amy Carr, Hazard Mitigation Planner at Wood, listed the hazards in the 2016 HMP. Amy noted that the significance level of some hazards may vary across the County, and some hazards may not be applicable to all jurisdictions.

- Biological Hazards
- Civil Disturbance
- Earthquake
- Erosion/Deposition
- Fire – Wildland
- Flood
- Hazmat
- Landslide/Rockslide
- Spring/Summer Storm
- Tornado
- Utility Disruption
- Winter Storm

Amy asked the group to review the list of hazards and comment on how they could be enhanced or updated with:

- Historic incidents
- Incident logs
- Public perception
- Scientific studies
- Other plans and reports (e.g., flood and drainage studies, CWPPs, Internet databases)
- Recent disasters

Coordinating with Other Agencies, Related Planning Efforts, and Recent Studies

A discussion on recent studies of hazards in other documents and reports followed the identified hazards discussion. Opportunities for coordinating and cross-referencing the HMP were discussed. HMPC members shared the following recent studies and related planning efforts:

- Larimer County Strategic Plan
- City of Loveland Mitigation Master Plan
- Town of Wellington Comprehensive Plan and Stormwater Master Plan *(both undergoing updates in 2020)*
- Big Thompson River Master Plan *(being developed and to be completed in June 2021)*
- City of Fort Collin's Climate Action Plan and Road to Zero Waste and Energy Policy Update *(both undergoing updates this year)*

Representatives from the City of Fort Collins added that they can likely include information from the risk assessment update and potentially link this process to the City's update to the Climate Action Plan, *Our Climate Future*.

Community Rating System (CRS) Requirements

The Community Rating System (CRS) is a voluntary program that recognizes activities above and beyond the minimum requirements of the National Flood Insurance Program (NFIP). The goals of the CRS programs are: Reduce flood damage to insurable property, Strengthen and support the insurance aspects of the NFIP, and Encourage a comprehensive approach to floodplain management. One benefit of CRS participation is providing community discounts on flood insurance premiums.

CRS credits for Activity 510 *Floodplain Management Planning* can be achieved through the planning process for the County's Hazard Mitigation Planning update in 2020. Currently, only the City of Fort Collins and City of Loveland participate in the CRS program. Both will be working with the consultant to receive CRS credits through this process.

Initial Information Needs and Next steps

Scott discussed initial information needs and next steps. Wood will be sending a Data Collection Guide requesting input on:

- Recent hazard events (since 2016) – damages, incident logs, damage assessments, etc.
- Growth and development trends
- Recent updated plans and policies

Where available online, Wood will try to obtain the updated plans previously noted. Scott encouraged the group to send other information that might not be readily accessible online.

A Google Share Drive has been set up for the project to share large documents and general project milestones. A GIS needs list was provided to the County to assist with data collection, which is already in progress. The County will provide the meeting summary, handouts, presentation and sign in sheet by email so that other HMPC members that could not attend today's meeting could get up to speed. Scott noted that he will be in touch to follow-up on some of the previously identified data sources and plans.

Wood will begin work in the Hazard Identification and Risk Assessment update and develop a public survey that can be used online, with a hardcopy version for dissemination at local events.
The next HMPC webinar is tentatively planned for May following the update of the Hazard Identification and Risk Assessment section of the plan. However, the project schedule may need to be adjusted due to the current pandemic situation. Meeting dates and other deadlines will be shared when available.

Adjourn

The meeting adjourned at 2:37 pm

scott.field@woodplc.com
303-742-5320

Larimer County
Hazard Mitigation Plan 2020 Update

Kickoff Webinar
1pm - 3 pm, April 10, 2020

Chat Log Transcript

Shayle Sabo: Yes!

Jeff Brislawn: Yes

Shayle Sabo: Scott – just emailed you the most recent version of the contact list

Scott Field: Thanks Shayle

Shayle Sabo: Yep!

Nick Sporer: Yes

Kristin Baja: yes

Daniel Bowker: Yes

Shayle Sabo: hold on fixing mic

Bob Gowing: Is a digital version of this presentation available?

Shayle Sabo: Bob, yes we will provide the presentation in the Google folder that is shared with the group

Bob Gowing: Thanks!

Shayle Sabo: The pdf version is in there now, but we will also ensure the recorded version of this presentation is put in there following the meeting.

Eric Fried: Perhaps the Sheriff's Office Emergency Sefvices and the Assessor's Office should be included among county departments.

Pat Mialy: Please ass LFRA as a planning partner

Courtney Gutman: CWCB/CDWR – addition to agency/partner list

Eric Fried: Federal/state partners would include Colorado State University, Colorado Division of Fire Prevention and Control, and National Park Service (Rocky Mountain NP)

Kenneth Quintana: I'm with CSU as am a partner

Eric Fried: Has anyone reached out to Front Range Fire Protection District to be a partner (cover part of Johnstown)

Courtney Gutman: Also, Peaks 2 People Water Fund and CO Forest Restoration Institute is doing extensive forest/wildfire behavior review – very comprehensive database maybe of interest. Jen of CPRW can provide info on Northern Co Fireshed Network.

Shayle Sabo: All great suggestions – will reach out to these!

Shayle Sabo: They have not been reached out to, we will do that

Courtney Gutman: What capacity does Larimer County have to partner with local partners in mitigation project/grant applications and funding sources?

Eric Rose: Shayle please plug us in where we can assist best (Estes)

Pat Mialy: Loveland has a Mitigation Master Plan that we would like ot share with the planners.

Shayle Sabo: Courtney – I think the answer to this is always the squishy "it depends," I imagine it is dependent on the project you are looking to partner with the County on and the scope, and we evaluate our capacity from there. We can definitely continue the conversation as we go through this process!

Shayle Sabo: thank you, and thank you for your participation!

Shayle Sabo: Pat – Yes, that would be great. Please send that my way!

Courtney Gutman: I'm sure you know, but CSFS for Community Wildfire Protection Planning efforts (Loveland and Larimer updates happening now) also coming to mind. CWPPs should be added to the list!

Pat Mialy: Thanks Courtney!

Shayle Sabo: Thank you Courtney! All previous/current plans that exist are incorporated throughout the planning process. CWPPs are definitely included!

Chris Wolf: I have ot jump off for another obligation.

Bob Gowing: B-Dams

Kristin Baja: Comprehensive Plans, Sustainability Plans, Climate Action Plans, Etc.

Devin & Tina: Larimer County's Strategic Plan

Katy McLaren: Fort Collins is undergoing updates to our Climate Action Plan, Road to Zero Waste and Energy Policy update. These will have a resilience component to them.

Kallie Bauer: Hi this is Kallie I am here but can't seem to be heard

Bob Gowing: Wellington Comprehensive Plan. Wellington Stormwater Master Plan. Both going on this year

Amy Carr: Great, thank you!

Scott Field: These are great, some of these we already have on the list but some are new. Keep them coming!

Kevin Gingery: Big Thompson River Master Plan

Courtney Gutman: how about DARCA for ditch operators? Not sure how local it is. Big Thompson River Envisioning Master Plan is being developed, completed June 2021.

Courtney Gutman: Contact BTWC for summer line up (COVID pending)

Katy McLaren: The City of Fort Collins can likely include some information and potentially link this process to the climate action plan update called Our Climate Future.

Scott Field: great ideas, thanks.

Shayle Sabo: Just a heads up that my email looks like there is a typo – it's sabosn@larimer.co.us :)

Mark Thompson: Scott, can you stay on for a minute?

Katy McLaren: Shayle, does the City of FC have a designated lead for this planning process?

Shayle Sabo: Nick Sporer I believe is the lead

Jennifer Waters: Thanks for the excellent presentation.

Scott Field: Thanks you!

Katy McLaren: That's what I figured. I'll touch base with Baja about how to loop in Nick and how to move forward. It's not clear to me how this might work yet.

Kevin Gingery: FYI – Kevin's can only chat today due to current setup.

Shayle Sabo: Thanks for letting us know, Kevin!

ATTENDANCE RECORD
Larimer County
Hazard Mitigation Plan Update
HMPC Kickoff Meeting
Friday, April 10, 2020 at 1:00 - 3:00 pm MDT

Name	Jurisdiction/Organization	Title	E-mail
Ashley Macdonald	Wellington Fire Protection District	Government Affair/Management Director	amacdonald@wfpd.org
Kristin Baja	Urban Sustainability Directors Network	Program Director, Climate Resilience	kristinbaja@usdn.org
Bob Gowing (970-576-4095)	Town of Wellington Public Works	Director	gowingbj@wellingtoncolorado.gov
Brian Phillips	Town of Johnstown	Chief of Police	bphillips@johnstownpolice.org
Chris Bieker	Upper Thompson Sanitation District	District Manager	chris@utsd.org
Chris Wolf	Poudre Fire Authority	Emergency Management Specialist	cwolf@poudre-fire.org
Claudia Quezada	City of Fort Collins Floodplain Management	Civil Engineer	cquezada@fcgov.com
Courtney Gutman	Crystal Lakes Road & Rec Association	Director	courtney.gutman@bigthompson.co
Daniel Bowker	Coalition for the Poudre River Watershed	Forest & Fire Project Manager	daniel@poudrewatershed.org
David Wolf	Estes Valley Fire Protection District	Chief	chief@estesvalleyfire.org
Devin Traff	Larimer County Floodplain Management	Engineer	traffdc@co.larimer.co.us
Eric Fried	Larimer County Building Department	Chief Building Official	friedeb@co.larimer.co.us
Eric Rose	Town of Estes Park Office of Emergency Management	Emergency Manager	erose@estes.org
Errin Henggeler	City of Fort Collins Utilities Division	Sr. Environmental Regulatory Specialist	ehenggeler@fcgov.com
Gary Green	Wellington Fire Protection District	Chief	ggreen@wfpd.org
Heidi Hansen	City of Fort Collins Floodplain Management	Engineer	hhansen@fcgov.com
Thomas Hickey (970-829-6410)	Colorado State University Office of Emergency Management	Assistant Emergency Coordinator	thomas.hickey@colostate.edu

Name	Jurisdiction/Organization	Title	E-mail
Jen Kovecses	Coalition for the Poudre River Watershed	Executive Director	jenk@poudrewatershed.org
Jennifer Waters	Estes Valley Watershed Coalition	Director	jwaters@estes.org
Jim Struble	Northern Colorado Water Conservancy District	Emergency Coordinator	jstruble@northernwater.org
Kallie Bauer	Colorado Division of Water Resources Dam Safety	Engineer	kallie.bauer@state.co.us
Katy McLaren	City of Fort Collins Social Sustainability	Sr. Environmental Planner	kmclaren@fcgov.com
Kevin Gingery	City of Loveland Floodplain Management	Senior Civil Engineer	Kevin.Gingery@cityofloveland.org
Lesli Ellis	Larimer County Community Development Department	Director	ellislk@larimer.org
Mark Peterson	Larimer County Engineering	Engineer	mpeterson@larimer.org
Mark Thompson	Colorado Division of Homeland Security & EM	Mitigation Planning Specialist	markw.thompson@state.co.us
Matt Zoccali	City of Fort Collins Utilities Division – Water Production	Environmental Regulatory Affairs Manager	mzoccali@fcgov.com
Nick Sporer	City Fort Collins Office of Emergency Preparedness & Security	Senior Emergency Management Specialist	nsporer@fcgov.com
Pat Mialy	City of Loveland/LFRA Office of Emergency Management	Emergency Manager	pat.mialy@LFRA.org
Kenneth Quintana	Colorado State University Office of Emergency Management	Emergency Manager	ken.quintana@colostate.edu
Rick Klimek	Town of Windsor Police Department	Chief	rklimek@windsorgov.com
Rick Life	Town of Estes Park Police Department	Administrative Lieutenant	rlife@estes.org
Robert Shainline	Town of Windsor Police Department		rshainline@windsorgov.com
Robert Stumpf	Berthoud Fire Protection District	Operations Chief	rstumpf@berthoudfire.org
Rusty McDaniel (970-498-5730)	Larimer County Engineering	Assistant Engineer	rmcdaniel@larimer.org
Shayle Sabo	Larimer County Office of Emergency Management	Emergency Management Coordinator	sabosn@co.larimer.co.us
Ted Plank	Pinewood Springs Fire Protection District	Chief	chief@pinewoodspringsfire.org
Terry Walker	Town of Windsor Public Works	Director	twalker@windsorgov.com
Tina Kurtz	Larimer County Floodplain Management	Environmental Coordinator Specialist	kurtztm@co.larimer.co.us

Name	Jurisdiction/Organization	Title	E-mail
Tom Carosello	Estes Valley Recreation & Park District	Executive Director	tomc@evprd.com
Will Davis	Big Thompson Watershed Coalition	Program Manager	will.davis@bigthompson.co
Wilynn Formeller (970-290-0738)	Estes Valley Watershed Coalition	Director	Wilynn.Formeller@evwatershed.org
Scott Field	Wood E&IS	Project Manager	Scott.field@woodplc.com
Jeff Brislawn	Wood E&IS	Lead Hazard Mitigation and Emergency Management Program	Jeff.brislawn@woodplc.com
Amy Carr	Wood E&IS	Hazard Mitigation Planner	Amy.carr@woodplc.com
502-395-0018			
719-338-6124			
858-775-7965			
970-381-8108			
970-578-0198			
970-586-8191			

Larimer County
Hazard Mitigation Plan Update
Risk Assessment Webinar Agenda

Date: Friday May 15, 2020
1:00 - 3:00 pm MDT

Meeting at: Microsoft Teams Webinar link:
https://teams.microsoft.com/l/meetup-join/19%3ameeting_NDQzNzRmMjYtNjQzZC00OTVmLWI4MGItNWYxZGRhNjkwNGJj%40thread.v2/0?context=%7b%22Tid%22%3a%220843acec-fd3e-49be-bd54-18c6048a3fd0%22%2c%22Oid%22%3a%221af7d331-902d-4752-9987-ea455d99ec99%22%7d

Phone: (866) 670-1764
Conference ID: 280 545 410#

Subject/Purpose

The purpose of the meeting is to review the highlights of the updated Hazard Identification and Risk Assessment. The meeting will be delivered as a webinar due to the COVID-19 pandemic and social distancing requirements.

Attendees: Hazard Mitigation Planning Committee and Wood Team Consultants

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1. Introductions
2. Review of the planning process and requirements
3. Public involvement activities
4. Hazard identification and risk assessment (HIRA) update
5. Capabilities assessment update
6. Mitigation goals and objectives update
7. Next steps
8. Questions

Summary of the Larimer County
Multi-Hazard Mitigation Plan Update
Hazard Mitigation Planning Committee Meeting #2

May 15, 2020
1:00 pm – 3:00pm
Risk Assessment Webinar

Introductions and Opening Remarks

Scott Field of Wood Environment and Infrastructure Solutions, the consulting firm hired to facilitate the plan development process, began the meeting with welcoming remarks. Fifty-three people attended the webinar.

Review of Mitigation, Disaster Mitigation Act (DMA) Requirements, and the Planning Process

Following introductions, Scott Field reviewed the planning process being followed and discussed the project status.

Risk Assessment Presentation and Discussion

The general risk assessment requirements were outlined before turning to a detailed discussion of each hazard. Highlights were presented on each hazard included in the updated risk assessment chapter of the plan. Refer to the Larimer County HMP Risk Assessment PowerPoint presentation for specific details on each hazard and a handout summarizing hazard significance. Highlights of the discussion are noted by hazard in the table below.

Hazard or Topic	Meeting Discussion and Problem Statements
Flood	• City of Fort Colins has mapped floodplains in addition to FEMA floodplain mapping and will share. • Recommendation to change the colors of the map that represent floodplains, currently confusing to differentiate between floodplains and lakes and streams.
Wildfire	• Noted that the areas on the map next to RMNP may give people the perception that there is no/low risk area. • Added there are large amounts of beetle kill in the RMNP area. • Suggested to highlight WUI risk areas instead of combing WUI and noting water supply and riparian areas. • Adding housing density to map was also suggested.
Spring/Summer Storm (hail, severe wind, lightning)	• County Building noted the County adopted by reference the Front Range Wind Gust Map produced by the Structural Engineers Association of Colorado which uses high wind speed design criteria.
Tornado	• No comments
Winter Storm	• No comments
Earthquake	• No comments
Landslide/Rockslide	• No comments
Erosion/Deposition	• No comments
Biological Hazards/Contagion	• Suggested including Non-English speaking communities to social vulnerabilities.

Hazard or Topic	Meeting Discussion and Problem Statements
Hazardous Materials Incidents	• It was clarified that oil and gas facilities are included in this analysis to the extent data is available.
Utility Disruption	• It is common for Estes Park to experience utility outages due to snow and wind • Fort Collins noted that 30% of City residents don't have air conditions and may become vulnerable to extreme heat.
Civil Disturbance	• No comments
Dam Inundation	• Dam inundation was not included in 2016 plan, HMPC agreed it should be included in 2020 update. • Fort Collins noted they have maps of dam inundation and keep a critical facilitates list. Added the City is talking with the state about the non-failure dam mapping projects (County is also in partnership with State on project) • Noted the 2013 flood many ditch diversion structures were damages (minor to severe). This in turn had impacts on part of the local economy

Update on Public Involvement Activities/public meeting.

Scott noted that the online public survey is open through the end of June, and has already received 68 responses. The HMPC is encouraged to share the link to the public survey through their respective channels: https://bit.ly/Larimer_HMP_Post_Mtg2_Survey
(Spanish Version) https://bit.ly/Encuesta_pública_de_Larimer_HMP

Plan Timeline/Next steps

The next HMPC planning meeting will be in July. The purpose of that meeting will be to review the mitigation actions from 2016 plan and discuss developing new mitigation actions for the 2020 plan update. The meeting materials from this meeting will also be shared electronically, including the presentation and handouts.

The meeting adjourned at 3:00 pm.

Meeting started 5/15 12:46 PM

[5/15 12:49 PM] Field, Scott
Good afternoon everyone, we'll be getting started in a few minutes

[5/15 1:03 PM] randerson@fcgov.com
is this going to be recorded?

[5/15 1:06 PM] Brian Phillips
No micro phone

[5/15 1:15 PM] ehenggeler@fcgov.com
will you post link in the chat?

[5/15 1:15 PM] Carr, Amy
https://bit.ly/Larimer_HMP_Post_Mtg2_Survey

[5/15 1:16 PM] Jen K
Hi Shayle, Jen K is Jen Kovecses for your attendance records!

[5/15 1:16 PM] Shayle Sabo
Thanks Jen! Gotcha down! :)

[5/15 1:18 PM] Gregg Stonecipher
Could you post that link in the chat, as well?

[5/15 1:18 PM] Gregg Stonecipher
The public survey?

[5/15 1:18 PM] Shayle Sabo
https://bit.ly/Larimer_HMP_Post_Mtg2_Survey
Fill | Larimer County Risk Assessment and Goals Update Webinar - Post Meeting Survey
Thank you for attending the Larimer County Risk Assessment and Goals Update webinar on May 15th. Please complete the following questions.
bit.ly

[5/15 1:19 PM] Carr, Amy
Public Survey link: https://bit.ly/Larimer_HMP_Public_Survey
Fill | Larimer County Hazard Mitigation Plan Update Public Input Survey
Larimer County is updating its Multi-Jurisdictional Hazard Mitigation Plan per the five year update cycle required by FEMA and the Federal Disaster Mitigation Act of 2000. The Hazard Mitigation P...
bit.ly

[5/15 1:19 PM] Gregg Stonecipher
Thanks.

[5/15 1:20 PM] Shayle Sabo
If anyone does not have the E-flyer and needs it - email me at sabosn@co.larimer.co.us and I can get this to you!

[5/15 1:21 PM] Pat Mialy
Will the revision not include "threat" to make it a THIRA?

[5/15 1:28 PM] Pat Mialy
Thanks Scott and Shayle

[5/15 1:29 PM] Pat Mialy
ok,, thanks again

[5/15 1:31 PM] kmclaren@fcgov.com
Can you explain why drought isn't listed as a natural hazard for this county?

[5/15 1:33 PM] Lori Hodges
I thought drought was in the last plan so if it isn't there we would like it to be included.

[5/15 1:34 PM] kmclaren@fcgov.com
It was included in the plan from 10 years ago

[5/15 1:38 PM] hhansen@fcgov.com
Please note that Fort Collins has City mapped floodplains in addition to the FEMA floodplains

[5/15 1:40 PM] Tina Kurtz
Is anyone else a slide behind?

[5/15 1:41 PM] Shayle Sabo
Tina are you seeing the NFIP Policies & Loss slide right now?

[5/15 1:42 PM] Tina Kurtz
Nope - stuck on FEMA Flood Mapping. Just moved to NFIP policies. Just skipped a slide or two

[5/15 1:43 PM] ehenggeler@fcgov.com
mine was doing that earlier - close program and rejoin meeting

[5/15 1:43 PM] Lori Hodges
Katy - We did find drought in the 2016 plan, it was just not listed as one of the top 10 hazards on the chart.
(1 liked)

[5/15 1:43 PM] ehenggeler@fcgov.com
it worked for me

[5/15 1:43 PM] Tina Kurtz
Thanks for the suggestion. I just thought it was my internet in Estes - away from civilization. ;)

[5/15 1:46 PM] courtney.gutman@bigthompson.co
what about wildfire impact to water quality/supply?

[5/15 1:46 PM] Gregg Stonecipher
Same question.

[5/15 1:49 PM] Tina Kurtz
There is also a lot of beetle kill in the park.

[5/15 1:57 PM] derek rosenquist
Kevin Sullivan- you can request access to COWRAP as a professional user and drill down into the Estes area for maps and risk reports

[5/15 1:57 PM] Jennifer Waters
Thanks for excellent information and presentation. Survey completed.

[5/15 1:58 PM] Kevin Sullivan
Thanks Derek -Kevin Sullivan

[5/15 2:05 PM] Eric Fried
The wind hazard information shown is outdated. It references ASCE 7-98, which is over 20 years old. The standard referenced in the 2018 International Building Code is ASCE 7-16. We also adopt by reference (as do many Front Range cities/towns/counties) the Front Range Wind Gust Map produced by the Structural Engineers Association of Colorado, which uses high wind speed design criteria.

[5/15 2:06 PM] Eric Fried
https://seacolorado.org/docs/FINAL-COLORADO-FRONT-RANGE-GUST-MAP-2013.pdf

[5/15 2:07 PM] Carr, Amy
thanks, Eric!

[5/15 2:08 PM] Shayle Sabo
Lisa to answer your question - PRPA was a participating jurisdiction in the previous plan, but were unable to participate in this plan. However they did say that if we wanted to incorporate their expertise or if they could answer any questions we are free to reach out to them.

[5/15 2:14 PM] Lisa Rosintoski
Thank YOU!

[5/15 2:15 PM] Field, Scott
Eric - thank you, I hadn't realized that map was still using the old ASCE!

[5/15 2:28 PM] kenq@colostate.edu

I need to get to another conference call. Tom will update me.

[5/15 2:35 PM] Lori Hodges
Some of those are worldwide numbers and others are U.S. numbers.

[5/15 2:36 PM] kmclaren@fcgov.com
I do think there's more social vulnerabilities than what was listed: non-english speaking communities as one example

[5/15 2:39 PM] Gregg Stonecipher
Katy, that was listed in the social vulnerabilities. Do you think it is more significant than represented?

[5/15 2:42 PM] kmclaren@fcgov.com
Sorry I missed it but saw it missing under the pandemic slide

[5/15 2:42 PM] Gregg Stonecipher
Ah, I see what you're saying.

[5/15 2:42 PM] kmclaren@fcgov.com
I do think language is significant barrier

[5/15 2:44 PM] kmclaren@fcgov.com
Those without air conditioning would not be ok in extreme heat event

[5/15 2:44 PM] kmclaren@fcgov.com
That's 30% of Fort Collins residents

[5/15 2:46 PM] Carr, Amy
Katy McLaren, thanks for pointing those out. We will be including social vulnerabilities within each hazard analysis. I've captured both of your comments. Thanks for the input!

[5/15 2:54 PM] Pat Mialy
Yes, dams should be included!

[5/15 2:54 PM] Tina Kurtz
Yes! Include dams

[5/15 2:54 PM] kmclaren@fcgov.com
Does the risk of earthquakes increase the likelihood of dam failure?

[5/15 2:55 PM] hhansen@fcgov.com
Fort Collins maps all of our dam inundation areas and we keep a critical facilities list

[5/15 2:55 PM] Shayle Sabo
Yes, we also want dams included

[5/15 2:55 PM] hhansen@fcgov.com
We've also been talking with the state about that non-failure dam mapping project

[5/15 2:58 PM] Carr, Amy
[Larimer HMP_Mitigation Goals Reference.pdf]
(https://woodplc-my.sharepoint.com/personal/amy_carr_woodplc_com/Documents/Microsoft Teams Chat Files/Larimer HMP_Mitigation Goals Reference.pdf)

[5/15 2:59 PM] Shayle Sabo
The handout was also attached to the Google invite and is in the Partners folder under Meeting Presentations - Planning Meeting #2.
(1 liked)

[5/15 3:00 PM] courtney.gutman@bigthompson.co
Can this project keep an ongoing list of grants/funding opportunities for improvement such as the one you are mentioning right now?

[5/15 3:00 PM] courtney.gutman@bigthompson.co
I will never remember that grant name...

[5/15 3:00 PM] Carr, Amy
Post Meeting Survey Link: https://bit.ly/Larimer_HMP_Post_Mtg2_Survey
Fill | Larimer County Risk Assessment and Goals Update Webinar - Post Meeting Survey
Thank you for attending the Larimer County Risk Assessment and Goals Update webinar on May 15th. Please complete the following questions.
bit.ly

[5/15 3:00 PM] Brislawn, Jeff P
HHPD is the short version.

[5/15 3:01 PM] Jen K
Hi, I had to step away for a minute and missed some details on the dam conversation - did the definition of dam include ditch diversion structures or was it literally only impoundment dams?

[5/15 3:02 PM] Mark Thompson
Jen K- all of the County and State mitigation plans I've seen only discuss impoundment dams.

[5/15 3:02 PM] Jen K
ok, thanks

[5/15 3:02 PM] Carr, Amy
Public Input Survey: https://bit.ly/Larimer_HMP_Public_Survey
Fill | Larimer County Hazard Mitigation Plan Update Public Input Survey
Larimer County is updating its Multi-Jurisdictional Hazard Mitigation Plan per the five year update cycle required by FEMA and the Federal Disaster Mitigation Act of 2000. The Hazard Mitigation P...
bit.ly

[5/15 3:02 PM] Brislawn, Jeff P
Typically those structures dont meet the criteria for a signficiant or hig h hazard dam.

[5/15 3:03 PM] Brislawn, Jeff P
Are they a flood concern? We could note that in the flood hazard profile.

[5/15 3:04 PM] Shayle Sabo
Thank you everyone!

[5/15 3:04 PM] Jen K
Many ditch diversion structures were damaged (minor to severe) during the 2013 floods. That in turn has impacts to other parts of the economy so I think it is worth mentioning

[5/15 3:05 PM] courtney.gutman@bigthompson.co
Re Jen K's concern, if the smaller ditch/diversion is impacted, is there potential hazard to water supply by water rights owners associated with it? Not that it would cause flood hazard, but it could cause economic hardship and lack of water available to owners.

[5/15 3:05 PM] courtney.gutman@bigthompson.co
Thanks all

[5/15 3:05 PM] courtney.gutman@bigthompson.co
Great updates

Meeting ended 4h 3m 5/15 4:50 PM

LARIMER COUNTY HAZARD MITIGATION PLAN
2020 UPDATE
Updating the Mitigation Strategy

Mitigation Planning Goals, Objectives, and Actions - Definitions

Goals, objectives, and mitigation actions should be based on the information revealed in the Risk Assessment. Definitions are provided below:

Goals are general guidelines that explain what you want to achieve. Goals are defined before considering how to accomplish them so that the goals are not dependent on the means of achievement. They are usually broad policy-type statements, long term, and represent global visions, such as:

- Reduce exposure to hazard related losses
- Minimize the risk from natural disasters to existing facilities and proposed development.
- Reduce the impact of natural hazards to the citizens of the county.
- Provide protection for natural resources from hazard impacts
- Maintain and enhance existing mitigation measures.
- Increase public awareness of vulnerability to hazards and support and demand for hazard mitigation

Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable, such as:

- Maintain the flood mitigation programs to provide 100-year flood protection
- Protect critical facilities to the 500 year flood
- Educate citizens about wildfire defensible space actions.
- Prepare plans and identify resources to facilitate reestablishing operations after a disaster.

Mitigation Actions are specific actions that help you achieve your goals and objectives. Some examples include:

- Elevate three historic structures located in the downtown district
- Sponsor a community fair to promote wildfire defensible space
- Retrofit the police department to withstand flood damage

The goals and objectives from the Montezuma County Hazard Mitigation Plan 2016 are shown on the next page. The 2020 plan update presents an opportunity to review the goals and modify if desired. Use this handout to verify that they are still appropriate or suggest modifications to the planning committee and Wood (amy.carr@woodplc.com).

Larimer County 2016 Hazard Mitigation Plan Goals and Objectives

Goal 1: Protect people, property, and natural resources

Goal 2: Improve capability to reduce disaster losses

Goal 3: Strengthen communication and coordination among public agencies, non-governmental organizations, businesses, and citizens

Goal 4: Increase public awareness of natural hazards and mitigation options

Goal 5: Integrate hazard mitigation into other planning mechanisms

> **Objective 1:** Continue to develop and expand public awareness and information programs
>
> **Objective 2:** Enhance training for hazard prevention and mitigation options
>
> **Objective 3**: Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans
>
> **Objective 4:** Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
>
> **Objective 5:** Reduce the vulnerability of local assets to the impacts of hazards.

Other Related Plan Goals

It is also important to integrate the mitigation strategy with other existing goals to ensure consistency, efficiency, and effectiveness, which is also useful in identifying funding opportunities. The following are provided for reference purposes.

The Larimer Community Resiliency Framework (2016) –

Larimer Community Resiliency Goals

Goal 1: Implement regional, long-range, comprehensive planning,

Goal 2: Engage and educate county residents to foster awareness, preparedness, self-sufficiency, and a greater sense of community.

Goal 3: Develop and implement construction standards that increase energy and resource efficiency and reduce risk.

Goal 4: Increase the range of housing options and increase stock of affordable housing through traditional means as well as creative land use, building codes, and measures for innovative housing.

Goal 5: Develop and fund a regional, multi-modal transportation network.

Goal 6: Manage natural resources through watershed restoration and floodplain and land use planning.
Goal 7: Build public-private sector partnerships to support and achieve the community's visions and goals.

Larimer County 2019-2023 Strategic Plan

Goal 1: Larimer County works collaboratively to ensure adequate public infrastructure is available to support the needs of our growing community.
Goal 2: Everyone in Larimer County has access to economic opportunities and a vibrant quality of live. We work together to remove barriers.
Goal 3: Larimer county government is ready to support the future service needs of our residents and visitors.

STATE OF COLORADO 2018 MITIGATION GOALS

Minimize the loss of life and personal injuries from all-hazard events (I)
Objectives: A, D, F, G, H
Reduce losses and damages to state, tribal, and local governments, as well as special districts and private assets, and support similar local efforts (II)
Objectives: J, O
Reduce federal, state, tribal, local, and private costs of disaster response and recovery (III)
Objectives: D, E, J, P, Q
Support mitigation initiatives and policies that promote disaster resiliency, nature-based solutions, cultural resources and historic preservation, and climate adaptation strategies (IV)
Objectives: A, B, E, M, N
Minimize interruption of essential services and activities (V)
Objectives: D, E, J, L, P, Q
Incorporate equity considerations into all mitigation strategies (VI)
Objectives: A, E
Support improved coordination of risk mitigation between and among the public, private, and non-profit sectors (VII)
Objectives: A, C, D, E, G, I, K, L, M, N, O, R
Create awareness and demand for mitigation as a standard of practice (VIII)
Objectives: A, B, C, E, G, K, L, M, N, O

State of Colorado 2018 Mitigation Objectives:

A. Support and empower local and regional mitigation strategies through statewide guiding principles, programs, and resources

B. Promote activities that are climate neutral and supportive of appropriate renewable and alternative energy

C. Strengthen hazard risk communication tools and procedures

D. Strengthen continuity of operations at the federal, state, regional, tribal, and local levels of government to ensure the delivery of essential services

E. Strengthen cross-sector connections across the state government

F. Identify specific areas at risk to natural hazards and zones of vulnerability

G. Expand public awareness, education, and information programs relating to hazards and mitigation methods and techniques

H. Develop mitigation projects focused on preventing loss of life, injuries, and negative impacts to natural resources and reliant community sectors from natural, technological, and human-caused hazards

I. Assist local government officials with construction, non-construction, and regulatory hazard mitigation activities

J. Protect state critical, essential, and necessary assets located in natural hazard risk areas

K. Improve state, tribal, and local government mitigation project monitoring and decision-making tools

L. Strengthen connections between hazard mitigation activities and preparedness, response, and recovery activities

M. Improve coordination of state government mitigation resources with federal, tribal, and local government and private nonprofit resources

N. Increase state, tribal, and local government and private nonprofit participation in existing hazard mitigation programs

O. Partner with local and tribal governments to develop projects, initiatives, and public resources that protect private property from hazards

P. Reduce services interruptions and revenue losses, resulting from hazard events, to the state

Q. Reduce downtime and revenue losses, resulting from hazard events, for local and tribal governments and private nonprofit organizations

R. Through training, grants, and technical assistance, increase local government use of land use strategies that reduce risks to hazards

New Grant Requirement: Rehabilitation of High Hazard Potential Dams (HHPD) Grant Program

- HHPD3. Did Element S8 (mitigation goals) include mitigation goals to reduce longterm vulnerabilities from HHPDs that pose an unacceptable risk to the public?



Larimer County Risk Assessment and Goals Update Webinar - Post Meeting Survey

9	36:57	Closed
Responses	Average time to complete	Status

1. Name

9
Responses

Latest Responses
"*Nick Sporer*"
"*Shayle Sabo*"
"*Matt Allen*"

2. Jurisdiction or Organization

9
Responses

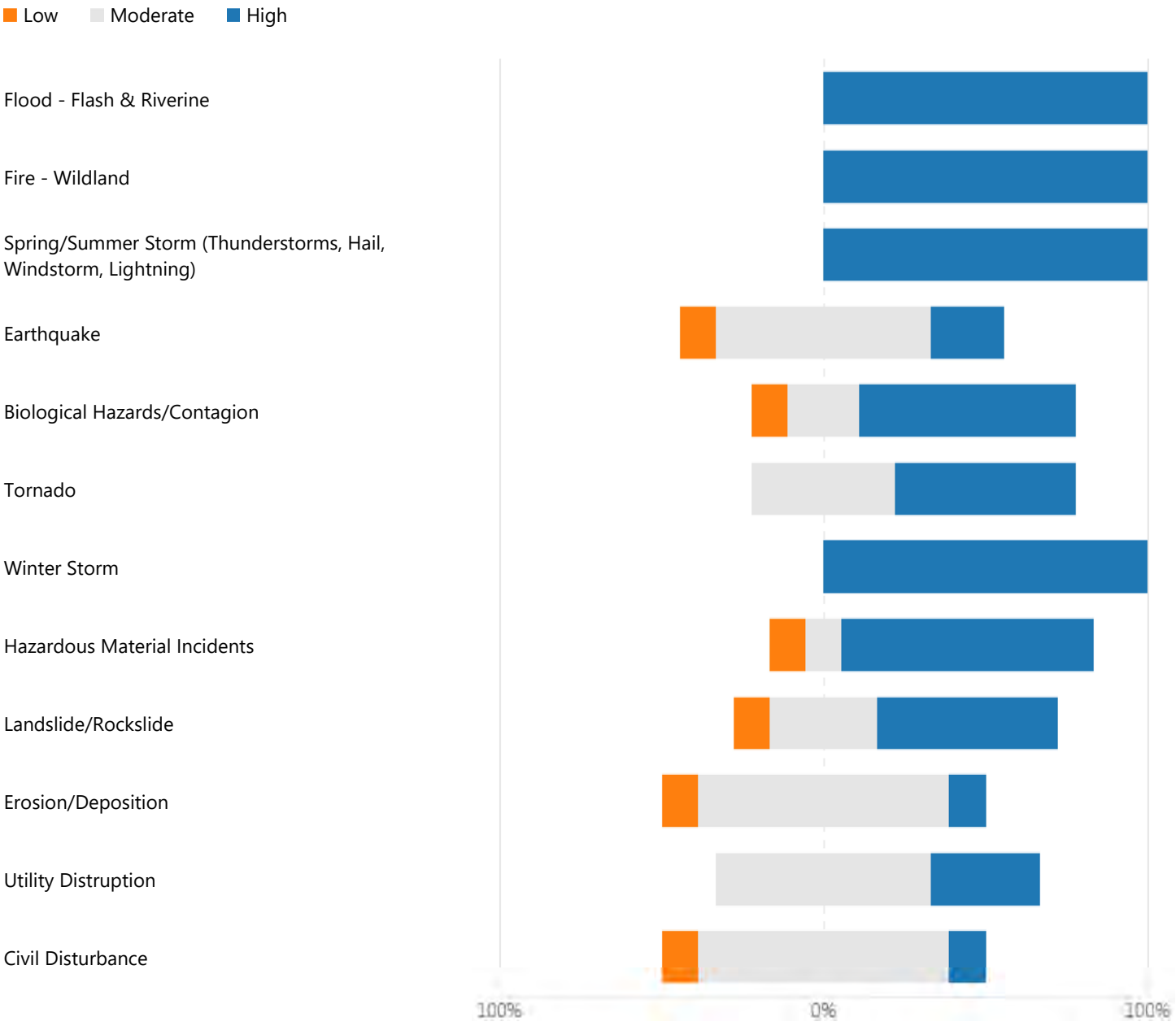
Latest Responses
"*City of Fort Collins*"
"*Larimer County*"
"*Upper Thompson Sanitation District*"

3. Email address

9
Responses

Latest Responses
"*nsporer@fcgov.com*"
"*sabosn@co.larimer.co.us*"
"*matt@utsd.org*"

4. The initial hazard ratings for the 2020 Larimer County Hazard Mitigation Plan are listed in the table above. Please review each of the ratings and indicate below if the hazard ratings should stay the same or be changed by selecting Low, Moderate or High for each hazard. Please note, these hazard ratings are for the County as a whole. Ratings may differ for individual jurisdictions.



5. Are there other hazards that should considered in the County's 2020 Hazard Identification and Risk Assessment?

Yes	4
No	5



6. If yes, please state which hazards should be considered.

4
Responses

Latest Responses
"*Drought*"
"*Drought, Dam inundation* "

7. Do you think any of the goals should be revised?

Yes	2
No	7



8. If yes, please state which goal should be revised and provide a recommended revision.

2
Responses

Latest Responses
"*2.) Increase level of community resilience county-wide and improve cap...*

9. Do you think any of the objectives should be revised?

Yes	1
No	8



10. If yes, please state which objective should be revised and provide a recommended revision.

1
Responses

Latest Responses

"5. Reduce the vulnerability of local assets and members of the communi..."

11. Do you have any additional comments related to the risk information (e.g. past events, data sources, community insights) shared at the May 15th meeting? Please provide comments below or email them to scott.field@woodplc.com

6
Responses

Latest Responses

"At reviewing the plan I just wanted to point out that the charts include t..."

"None"

ATTENDANCE RECORD
Larimer County
Hazard Mitigation Plan Update
HMPC Meeting #2 – Risk Assessment Webinar
Friday, May 15, 2020 at 1:00 - 3:00 pm MDT

Name	Jurisdiction/Organization	Title	E-mail
Ashley Macdonald	Wellington Fire Protection District	Government Affair/Management Director	amacdonald@wfpd.org
Brian Phillips	Town of Johnstown	Chief of Police	bphillips@johnstownpolice.org
Chris Wolf	Poudre Fire Authority	Emergency Management Specialist	cwolf@poudre-fire.org
Claudia Quezada	City of Fort Collins Floodplain Management	Civil Engineer	cquezada@fcgov.com
Courtney Gutman	Crystal Lakes Road & Rec Association	Director	courtney.gutman@bigthompson.co
Dan Escobedo	Division of Fire Prevention and Control (DFPC), Big Thompson Region	Battalion Chief	dan.escobedo@state.co.us
Daniel Bowker	Coalition for the Poudre River Watershed	Forest & Fire Project Manager	daniel@poudrewatershed.org
Danielle May (806-678-3384)	Banner Health	Emergency Management Program Manager, Western Division	Danielle.May@bannerhealth.com
Derek Rosenquist	Larimer County Sheriffs Office, Emergency Services	Emergency Services Specialist	rosenqdc@co.larimer.co.us
Devin Traff	Larimer County Floodplain Management	Engineer	traffdc@co.larimer.co.us
Eric Fried	Larimer County Building Department	Chief Building Official	friedeb@co.larimer.co.us
Everitt Pettit	Wellington Fire Protection District	Captain	epettit@wfpd.org
Gary Green	Wellington Fire Protection District	Chief	ggreen@wfpd.org
Gregg Stonecipher	City of Fort Collins Utilities – Water Production	Technical Services Supervisor	gstonecipher@fcgov.com
Gretchen Stanford	City of Fort Collins Utilities	Public Information Officer	gstanford@fcgov.com
Heather Schinkel	Peaks to People Water Fund	Executive Director	heather@peakstopeople.org
Heidi Hansen	City of Fort Collins Floodplain Management	Engineer	hhansen@fcgov.com

Name	Jurisdiction/Organization	Title	E-mail
Jason Eisenbach	Larimer County Public Health & Environment	EPR Coordinator	eisenbja@co.larimer.co.us
Jason Graham	City of Fort Collins Utilities	Water Reclamation and Biosolids Manager	jgraham@fcgov.com
Jean Lever	Colorado Division of Water Resources District 4	Commissioner	jean.lever@state.co.us
Jennifer Waters	Estes Valley Watershed Coalition	Director	jwaters@estes.org
Katy McLaren	City of Fort Collins Social Sustainability	Sr. Environmental Planner	kmclaren@fcgov.com
Kevin Sullivan	Estes Valley Fire Protection District	Division Chief Prevention Fire Marshal	prevention@estesvalleyfire.org
Lisa Rosintoski	City of Fort Collins Utilities	Public Information Officer	Lrosintoski@fcgov.com
Lori Hodges	Larimer County Office of Emergency Management	Director	hodgeslr@co.larimer.co.us
Mark Kempton	City of Fort Collins Utilities - Water Production	Interim Deputy Director	mkempton@fcgov.com
Mark Peterson	Larimer County Engineering	Engineer	mpeterson@larimer.org
Mark Thompson	Colorado Division of Homeland Security & EM	Mitigation Planning Specialist	markw.thompson@state.co.us
Matt Allen	Upper Thompson Sanitation District	Collection Department Supervisor	matt@utsd.org
Matt Laferty	Larimer County Community Development	Principle Planner	laffermn@co.larimer.co.us
Nick Sporer	City Fort Collins Office of Emergency Preparedness & Security	Senior Emergency Management Specialist	nsporer@fcgov.com
Pat Mialy	City of Loveland/LFRA Office of Emergency Management	Emergency Manager	pat.mialy@LFRA.org
Patricia Gavelda	Colorado Division of Homeland Security & EM	State and Local Mitigation Program Planning Manager	patricia.gavelda@state.co.us
Kenneth Quintana	Colorado State University Office of Emergency Management	Emergency Manager	ken.quintana@colostate.edu
Rich Anderson	City of Fort Collins Building Services	Chief Building Official	RAnderson@fcgov.com
Rick Klimek	Town of Windsor Police Department	Chief	rklimek@windsorgov.com
Shayle Sabo	Larimer County Office of Emergency Management	Emergency Management Coordinator	sabosn@co.larimer.co.us
Scott Benton	City of Fort Collins Planning Department	Environmental Planner	Sbenton@fcgov.com

Name	Jurisdiction/Organization	Title	E-mail
Thomas Hickey (970-829-6410)	Colorado State University Office of Emergency Management	Assistant Emergency Coordinator	thomas.hickey@colostate.edu
Ted Plank	Pinewood Springs Fire Protection District	Chief	chief@pinewoodspringsfire.org
Terry Walker	Town of Windsor Public Works	Director	twalker@windsorgov.com
Tina Kurtz	Larimer County Floodplain Management	Environmental Coordinator Specialist	kurtztm@co.larimer.co.us
Tim Morales	City of Fort Collins GIS Department	Programmer/Analyst	tmorales@fcgov.com
Tom Carosello	Estes Valley Recreation & Park District	Executive Director	tomc@evprd.com
Tom DeMint	Poudre Fire Authority	Chief	tdemint@poudre-fire.org
Will Davis	Big Thompson Watershed Coalition	Program Manager	will.davis@bigthompson.co
Scott Field	Wood E&IS	Project Manager	Scott.field@woodplc.com
Jeff Brislawn	Wood E&IS	Lead Hazard Mitigation and Emergency Management Program	Jeff.brislawn@woodplc.com
Amy Carr	Wood E&IS	Hazard Mitigation Planner	Amy.carr@woodplc.com
858-775-7965			
970-290-0738			
970-498-7000			
970-577-3689			
970-586-8191			

Larimer County
Hazard Mitigation Plan Update
Mitigation Strategy Meeting Agenda

Date: Tuesday, July 14, 2020
1:00 – 3:00 pm MST

Meeting at: Microsoft Teams meeting
Click Here to Join the Meeting
https://bit.ly/3oDUyDh
+1 281-810-1627 United States, Houston (Toll)
(866) 670-1764 United States (Toll-free)
Conference ID: 765 097 177#

Subject/Purpose

This meeting will focus on updating the plan's mitigation strategy, including the plan's goals and objectives, actions undertaken since the last plan update, and identifying new mitigation activities. All participating jurisdictions and planning team members are encouraged to attend. The meeting will be delivered as a webinar due to the COVID-19 pandemic and social distancing requirements.

Attendees: Hazard Mitigation Planning Committee, Stakeholders and Consultant Team

1. Introductions
2. Review of the Planning Process and Progress to Date
3. Update Mitigation Goals & Objectives
4. Review of progress on Mitigation Actions from 2016 Plan
5. Review of Mitigation Action Categories
6. Development of New Mitigation Actions
7. Next steps
8. Questions and Answers

Larimer County Hazard Mitigation Plan 2020 Update

Mitigation Strategy Meeting Chat Log

[7/8 5:11 PM] Field, Scott joined the meeting.
Meeting started 7/14 12:43 PM
[7/14 12:47 PM] Carr, Amy joined the meeting.
[7/14 12:47 PM] Chris Wolf joined the meeting.
[7/14 12:47 PM] Keith Dunn LFPD (Guest) joined the meeting.
[7/14 12:49 PM] Lori Hodges (Guest) joined the meeting.
[7/14 12:53 PM] Shayle Sabo (Guest) joined the meeting.
[7/14 12:54 PM] William Vieth (Guest) joined the meeting.
[7/14 12:55 PM] William Vieth (Guest) left the conversation.
[7/14 12:55 PM] Brislawn, Jeff P joined the meeting.
[7/14 12:55 PM] William Vieth (Guest) joined the meeting.
[7/14 12:55 PM] Adam Olinger (Guest) joined the meeting.
[7/14 12:56 PM] mzoccali@fcgov.com joined the meeting.
[7/14 12:57 PM] Kallie (Guest) joined the meeting.
[7/14 12:57 PM] Kallie (Guest) left the conversation.
[7/14 12:57 PM] Kevin Sullivan joined the meeting.
[7/14 12:57 PM] Jones,Warren joined the meeting.
[7/14 12:57 PM] Matt Allen joined the meeting.
[7/14 12:58 PM] Lori Hodges (Guest) left the conversation.
[7/14 12:58 PM] Scott Benton joined the meeting.
[7/14 12:58 PM] Dan Escobedo - DFPC joined the meeting.
[7/14 12:59 PM] Kallie (Guest) joined the meeting.
[7/14 12:59 PM] Jean Lever (Guest) joined the meeting.
[7/14 12:59 PM] gstonecipher@fcgov.com joined the meeting.
[7/14 12:59 PM] Mark Thompson joined the meeting.
[7/14 12:59 PM] Norville,Matt joined the meeting.
[7/14 1:00 PM] ehenggeler@fcgov.com joined the meeting.
[7/14 1:01 PM] nsporer@fcgov.com joined the meeting.
[7/14 1:01 PM] Diana Royval joined the meeting.
[7/14 1:01 PM] Ted Plank (Guest) joined the meeting.
[7/14 1:01 PM] Eric Fried (Guest) joined the meeting.
[7/14 1:01 PM] Matt Lafferty (Guest) joined the meeting.
[7/14 1:01 PM] Marco (Guest) joined the meeting.
[7/14 1:01 PM] randerson@fcgov.com joined the meeting.
[7/14 1:01 PM] Gary Hall joined the meeting.
[7/14 1:02 PM] Tom Carosello joined the meeting.
[7/14 1:02 PM] Jen K CPRW (Guest) joined the meeting.
[7/14 1:02 PM] Tom Carosello (Guest) joined the meeting.
[7/14 1:03 PM] kmclaren@fcgov.com joined the meeting.
[7/14 1:03 PM] Jason Eisenbach (Guest) joined the meeting.
[7/14 1:03 PM] Jason Eisenbach (Guest) joined the meeting.
[7/14 1:04 PM] Tom Demint joined the meeting.
[7/14 1:04 PM] Gretchen Stanford joined the meeting.

[7/14 1:04 PM] Matt Allen (Guest)
I am here...Matt Allen with Upper Thompson Sanitation District in Estes Park.

[7/14 1:05 PM] Jennifer Waters (Guest) joined the meeting.
[7/14 1:05 PM] Jason Eisenbach (Guest) joined the meeting.
[7/14 1:05 PM] Bill McCormick (Guest) joined the meeting.
[7/14 1:05 PM] Jason Eisenbach (Guest) left the conversation.
[7/14 1:09 PM] Keith Dunn LFPD (Guest) left the conversation.
[7/14 1:09 PM] Everitt Pettit (Guest) joined the meeting.
[7/14 1:10 PM] Eric Rose (Guest) joined the meeting.
[7/14 1:11 PM] courtney.gutman@bigthompson.co joined the meeting.
[7/14 1:12 PM] Keith Dunn Livermore Fire(Guest) joined the meeting.
[7/14 1:12 PM] hhansen@fcgov.com joined the meeting.
[7/14 1:13 PM] Bob Gowing joined the meeting.
[7/14 1:15 PM] twalker@windsorgov.com joined the meeting.
[7/14 1:17 PM] twalker@windsorgov.com left the conversation.

[7/14 1:18 PM] courtney.gutman@bigthompson.co
Who coordinated the survey development and release? I would love to talk with them as we are doing similar outreach now- Courtney Gutman

[7/14 1:21 PM] kmclaren@fcgov.com
Where did we land on including drought as a hazard?

[7/14 1:24 PM] Mike Blackwill joined the meeting.

[7/14 1:26 PM] manorv@colostate.edu
drought increases the wildfire hazard

[7/14 1:27 PM] Bill McCormick (Guest) left the conversation.

[7/14 1:28 PM] courtney.gutman@bigthompson.co
I believe CWCB has a model available to help assess future projection of water availability if useful. I can get you more details if you need a program name.

[7/14 1:28 PM] Bill McCormick (Guest) joined the meeting.
[7/14 1:28 PM] Matt Lafferty (Guest) left the conversation.

[7/14 1:29 PM] Shayle Sabo (Guest)
That would be great, Courtney!

[7/14 1:29 PM] Tim Morales joined the meeting.
[7/14 1:31 PM] Devin T (Guest) joined the meeting.
[7/14 1:33 PM] Kathy (Guest) joined the meeting.
[7/14 1:33 PM] Kathy (Guest) left the conversation.

[7/14 1:34 PM] courtney.gutman@bigthompson.co
I believe this is it: https://www.colorado.gov/pacific/cdss/surface-water-statemod

[7/14 1:34 PM] Kathy (Guest) joined the meeting.

[7/14 1:36 PM] courtney.gutman@bigthompson.co
Also Shayle, maybe worthwhile to take a look at this, but other meeting participants on this call likely know more about this work than I do. https://www.colorado.gov/pacific/cdss/colorado-river-water-availability-study

[7/14 1:37 PM] Shayle Sabo (Guest)
Thank you, Courtney!

[7/14 1:39 PM] Carr, Amy
Examples of Mitigation Action Alternatives:
[Typical Mitigation Action Alternatives.pdf]
(https://woodplc-my.sharepoint.com/personal/amy_carr_woodplc_com/Documents/Microsoft Teams Chat Files/Typical Mitigation Action Alternatives.pdf)

[7/14 1:39 PM] Kathy (Guest) left the conversation.

[7/14 1:43 PM] gstonecipher@fcgov.com
I'm having trouble accessing that document

[7/14 1:43 PM] Shayle Sabo (Guest)
Amy - if you email me that document I can send it out to this whole group

[7/14 1:45 PM] Carr, Amy
Shayle just emailed it to you. Thanks!

[7/14 1:46 PM] Shayle Sabo (Guest)
Awesome - thanks!

[7/14 1:48 PM] courtney.gutman@bigthompson.co
City of Loveland's Public Works dept may be doing an assessment of infrastructure upgrade needs in the next few years I believe - I suggest reaching to their staff.

[7/14 1:49 PM] Shayle Sabo (Guest)
It has not been sent out yet

[7/14 1:54 PM] courtney.gutman@bigthompson.co
How will community or NGO-led projects or actions be captured/articulated? Or are they just a bonus?

[7/14 1:55 PM] Shayle Sabo (Guest)
The way we did this in the past, at least for water coalitions specifically Courtney is that we folded your actions underneath Larimer County but we can discuss this a little more

[7/14 1:58 PM] Jason Eisenbach (Guest) left the conversation.
[7/14 2:00 PM] Jennifer Waters (Guest) left the conversation.

[7/14 2:02 PM] Jen K CPRW (Guest)
Courtney - I offered to Shayle to provide an update on what the Fireshed is doing/planning, which will capture an important chunk of that federal work - at least the wildfire piece.

[7/14 2:03 PM] courtney.gutman@bigthompson.co
Great idea Jen

[7/14 2:03 PM] Shayle Sabo (Guest)
Yes I was just thinking about how I wanted you to provide that as an option, Jen

[7/14 2:05 PM] manorv@colostate.edu
CSFS and the Conservation Districts also get work fuels reduction, forest restoration, and wildfire risk reduction on unincorporated land within Larimer County. The Fireshed knows about some of this work.

[7/14 2:07 PM] Jen K CPRW (Guest)
I want the money...

[7/14 2:08 PM] Carr, Amy
New Mitigation Actions Survey: https://bit.ly/Larimer_HMP_New_Mitigation_Actions
Fill | New Mitigation Action Worksheet
bit.ly

[7/14 2:09 PM] Keith Dunn Livermore Fire(Guest)
Shayle can you send these forms to us? The links dont seem to work

[7/14 2:09 PM] Shayle Sabo (Guest)
You bet - I'll get them all from Amy and send them out

[7/14 2:11 PM] mzoccali@fcgov.com
Is it possible to use FEMA $$ for a mitigation action related to creating staff capacity? Like, could you get funding to get a consultant to capture critical knowledge/expertise from staff to minimize the impacts from disruptions?

[7/14 2:15 PM] Marco (Guest) left the conversation.

[7/14 2:19 PM] manorv@colostate.edu
How technical or fleshed out do the Actions need to be?

[7/14 2:22 PM] hhansen@fcgov.com
it worked for me

[7/14 2:22 PM] Keith Dunn Livermore Fire(Guest)

I was able to open the mitigation form but not the other stuff

[7/14 2:22 PM] Adam Olinger (Guest)
No problems here

[7/14 2:23 PM] Tim Morales (Guest)
I haven't been able to get the Mitigation actions link to work

[7/14 2:23 PM] courtney.gutman@bigthompson.co
I can open the survey link. Email send out is always helpful though.

[7/14 2:23 PM] ehenggeler@fcgov.com
I am able to open link

[7/14 2:23 PM] Carr, Amy
Mitigation Action Tracker. Will also be emailed post meeting
[Larimer Mitigation Action Tracker.xlsx]
(https://woodplc-my.sharepoint.com/personal/amy_carr_woodplc_com/Documents/Microsoft Teams Chat Files/Larimer Mitigation Action Tracker.xlsx)

[7/14 2:23 PM] Keith Dunn Livermore Fire(Guest)
Thanks Shayle

[7/14 2:24 PM] gstonecipher@fcgov.com

[7/14 2:24 PM] kmclaren@fcgov.com
Our FC team will be meeting to discuss further so we'll have more ideas later

[7/14 2:24 PM] cheryl poage (Guest) joined the meeting.

[7/14 2:26 PM] kmclaren@fcgov.com
Shayle can you let FC Staff know when you have your marketing for the next public meeting is so we can help promote?

[7/14 2:27 PM] Shayle Sabo (Guest)
Yes - definitely will do, Katy!

[7/14 2:29 PM] Matt Allen left the conversation.
[7/14 2:29 PM] Adam Olinger (Guest) left the conversation.

[7/14 2:29 PM] kmclaren@fcgov.com
Thanks!

[7/14 2:29 PM] courtney.gutman@bigthompson.co
We would also like to help circulate, learn about lessons learned/successes for our own outreach efforts (selfish request here), and maybe even share your outcomes since they might align with questions we have in our Stream Management Planning project (Shayle, we can talk soon on this)

[7/14 2:29 PM] Devin T (Guest) left the conversation.

[7/14 2:30 PM] courtney.gutman@bigthompson.co
Thanks all

[7/14 2:30 PM] Jen K CPRW (Guest) left the conversation.
[7/14 2:30 PM] Keith Dunn Livermore Fire(Guest) left the conversation.
[7/14 2:30 PM] Ted Plank (Guest) left the conversation.
[7/14 2:30 PM] Bill McCormick (Guest) left the conversation.
[7/14 2:30 PM] Eric Fried (Guest) left the conversation.

[7/14 2:30 PM] Scott Benton (Guest)
have a good afternoon

[7/14 2:30 PM] William Vieth (Guest) left the conversation.
[7/14 2:30 PM] Kallie (Guest) left the conversation.
[7/14 2:30 PM] cheryl poage (Guest) left the conversation.
[7/14 2:30 PM] Dan Escobedo - DFPC left the conversation.
[7/14 2:30 PM] Shayle Sabo (Guest) left the conversation.
[7/14 2:30 PM] Eric Rose (Guest) left the conversation.
[7/14 2:30 PM] Mike Blackwill left the conversation.
[7/14 2:32 PM] Jean Lever (Guest) left the conversation.
[7/14 3:09 PM] Tom Carosello (Guest) left the conversation.
[7/14 4:44 PM] Chris Wolf left the conversation.
Meeting ended 4h 7/14 4:44 PM

Larimer County Hazard Mitigation Plan 2020 Update

Mitigation Strategy Meeting Summary

July 14, 2020, 1:00 – 3:00 pm

Introductions

Scott Field, Project Manager, Wood Environment and Infrastructure Solutions (Wood), kicked off the webinar and thanked everyone for their participation. Scott introduced the Wood team and led a roll call of attendees to introduce themselves. In total 45 individuals participated in the webinar representing Larimer County and participating jurisdictions including municipalities and special districts as well as stakeholders and partner organizations.

Review of the Planning Process

The FEMA planning process steps were recapped; Wood is currently wrapping up the Risk Assessment process and beginning the mitigation strategy portion. This webinar addressed mitigation strategizing and goal review/development aspects.

The roles of the participating jurisdictions in the HMPC vs. Stakeholders were reviewed, as differentiated under FEMA's eyes. Only the participating jurisdictions, will be specifically addressed in the plan and will be required to meet certain criteria such as attending planning meetings, identifying mitigation actions, and tracking other aspects in order to qualify for funding in the future. While other entities (i.e. everyone else) were key stakeholders that would provide useful input and feedback as well as review the Hazard Mitigation Plan (HMP) drafts.

The progress on the plan update process to date was reviewed. Highlights include:

- Kickoff meeting held April 10th
- Risk Assessment meeting held May 15th
- First public meeting held May 28th
- HIRA Updated
- Online Public Survey closed July 14th

Public Survey Results

Two versions of the Public Survey, an English and Spanish version were open to public from June 1 to July 14th. Links to both surveys were posted on the County website. In total 138 responses were received from the English version. The top five hazards of concern based on this public survey were:

- Wildfire,
- Spring/Summer Storm (includes thunderstorm, hail, lightning, sever wind, and heavy rain)
- Winter Storm
- Flood
- Biological Hazards/Contagion

Handouts showing the entire survey results were emailed to the meeting attendees. The HMPC and stakeholders were encouraged to review the survey results and take them into account when developing mitigation goals, objectives, and actions.

2020 Hazard Summary

The Hazard Summary table was briefly reviewed. The group discussed whether the frequency rating for Biological Hazards/Contagion should be kept as Highly Likely, or reduced to Likely. Highly Likely would reflect the regular occurrence of annual health hazards, whereas Likely would only reflect more serious outbreaks like epidemics & pandemics. The consensus was to keep it as Highly Likely, since public health events have been common in the county in recent years and that while an event may not exceed response of the county it may exceed the resources at county Public Health.

The HMPC noted that Drought was not included in the hazard summary table. In the 2016 plan the hazard was discussed but not fully profiled as a hazard. Considering the impacts drought has on the county, its ability to influence other hazard, in addition to increased impacts due to climate change the HMPC determined that Drought should be fully profiled in the updated HIRA.

Mitigation Goals and Objectives

The goals from the 2016 Hazard Mitigation Plan were revisited and results from the Webinar #2 Post Meeting Summary was discussed. Key differences between "goals," "objectives" and "actions" were defined: goals and objectives are usually more general and broad guidelines while actions are specific and project-driven. Projects submitted for grant funding will need to tie back to goals and objectives in the HMP. The revised 2020 Larimer County Hazard Mitigation Plan goals and objectives are as follows. Approved revisions are underlined.

Goals:

- Goal 1: Protect people, property, and natural resources
- Goal 2: Increase level of community resilience county-wide and improve capability to reduce disaster losses
- Goal 3: Strengthen communication and coordination among public agencies, non-governmental organizations, businesses, and citizens
- Goal 4: Increase public awareness of natural and human-caused hazards and mitigation options
- Goal 5: Integrate hazard mitigation into other planning mechanisms.

Objectives:

- Continue to develop and expand public awareness and information programs
- Enhance training for hazard prevention and mitigation options
- Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans
- Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
- Reduce the vulnerability of local assets and members of the community to the impacts of hazards.

Mitigation Actions

One way to think of mitigation actions is the four A's:

- Altering a hazard,

- Averting a hazard,
- Avoiding a hazard,
- Adapting to a hazard

FEMA suggests these four categories for mitigation actions:

- Plans and Regulations,
- Structure and Infrastructure Projects,
- Education and Awareness, and
- Natural Systems Protection.

Resources for more details on mitigation action types, categories, and example projects were provided, including a short discussion on climate change and adaptation considerations. Example hazard-specific mitigation projects were discussed including FEMA funding-eligible projects for winter weather, flood, and other hazards.

The new FEMA High Hazard Potential Dam (HHPD) grant was discussed. A community needs to have existing dam related goals or objectives in order to qualify for grant funds. The existing goals and objectives meet this requirement. The State of Colorado was awarded two grant projects from this grant last year. This dam grant, however, cannot be applied towards federal dams or hydroelectric dams.

Review of Progress on Existing Mitigation Actions

Prior to the webinar, a Mitigation Action Tracker was sent to the HMPC listing each jurisdictions' 2016 mitigation actions. Each HMPC representative was asked to provide status to provide comments on the status of each action. The Tracker was emailed again following the webinar to fill in some of the missing statuses. The mitigation action statuses are categorized as one of the following: Completed, Annual Implementation, In Progress, Not Started and Deleted.

Some examples of "Deleted" actions may be due to lack of project applicability over time, or even inability to complete a project in an area where the community does not have control/jurisdiction (e.g. state owned vs. federal land).

Annual Implementation are actions that a jurisdiction is conducting on an ongoing basis, but which the jurisdiction wants to continue forward into the updated plan to maintain visibility on the action.

Developing New Mitigation Actions

Each participating jurisdiction is required to develop at least one new action for the 2020 plan update. Ideally, jurisdictions should develop actions that address all the hazards addressed in the plan, or at least the High significance hazards, but FEMA Region VIII does not require this. All jurisdictions that participate in the National Flood Insurance Program (NFIP) will need to have a mitigation action addressing continued NFIP compliance.

The following are resources with ideas and examples of mitigation actions and implementation:

- FEMA's Mitigation Idea: https://www.fema.gov/media-library/assets/documents/30627
- Colorado Planning for Hazards Guide: https://planningforhazards.com/home

A link to the New Mitigation Action Survey was shared during the meeting and emailed after. Each HMPC member was asked to fill out the survey with at least one mitigation action by July 31st.

New Mitigation Actions Survey: https://bit.ly/Larimer_HMP_New_Mitigation_Actions

Next Steps

The next steps in the HMP update process were briefly discussed and the project milestones and prospective timeline for task completions were presented. The Wood team mentioned that the next HMPC meeting will include prioritizing new mitigation actions and reviewing the draft plan. The specific day and time would be set soon.

Project Milestone	Anticipated Timeline
• Updated HIRA	July 2020
• HMPC Meeting #4 – Plan Review	August 2020
• HMPC Review Draft	September 2020
• Public Review Draft	September – October 2020
• CO DHSEM Review	October 2020
• FEMA Review (estimated)	October – December 2020
• Final Approved HMP for local adoption	January 2021

Questions and Answers/Adjourn

The webinar adjourned around 3pm.

Points of Contact for this HMP update effort:

Scott Field
Wood E&IS Project Manager
scott.field@woodplc.com
303-742-5320

Shayle Nelson Sabo
Larimer County OEM
sabosn@co.larimer.co.us
970-498-7148

ATTENDANCE RECORD
Larimer County
Hazard Mitigation Plan Update
HMPC Meeting #3 – Mitigation Strategy Webinar
Tuesday, July 14, 2020 at 1:00 - 3:00 pm MDT

Name	Jurisdiction/Organization	Title	E-mail
Adam Olinger	Town of Berthoud Planning Department	Planner	aolinger@berthoud.org
Bob Gowing	Town of Wellington Public Works	Director	gowingbj@wellingtoncolorado.gov
Bill McCormick	Colorado Division of Water Resources Dam Safety	Chief	bill.mccormick@state.co.us
Chris Wolf	Poudre Fire Authority	Emergency Management Specialist	cwolf@poudre-fire.org
Courtney Gutman	Crystal Lakes Road & Rec Association	Director	courtney.gutman@bigthompson.co
Dan Escobedo	Division of Fire Prevention and Control (DFPC), Big Thompson Region	Battalion Chief	dan.escobedo@state.co.us
Devin Traff	Larimer County Floodplain Management	Engineer	traffdc@co.larimer.co.us
Diana Royval	City of Fort Collins Utilities	Public Information Officer	DROYVAL@fcgov.com
Eric Fried	Larimer County Building Department	Chief Building Official	friedeb@co.larimer.co.us
Eric Rose	Town of Estes Park Office of Emergency Management	Emergency Manager	erose@estes.org
Errin Henggeler	City of Fort Collins Utilities Division	Sr. Environmental Regulatory Specialist	ehenggeler@fcgov.com
Everitt Pettit	Wellington Fire Protection District	Captain	epettit@wfpd.org
Gary Hall	Estes Park Health	Chief Information Officer	ghall@eph.org
Gregg Stonecipher	City of Fort Collins Utilities – Water Production	Technical Services Supervisor	gstonecipher@fcgov.com
Gretchen Stanford	City of Fort Collins Utilities	Public Information Officer	gstanford@fcgov.com
Heidi Hansen	City of Fort Collins Floodplain Management	Engineer	hhansen@fcgov.com
Jason Eisenbach	Larimer County Public Health & Environment	EPR Coordinator	eisenbja@co.larimer.co.us

Name	Jurisdiction/Organization	Title	E-mail
Jason Graham	City of Fort Collins Utilities	Water Reclamation and Biosolids Manager	jgraham@fcgov.com
Jen Kovecses (858-775-7965)	Coalition for the Poudre River Watershed	Executive Director	jenk@poudrewatershed.org
Jean Lever	Colorado Division of Water Resources District 4	Commissioner	jean.lever@state.co.us
Jennifer Waters	Estes Valley Watershed Coalition	Director	jwaters@estes.org
Kallie Bauer	Colorado Division of Water Resources Dam Safety	Engineer	kallie.bauer@state.co.us
Katy McLaren	City of Fort Collins Social Sustainability	Sr. Environmental Planner	kmclaren@fcgov.com
Keith Dunn	Livermore Fire Protection Distirct	Captain	kdunn@livermorefire.org, keithfdunn@gmail.com
Kevin Sullivan	Estes Valley Fire Protection District	Division Chief Prevention Fire Marshal	prevention@estesvalleyfire.org
Marco Carnai	Town of Johnstown Public Works	Director	mcarani@townofjohnstown.com
Mark Thompson	Colorado Division of Homeland Security & EM	Mitigation Planning Specialist	markw.thompson@state.co.us
Matt Allen	Upper Thompson Sanitation District	Collection Department Supervisor	matt@utsd.org
Matt Lafferty	Larimer County Community Development	Principle Planner	laffermn@co.larimer.co.us
Matt Norville	Colorado State Forest Service	Forester	Matt.Norville@colostate.edu
Matt Zoccali	City of Fort Collins Utilities – Water Production	Environmental Regulatory Affairs Manager	mzoccali@fcgov.com
Mike Blackwill	Windsor Severance Fire Protection District	Operations Chief	mblackwill@wsfr.us
Nick Sporer	City Fort Collins Office of Emergency Preparedness & Security	Senior Emergency Management Specialist	nsporer@fcgov.com
Rich Anderson	City of Fort Collins Building Services	Chief Building Official	RAnderson@fcgov.com
Shayle Sabo	Larimer County Office of Emergency Management	Emergency Management Coordinator	sabosn@co.larimer.co.us
Scott Benton	City of Fort Collins Planning Department	Environmental Planner	Sbenton@fcgov.com
Thomas Hickey (970-829-6410)	Colorado State University Office of Emergency Management	Assistant Emergency Coordinator	thomas.hickey@colostate.edu

Name	Jurisdiction/Organization	Title	E-mail
Ted Plank	Pinewood Springs Fire Protection District	Chief	chief@pinewoodspringsfire.org
Tom Carosello	Estes Valley Recreation & Park District	Executive Director	tomc@evprd.com
Tom DeMint	Poudre Fire Authority	Chief	tdemint@poudre-fire.org
Warren Jones	Glacier View Fire Protection District	Chief	gvfdchief1@gmail.com
William Vieth	Wildlands Restoration Volunteer	Program Manager, Rivers & Forests	william@wlrv.org
Scott Field	Wood E&IS	Project Manager	Scott.field@woodplc.com
Jeff Brislawn	Wood E&IS	Lead Hazard Mitigation and Emergency Management Program	Jeff.brislawn@woodplc.com
Amy Carr	Wood E&IS	Hazard Mitigation Planner	Amy.carr@woodplc.com
970-498-7000			
970-443-1276			
970-586-8191			
970-532-2643			

LARIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

VIRTUAL PUBLIC WORKSHOP



JOIN THE DISCUSSION ON LOCAL HAZARD IDENTIFICATION & RISK ASSESSMENTS

THURSDAY, MAY 28, 2020 | 5PM - 7PM
TO REGISTER TO PARTICIPATE
PLEASE CLICK HERE

We Invite you to Take a Public Survey:
https://bit.ly/Larimer_HMP_Public_Survey

ACTUALIZACIÓN DEL PLAN DE MITIGACIÓN DE RIESGOS DE JURISDICCIÓN MÚLTIPLE DEL CONDADO DE LARIMER.

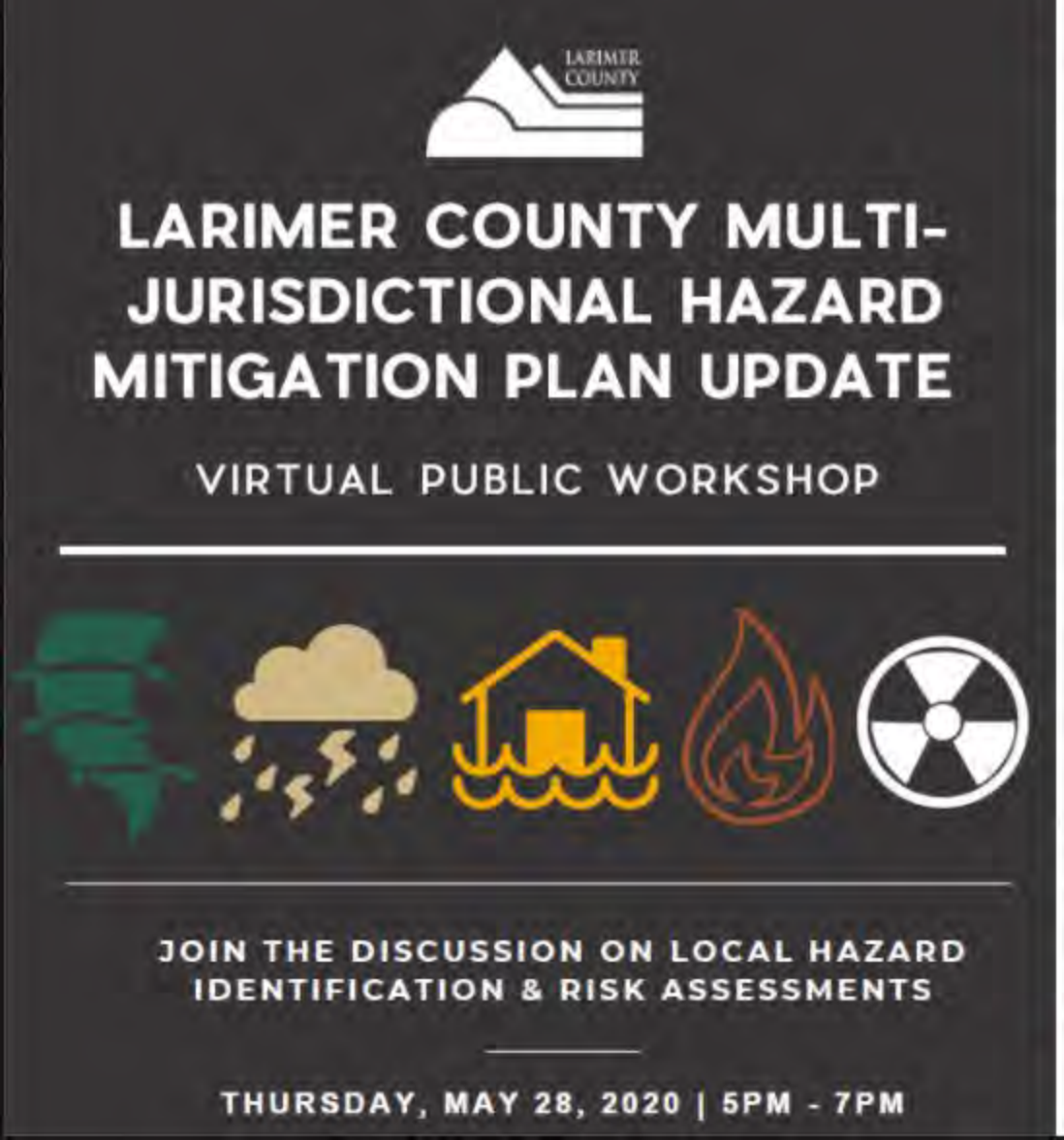
TALLER PÚBLICO VIRTUAL



EN LA DISCUSIÓN SOBRE IDENTIFICACIÓN Y EVALUACIONES DE RIESGOS Y APORTAR A NUESTRO PLAN

MARTES, 13 DE OCTUBRE 2020 | 5PM - 7PM

PARA REGISTRARSE PARA PARTICIPAR, CLIC AQUÍ



Larimer County Office of Emergency Management

Like This Page · May 14, 2020

We are updating our local Hazard Mitigation Plan! Did you know that for every $1 spent on mitigation, we save $6 in future disaster costs? We want you to share your input on the planning process!

Join us for a Virtual Workshop followed by a question & answer session - May 28th, 5:00 - 7:00 p.m. For more information and to register to participate please click the following link: https://www.larimer.org/events/emergency-management/multi-jurisdictional-hazard-mitigation-plan-update-virtual-public

You can also participate in this process by filling out a brief public survey. This will help us understand how our local community members perceive and identify hazards and risk in Larimer County: https://bit.ly/Larimer_HMP_Public_Survey

Alli Berkompas, Ryan Elwyn, Michelle Bird and 3 others like this.

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Kenneth Ambrose Need to let people harvest the dead timber. They need it for heat and the state needs it to be done. Win win

Multi-Jurisdictional Hazard Mitigation Plan Public Workshop

View Edit Unpublish

Upcoming Month

Join the discussion on local hazard identification and risk assessments and provide input to our draft plan.

To register to participate: https://zoom.us/webinar/register/WN_R0-o4QoOSzqW31z8DKgBCQ

Únase a la discusión sobre la identificación de peligros locales y las evaluaciones de riesgos y aportar a nuestro plan.

Para registarse para participar: https://zoom.us/webinar/register/WN_R0-o4QoOSzqW31z8DKgBCQ



Event Date: Tuesday, October 13, 2020 - 5:00pm to 7:00pm
6 days remaining

Register

Add to My Google Calendar

Department: Emergency Management

Contact Name: Shayle Sabo

Contact Email: sabosn@co.larimer.co.us

Contact Phone: 2089402387

Share:

Per the Americans with Disabilities Act (ADA), Larimer County will provide reasonable accommodations to qualified individuals with a disability who need assistance. Services can be arranged with at least seven business days' notice. Please email dnotter@larimer.org or call (970) 498-5967 or Relay Colorado 711. "Walk-in" requests for auxiliary aids and services will be honored to the extent possible but may be unavailable if advance notice is not provided.

of Emergency Management.

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The Fabulous Moms Of Northern Colorado
3.4K members • 6 posts a day
Join

Windsor, CO Community
2.8K members • 20 posts a day
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Reminder! Please make sure you are registered for our virtual workshop on the Hazard Mitigation Plan next week!

To register:
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The Larimer County Office of Emergency Management page provides updates and information on preparedness, response, mitigation and recovery in the county.

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¡Recordatorio! ¡Asegúrese de estar registrado para nuestro taller virtual sobre el Plan de mitigación de riesgos la próxima semana!

Para registrarse para participar:
https://zoom.us/webinar/register/WN_R0-o4QoOSzqW31z8DKgBGQ

> Reminder! Make sure you're registered for our virtual workshop on Risk Mitigation Plan next week!
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NEW DATE FOR OUR VIRTUAL WORKSHOP:
October 13, 2020 5pm - 7 pm
We need your input!
To register to participate: zoom.us/webinar/regist...



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¡Recordatorio! ¡Asegúrese de estar registrado para nuestro taller virtual sobre el Plan de mitigación de riesgos la próxima semana!
Para registarse para participar:
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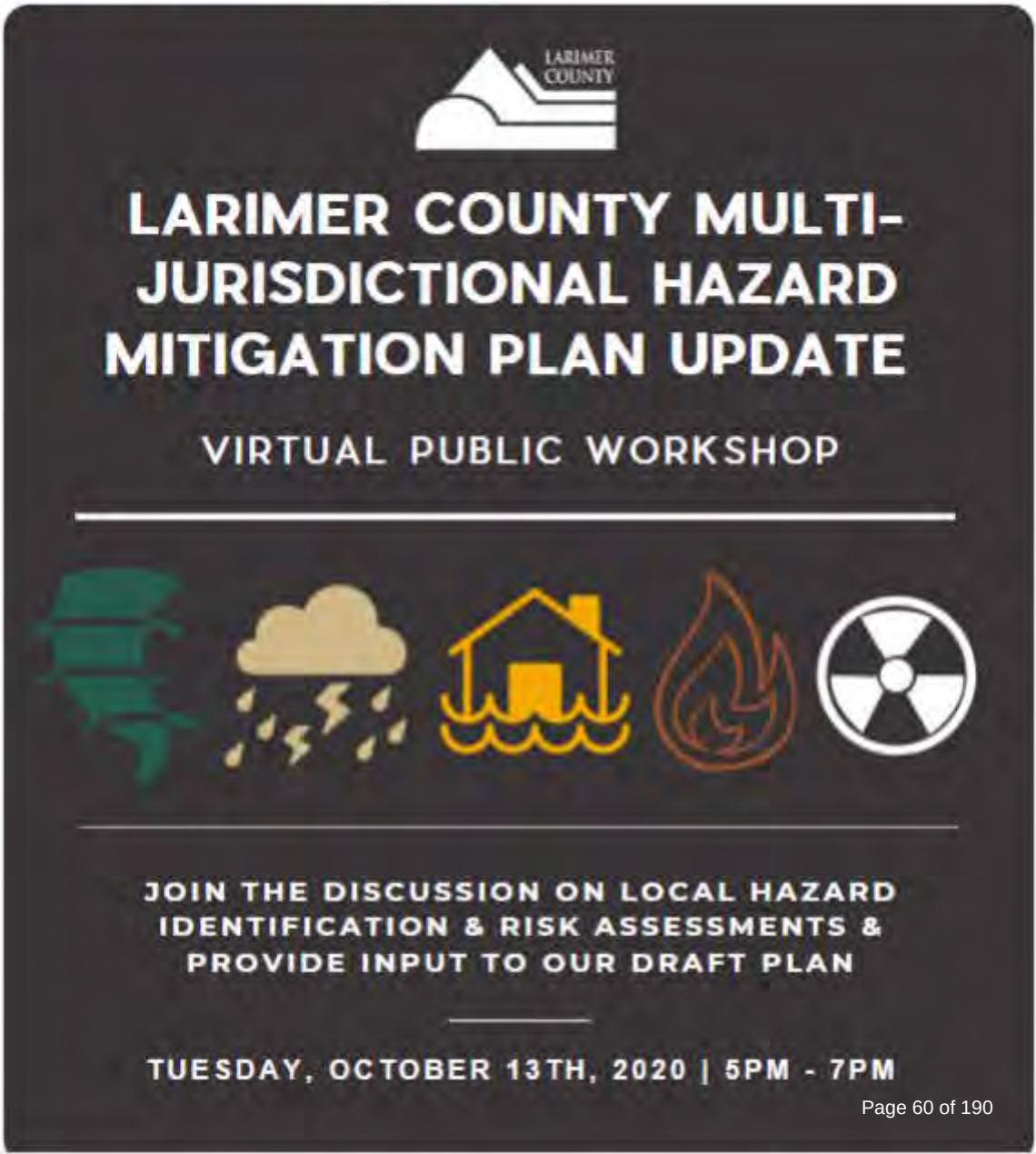
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NUEVA FECHA PARA NUESTRO TALLER PÚBLICO VIRTUAL:
13 de Octubre 2020

¡Necesitamos su opinión!
Para registrarse para participar:
zoom.us/webinar/regist...

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Hazard mitigation plan being updated



Published on:
Monday, May 18, 2020 - 12:26pm

Contact Details:

Shayle Sabo, Larimer County Emergency Management, [970] 498-7148, sabosn@co.larimer.co.us

Department:
Emergency Management

Public participation sought

A multi-jurisdictional hazard mitigation plan designed to reduce the risk of hazards and disasters while also increasing resilience is being developed by Larimer County, special districts, stakeholders and other local government jurisdictions.

The plan is updated every five years to keep it current, and include new information to help reduce the loss of life and property while lowering the impact from disasters in Larimer County. The participating jurisdictions are also eligible to receive funding from the Federal Emergency Management Agency [FEMA] for post-disaster mitigation work.

The current 2016 Larimer County Multi-jurisdictional Plan can be viewed by clicking https://www.larimer.org/emergency/mitigating-against-hazards.

For every $1 spent on national hazard mitigation from federal grants our nation saves $6 in mitigation costs, according to a 2017 National Institute of Building Science Report.

Public engagement and feedback on the plan are essential to its success, with two ways to participate:

Participate in an online survey intended gauge how risk in Larimer County is perceived by residents. Visit https://bit.ly/Larimer_HMP_Public_Survey to share your thoughts.

A virtual public participation workshop is also scheduled from 5 p.m. to 7 p.m., May 28, 2020. For more information and how to register for the workshop visit https://www.larimer.org/events/emergency-management/multi-jurisdictional-hazard-mitigation-plan-update-virtual-public.

Multi-Jurisdictional Hazard Mitigation Plan Update Virtual Public Workshop

Upcoming Month

Join the conversation on hazard identification and risk assessments in our local communities and jurisdictions, as well as programs such as the Community Rating System!



We invite your feedback in a virtual public workshop as we update our current Larimer County Multi-Jurisdictional Hazard Mitigation Plan.

Details:

This workshop and webinar will be done via Zoom.

Thursday, May 28th, 2020

5:00 pm - 7:00 pm

A webinar will be provided followed by a facilitated opportunity to provide feedback and a question and answer session. Use the link provided to register to participate.

We want to ensure this process is as inclusive as possible. Please provide requests for a reasonable accommodation to Project Lead Shayle Sabo at sabosn@co.larimer.co.us

We also invite you to participate in a public survey regarding your perception of hazard and risk in Larimer County: https://bit.ly/Larimer_HMP_Public_Survey

Event Date: Thursday, May 28, 2020 - 5:00pm
9 days until the event

Register

Add to My Google Calendar

Department: Emergency Management

Contact Name: Shayle Sabo

Contact Email: sabosn@co.larimer.co.us

From:	Shayle Sabo
To:	Adam Olinger; Andrew Glendenning; Andrew Kamei; Andrew Lucas; Ashley Macdonald; Bernie Lodge; Bette Blinde; Bill McCormick; Bob Gowing; Brian Phillips; Brislawn, Jeff P; Carr, Amy; Cheryl Franz; Cheryl Poage; Chief Warren Jones (GVM); Chris Bieker; Chris Kirk; Chris Sturm; Chris Wolf; Christian Samora; Claudia Quezada; Corey Pass; Courtney Gutman; Daniel Bowker; Danielle May; David Wolf; Derek Rosenquist; Devin Traff; Diana Royvol; Donn Maynard; Doug Race; Eddie Taylor; Eric Fried; Eric Rose; Errin Henggeler; Escobedo - CDPS, Dan; Everitt Pettit; Field, Scott; Gary Green; Gary Hall; Gregg Stonecipher; Gretchen Stanford; Guy Beesley; Heather Schinkel; Heidi Hansen; Hugh Collins; Jason Eisenbach; Jason Graham; Jean Lever; Jen Kovecses; Jennifer Waters; Jessica Bologna; Jim Byrne; Jim Struble; John Feeney; Kallie Bauer; Katie O"Donnell; Katy McLaren; Keith Dunn; Kelli Curl; Ken Quintana; Kevin Gingery; Kevin Sullivan; Kohl Parrott; Larry Rogstad; Lesli Ellis; Lisa Rosintoski; Livermore Fire Dept.; Lori Hodges; Marco Carani; Marian Kelly; Mark Kempton; Mark Peterson; Mark Peterson; Mark Rode; Mark Turner; Marsha Hilmes-Robinson; Matt Allen; Matt Lafferty; Matt LeCerf; Matt Norville; Matt Zoccali; Melissa Peters-Garcia; Mike Blackwill; Nick Sporer; Pat Mialy; Patricia Gavelda; Randy Lesher; Rick Klimeck; Rick Life; Rick Vander Velde; Rob Stumpf; Robert Shainline; Rusty McDaniel; Rusty McDaniel; Sandi Good; Scott Benton; Shayle Sabo; Steve Charles; Terry Jones; Terry Walker; Thomas Hickey; Thompson - CDPS, Mark; Tim Morales; Tina Kurtz; Tom Carosello; Tom DeMint; Tony Bradley; Traci Shambo; Tracy Hays; Will Davis; William Vieth; Wilson Branch - CDPS; Wilynn Formeller
Subject:	Public Workshop 2
Date:	Tuesday, September 8, 2020 4:38:17 PM
Attachments:	HMP Public Workshop 2 English E-Flyer (2).PNG HMP Public Workshop 2 English.pdf HMP Public Workshop Spanish (1).pdf HMP Public Workshop 2 English E-Flyer (1).PNG

CAUTION: External email. Please do not click on links/attachments unless you know the content is genuine and safe.

Good afternoon,

I hope this email finds you all well on this early winter day. We have scheduled our second public virtual public workshop for **Tuesday October 6, 5pm - 7pm** for the Hazard Mitigation Plan process. If you could please help us distribute the following through your networks that would be great. I have attached 2 E-flyers and 2 social media graphics, both in English and Spanish for your use.

The link for registration is: https://zoom.us/webinar/register/WN_R0-o4QoOSzqW31z8DKgBGQ

Thank you!

Shayle

Larimer County

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

From: Shayle Sabo

To: Adam Olinger; Andrew Glendenning; Andrew Kamei; Andrew Lucas; Ashley Macdonald; Bernie Lodge; Bette Blinde; Bill McCormick; Bob Gowing; Brian Phillips; Brislawn, Jeff P; Carr, Amy; Cheryl Franz; Cheryl Poage; Chief Warren Jones (GVM); Chris Bieker; Chris Kirk; Chris Sturm; Chris Wolf; Christian Samora; Claudia Quezada; Corey Pass; Courtney Gutman; Daniel Bowker; Danielle May; David Wolf; Derek Rosenquist; Devin Traff; Diana Royvol; Donn Maynard; Doug Race; Eddie Taylor; Eric Fried; Eric Rose; Errin Henggeler; Escobedo - CDPS, Dan; Everitt Pettit; Field, Scott; Gary Green; Gary Hall; Gregg Stonecipher; Gretchen Stanford; Guy Beesley; Heather Schinkel; Heidi Hansen; Hugh Collins; Jason Eisenbach; Jason Graham; Jean Lever; Jen Kovecses; Jennifer Waters; Jessica Bologna; Jim Byrne; Jim Struble; John Feeney; Kallie Bauer; Katie O"Donnell; Katy McLaren; Keith Dunn; Kelli Curl; Ken Quintana; Kevin Gingery; Kevin Sullivan; Kohl Parrott; Larry Rogstad; Lesli Ellis; Lisa Rosintoski; Livermore Fire Dept.; Lori Hodges; Marco Carani; Marian Kelly; Mark Kempton; Mark Peterson; Mark Peterson; Mark Rode; Mark Turner; Marsha Hilmes-Robinson; Matt Allen; Matt Lafferty; Matt LeCerf; Matt Norville; Matt Zoccali; Melissa Peters-Garcia; Mike Blackwill; Nick Sporer; Pat Mialy; Patricia Gavelda; Randy Lesher; Rick Klimeck; Rick Life; Rick Vander Velde; Rob Stumpf; Robert Shainline; Rusty McDaniel; Rusty McDaniel; Sandi Good; Scott Benton; Shayle Sabo; Steve Charles; Terry Jones; Terry Walker; Thomas Hickey; Thompson - CDPS, Mark; Tim Morales; Tina Kurtz; Tom Carosello; Tom DeMint; Tony Bradley; Traci Shambo; Tracy Hays; Will Davis; William Vieth; Wilson Branch - CDPS; Wilynn Formeller

Subject: Re: Public Workshop 2

Date: Tuesday, September 8, 2020 4:35:39 PM

Attachments: SMPublicMeeting2Spanish.PNG
SMPublicMeeting2English.PNG

CAUTION: External email. Please do not click on links/attachments unless you know the content is genuine and safe.

My apologies for the second email everyone, I noticed when I sent this that the 2 social media graphics came across all glitchy. Trying again.

Kindest regards,
Shayle

Larimer County

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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On Tue, Sep 8, 2020 at 4:32 PM Shayle Sabo <sabosn@co.larimer.co.us> wrote:

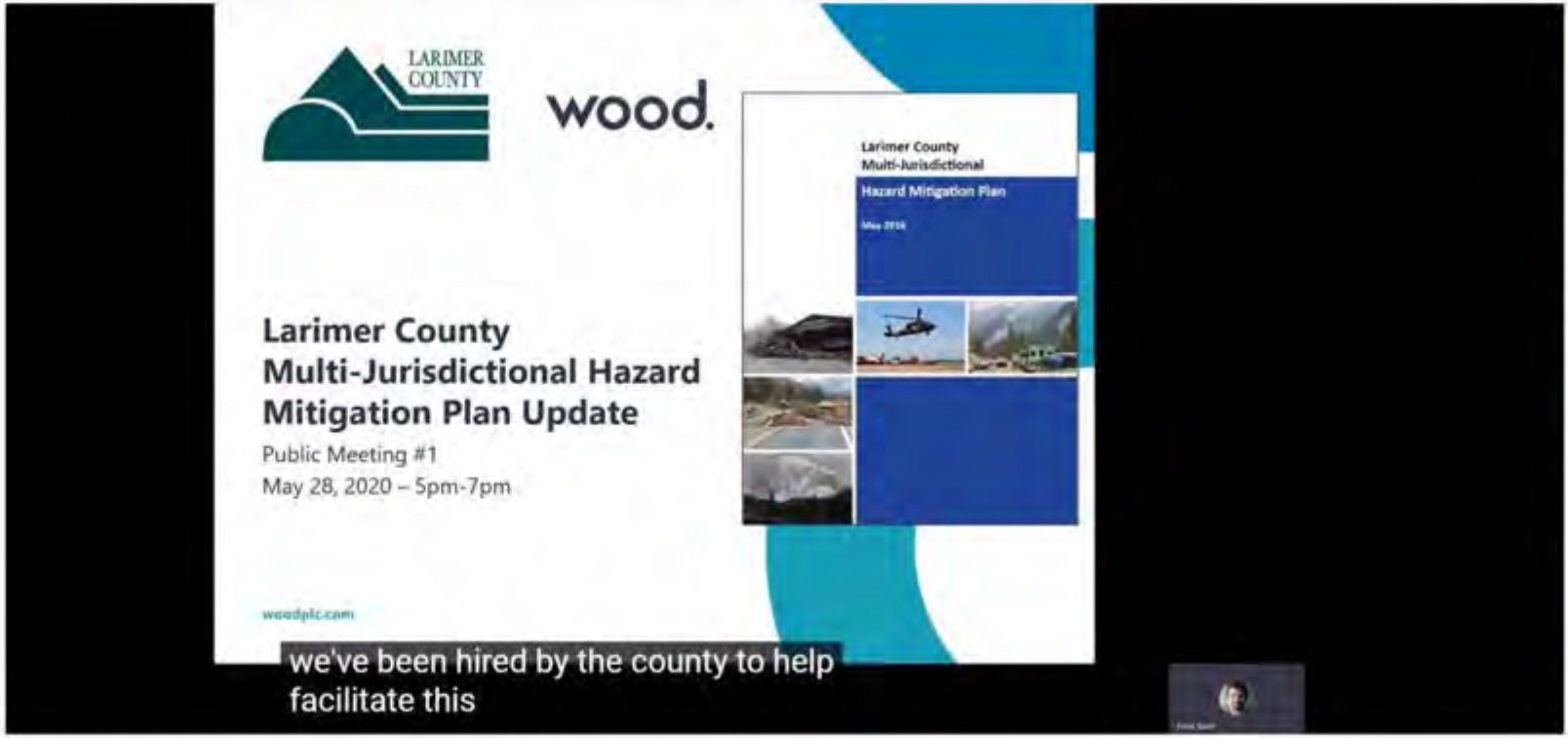
> Good afternoon,
>
> I hope this email finds you all well on this early winter day. We have scheduled our second public virtual public workshop for **Tuesday October 6, 5pm - 7pm** for the Hazard Mitigation Plan process. If you could please help us distribute the following through your networks that would be great. I have attached 2 E-flyers and 2 social media graphics, both in English and Spanish for your use.
>
> The link for registration is: https://zoom.us/webinar/register/WN_R0-o4QoOSzqW31z8DKgBGQ
>
> Thank you!

Shayle

Larimer County

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Multi-Jurisdictional Hazard Mitigation Plan Update Public Meeting || 5/28/2020

16 views • May 29, 2020

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Larimer County Government
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Join the conversation on hazard identification and risk assessments in our local communities and jurisdictions, as well as programs such as the Community Rating System!



LARIMER COUNTY

Multi-Jurisdictional Hazard Mitigation Plan Update Public Meeting || 10/13/2020

3 views • Jan 26, 2021

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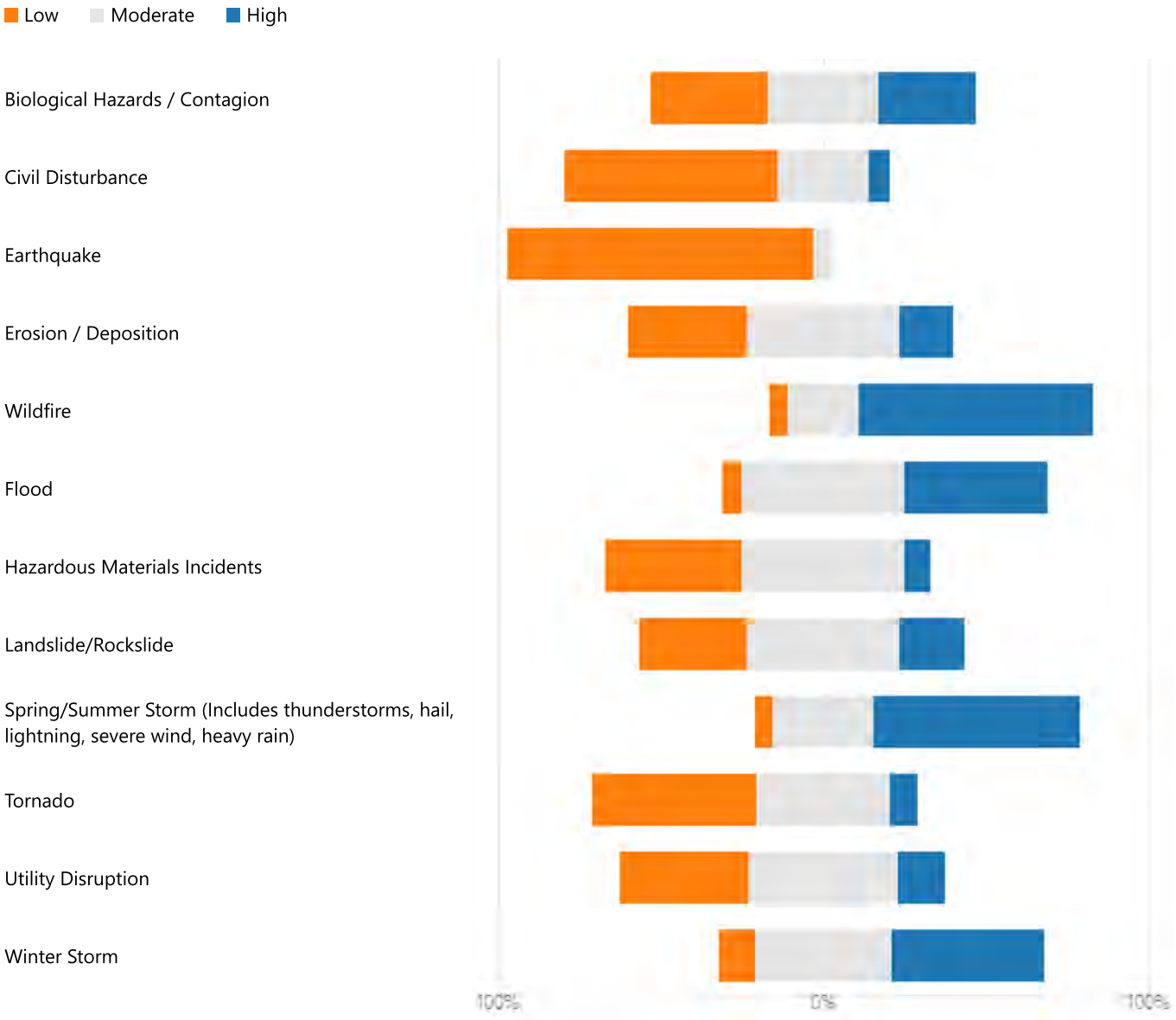
SUBSCRIBE

Join the conversation on hazard identification and risk assessments in our local communities and jurisdictions, as well as programs such as the Community Rating System!

Larimer County Hazard Mitigation Plan Update Public Input Survey

138	42:45	Closed	
Responses	Average time to complete	Status	Ideas

1. The hazards addressed in the Hazard Mitigation Plan update are listed below. Please indicate the level of significance in Larimer County that you perceive for each hazard.



2. How many times has a natural hazard disrupted your daily life in the last five years?

0	15
1-2	62
3-5	41
More than 5 tmes	16
Other	3



3. Do you have information on specific hazard issues/problem areas that you would like the planning committee to consider? Note the jurisdiction to which it applies:

64

Responses

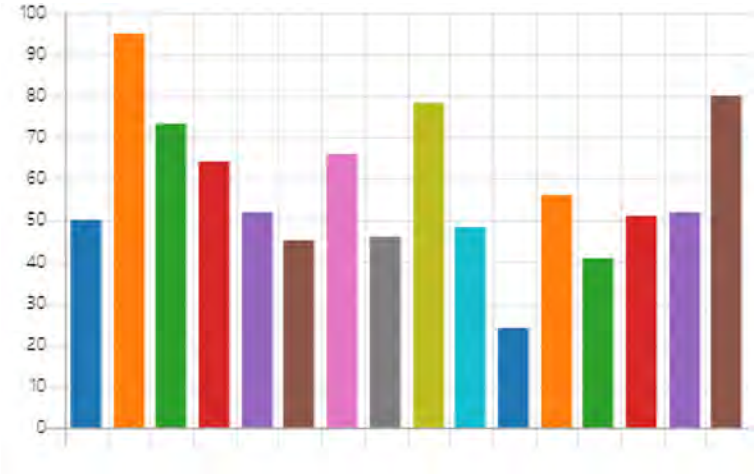
Latest Responses

"Development in the floodplain; adding impervious areas."

"CSU pathogen research should be considered if it's not already. "

4. The following types of mitigation actions may be considered in Larimer County. Please indicate the types of mitigation actions that you think should have the highest priority in the Larimer County Hazard Mitigation Plan.

Indoor/Outdoor Warning syst...	50
Wildfire Fuels Treatment proje...	95
Continued Participation in the...	73
Critical Facilities Protection	64
Generators for Critical Facilities	52
Planning/Zoning	45
Public Education/Awareness	66
Stormwater Drainage Improve...	46
Forest Health/Watershed Prot...	78
Stream Restoration	48
Education and Discounts on Fl...	24
Water Conservation	56
Floodprone Property Buyout	41
Evacuation route development	51
Dam safety	52
Improve reliability of commun...	80



5. Please comment on any other pre-disaster mitigation actions that the planning committee should consider for reducing future losses caused by disasters:

61
Responses

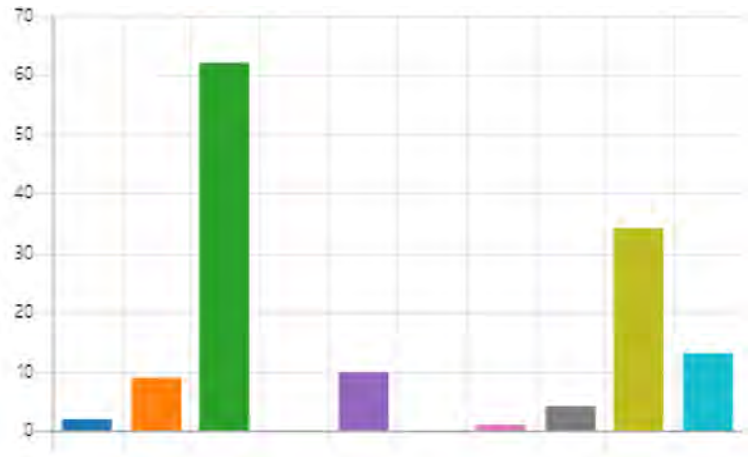
Latest Responses

"*Floodproofing existing buildings; watershed restoration.*"

"*Planting fire & flood hazard areas with more diversity to help mitigat...*

6. Please indicate the community you live in

Town of Berthoud	2
Town of Estes Park	9
City of Fort Collins	62
Town of Johnstown	0
City of Loveland	10
Town of Timnath	0
Town of Wellington	1
Town of Windsor	4
Unincorporated Larimer County	34
Other	13



7. How long have you lived in this community?

Less than 1 year	2
1-5 years	26
5-10 years	19
over 10 years	85
Other	4



8. Optional: Provide your name and email address if you would like to be added to a distribution list for upcoming activities related to this planning process:

49
Responses

Latest Responses

"*Jennifer Waters - I am already on your list.*"

"*Cristin Jones crisocolla@gmail.com* "

Question 3: Do you have information on specific hazard issues/problem areas that you would like the planning committee to consider? Note the jurisdiction to which it applies:

- Road closures. Power outages.
- PID 55. Culverts in appropriate areas to prevent erosion and flooding
- Fire mitigation on properties where people are resistant to proper forest management. A thick forest isn't a healthy forest and presents a clear and present danger to homes and wildlife.
- Wildfire is always an issue in our area. Communication is a weak point especially if landlines will fail when backup generators go out. In the winter, one of our biggest challenges is the icy/snowy roads and power going out. PVREA believes (PVREA employees told me that) that we have hardly had any outages in the past couple of years, when the power has gone out more in the last 2 years than the previous 10. We had multiple power outages. I would think that the PVREA has a record of these outages and perhaps it would help to have an agency like yourselves have those records to be an advocate or find out who could be an effective advocate.
- Heavy Snow
- Poor civil defense warnings for tornado or life-threatening issues, especially if you do not have or rarely use a cellphone. Better to have sirens. Texting is not for everyone. Maybe reverse 911 type thing to call phones including landlines but need more PR for it. Also, possibly recommendations for things like weather alert radio or settings for Echo devices or similar
- Rock slide on our property - rural Larimer County/Drake area
- During the 5" of rain in 30 minutes my on-bedroom condo unit flooded my living & dining room areas. Had to call a mitigation company.to remove water; get furniture out, etc. Five large fans were left the next day to help dry out. Laminated flooring was removed. Had tile floor installed but disrupted for a full month.
- Outside of COVID, it's really just been the occasional big snowstorm in Fort Collins. Although I know the next big wildfire, flood, or civil disturbance could be right around the corner. The last one is particularly concerning. Now that so many people have left the churches and have no semblance of community or a moral compass, I think mental health is a huge concern--even more so in the midst of quarantining.
- Estes Park:
    - -Questionable community and tourist commitment to Covid best practices
    - -Local (full and part time residents) distrust of government and authorities
    - -Too many tourists creating negative impacts on ecology, wildlife, traffic, safety, public health communication and compliance
    - -Flood concerns; bridge clearance, full/blocked culverts, flood plain awareness
    - -Wildfire: lack of residential mitigation, lack of red flag respect, human (tourist and local) carelessness with fires/cigarettes/fireworks
    - -Utilities and/or internet disruption creating issues/crises
    - -Lack of responders that actually live in Estes vs down valley...for housing and economic reasons

- Covid-19, Hail damage to 2 houses- Fort Collins, Hail damage to vehicles- Fort Collins- different storm than house damage, Flooding to home in Estes from storm, Significant snow storm closed our business- Fort Collins
- I have lived in Harmony Crossing over 20 years. The city has encouraged overcrowding all around us. Commercial and residential traffic in area has increased dozens of times over. City has closed exits out of neighborhood. In emergency we can't exit. City of Fort Collins planner has endangered us. Taxes and burglary have both increased tremendously. My wage and feeling of safety have not. Then force us to pay HOA to do nothing but take dues.
- Cyber attacks against critical infrastructure. They will happen more and more frequently, and with larger impact. It isn't widely known, but the US is currently engaged in a low-grade but simmering cyber war. If our critical infrastructure goes down for an extended time, it can have cascading effects on society. We should focus on resilience.
- Wind, Wildfire, Flood
- 2013 Flood Information, floodplain zones
- CDC and related businesses have biologically hazardous materials/ also have APHIS here in town and other research facilities/ the train goes directly through some of the most densely populated and busy business districts/ most of the times hazards have disrupted my life is weather related
- Dead trees on federal land. I just need help with mitigation.
- Wildfire risks in the Estes Valley
- I would like to see drought included in this plan.
- Stop closing the whole county down with a so-called pandemic. The real issue was the destruction of livelihood and our economic ways in Larimer County.
- Storms are the most common/frequent problems. So flooding, landslides, etc. that go along impact the most residents.
- Spills, gas and liquid leakage from oil & gas operations in Fort Collins. Fire risk in the Poudre River canyon region, Red Feather Lakes region.
- Did we learn anything from the disastrous fire in Paradise, California? How many people and vehicles do we have in the Estes Valley on a typical summer weekend? How long would it take those people and vehicles to evacuate the Estes Valley. How long would it take if our tourists were driving in circles looking for an exit. Or if fire fighters were surging up one road? Or if one road was closed by the fire? Or if one or more roads were blocked by crashes of panicked drivers? We seem to plan at a granular level while ignoring a plan for the community as a whole. That's what Paradise did. Didn't work out well.
- We are in an area with no public water, and steep dirt roads, so wildfire is our greatest concern. We have done fire mitigation on our property, but I don't know if the majority of our neighbors take this seriously. How can we change that?
- Wildfire in mountain communities, neighborhood collaboration for mitigation work
- Wildfires
- We have mitigated some previous hazards (fire, flood) by removing people and structures from their path. currently I think the biggest threats to COMMUNITY are the CDC on campus and the

railroad through town. Fire remains a threat but only to the individuals who chose to put their homes in fire-prone areas. Let them take the burden of "fighting fires"

- I feel that wild land fire is our biggest threat to the mountain, cities and plains of our County. We have many volunteer Fire Departments who could benefit greatly from additional funding of Wild Land Firefighting units Brush Trucks. The County itself has units that have been donated after end of life to local volunteer fire departments. I think it is time to assure VFDs have proper wild fire apparatus so they can put the fire out when it is small and not threatening larger population areas. These units are critical in areas of northern Larimer where water is not prevalent.
- Wildland fire is a major potential problem that occurs numerous times every year in Larimer County.
- Impacts of climate change
- The only hazards I deal with on a regular basis involved automobile hazards. Natural events and aggressive humans aren't otherwise an issue for me.
- Air and noise pollution are a major problem on North Overland Trail road between the town of Laporte and Mulberry Street. Residents would like lowered speed limits, restrictions on heavy equipment/commercial semi-trucks, and county-wide restrictions on motor vehicle decibel levels similar to emissions restrictions.
- People NOT wearing masks, People NOT maintaining social distance
- Most of the hazards of which I am aware have to do with flooding and moving the water out of the way. Of course this is an occasional issue, at least at this point in time. Better water drainage would be nice.
- Please consider a fire mitigation reimbursement program for Larimer County residents like Boulder County has. If I were compensated $1000 per mitigated acre I would have completed my 16.45 acre mitigation years ago by hiring help instead of doing it piecemeal over years on weekends. My property is within sight of Boulder County and will burn if/when a fire comes through either county NW of Lyons.
- Pandemic response if that maybe falls under an environmental issue?
- Air contaminants/pollution coming in from the east.
- WUI area. Livermore area. Wildfire risk is always of concern. Have been evacuated from wildfire.
- Utilities affect everyone so should be one of the priorities. Larimer county is so big and varied that I don't envy you in designing a plan for all!
- Larimer County:
    - CR128 rock slides - needing more mitigation work done for road and assistance from Forest Service and County to accomplish this. (resulting from 2013 flooding)
    - On-going 2013 Flooding repairs/mitigation projects US34 / GlenHaven (CR43) and Estes Park areas
    - on-going 2000 Bobcat Gulch fire mitigation work"
- There are few if any plans about drone attacks. With more sophisticated drones this becomes a real possibility. The CSU foothills campus has several installations at risk so coordination with

CSU, state and the federal government is essential. Horsetooth Reservoir could be another target.

- Utility disruption is the most common hazard the Crystal Lakes community experiences. (PVREA). Cell phone and internet services are sporadic--though they have improved somewhat in recent years. (Various carriers). Since Crystal Lakes is surrounded by US and CO forest, the threat of wildfire is constant and potentially is the most damaging hazard to the area, outweighing the less probable hazard of dam failure, which would endanger a specific area of the development. Crystal Lakes VFD has responded to three major, and several smaller, wildland fires within its jurisdiction within the last five years, and also has responded to ""mutual aid"" incidents involving surrounding forest lands and neighboring fire districts.
- Currently I would greatly appreciate a much more direct and definitive and protective set of guidelines to insure that all Larimer County residents and visitors can be safe and protected from the Corona virus! I feel that the relaxed and nebulous guidelines from county health have and are just encouraging too many people to think that we are past this pandemic and everything is now safe. Please be very careful in how you try to balance health safety - the primary concern - and economic activity... just as unemployed people do not have much, or any, money to spend, severely ill and dead people will not be spending any money.
- Flooding and snow
- Keeping Sewer Drains Clear, so that they can drain properly especially in winter; Wildfires be willing to do air drops when needed
- Loveland: Big Thompson River Maintenance - removal of downed trees/debris from within the river corridor, removal of sediment from within the bridges, etc.
- Wildfire mitigation/watershed protection
- Wildfire, pandemic response
- "There is a need for some kind of permanently-funded and -staffed medical clinic in the Red Feather Lakes area and in other similar small mountain towns in Larimer County, as well as in many other remote mountain communities in Colorado. The potential future clinic might be a mobile clinic, similar to the one that CSU has on-site during sports games, or the clinic might be housed in a RFL structure and staffed as many days per week as possible. A clinic of either type would require continuing community support, a permanent and stable source of funding, and continuity of professional staffing and management. Much easier said than done; the problems of already-existing rural hospitals attest to this.
- There was a clinic in RFL some years ago which went out of existence due to the fact that the building did not meet County codes and the difficulty of obtaining funding to pay medical professions on a long-term basis. Since that time, a few mtn. residents have not sought help with their medical needs, have foregone an annual check-up, and thus have avoided diagnosis and treatment for a variety of moderate to serious conditions and illnesses. Mtn. residents do go to the ER in Fort Collins or other large nearby cities for treatment of injuries, however.
    - Perhaps 3rd and 4th year medical students could be attracted to serve, under supervision of a licensed MD, if the students were offered a partial payment toward their Medical School tuition and expenses. Ditto student nurses who are very close to

graduating. There could also be a partnership with a philanthropic organization for this purpose.

- You may have already discussed this, but I think the train activity which blocks intersections on Vine street in Fort Collins could be considered a major problem area. In the event of a hazard situation that required emergency response to the neighborhoods north of Vine response times could be much slower if the trains are blocking the intersections and emergency services have to find an alternate route.
- Dead standing beetle kill is a fire hazard. Pine wilt has been detected - we need a way to stop it.
- Severe weather and flooding is the #1 hazard we face. They account for over 90% of the annual disasters in our country. They cost tens of billions of dollars in damage and claim thousands of lives each year.
- A wider shoulder on Taft Hill. Between Harmony and Loveland
- Hail damage protection:
    - Maybe consider providing COVERED areas with sturdy WOOD canopies, for people DRIVING during a hail storm. So they can take cover when not at home, or in an area to be able to pull under a carport, or into a garage. Such as in large box stores' parking lots, near park & ride lots, or in city parks lots. <<< Just a thought! >>>
- CSU pathogen research should be considered if it's not already.
- Development in the floodplain; adding impervious areas.

Question 5: Please comment on any other pre-disaster mitigation actions that the planning committee should consider for reducing future losses caused by disasters:

- More wildfire risk reduction projects; targeted stream restoration projects to reduce flooding risk in town and to capture sediment from potential wildfires in the upper watershed. I also think there's a lot of merit in planning for multiple disasters at once. I worry about wildfire season this year and the COVID-19 pandemic.
- Encourage wood clearing with local residents who burn wood for winter heat by paying for permits instead of charging
- We need to improve LETA 911 to ensure that everyone gets registered and notified in a timely manner. The last time it was used to contact me, I got the text HOURS after the incident.
- Securing supplies and/or guaranteed sources for supplies needed in a disaster.
- Education is key. Keep up your efforts to connect the community and educational materials. The trick is to make learning fun and engaging which can be a challenge. We found that all of our efforts to be prepared for a wildfire has helped us respond quickly to COVID 19. Money funds to do interactive exercises and drills with the public. Hopefully this can draw in more people and get past the apathy.
- Floodplain stream bank armament.
- We need cell phone signals in our area. The county makes this big deal about broadband, but meanwhile we're like a third world country when it comes to basic cell phone coverage.
- Of course, wild fires need to be included.
- I'm not sure what the county can do for non-county entities, but cybersecurity is worth considering.
- Address concerning issue of economics/profits over people and at risk populations. Proaction vs reaction confusion. Address issues of bullying and neglect of those not in the “good ole boy” network
- Better consideration for travel when the roads are icy. We have had some VERY icy road conditions the last couple of years and nothing is done to reduce travel/accidents, especially in the morning during rush hour.
- Make rail carriers maintain their property instead of letting them leave trash and weeds as fire hazards. I have to maintain my property without grants and tax breaks. If that burns then many families are in danger. And they might not be able to exit because of poor city roads planning.
- Strategic investment in the health of our forests and watersheds. This is why most of us live here, and it is one of the largest economic drivers for our communities.
- County health & public system Improvements in services and communication needed.
- Road maintenance
- We should spend more energy on water use and conservation than water development/ I support continued involvement in NFIP but only if we continue to work on multiple objective management like buyouts, floodplain restoration, and parkland expansion/ i support continued work on wildfire mitigation but think it should be watershed based rather

than homeowner-based/ people who live in areas with known hazards should accept more of the responsibility (pay higher premiums, pay into a fire protection district unique to there neighborhood, be denied building permits)

- I was on the Siemens Res. Fire. When u called to report it, I was told “a text was sent out” and that it was posted online. Many of us don’t have reliable internet! Emergency messages must always include phone messages too. I’ll get notifications on mosquito mitigation on Fort Collins more than fires or road closures.
- I do think there's a strong role for individual home owners in mitigation actions. We can't reasonably rely on government (local, state, federal) to mitigate risk and pay for recovery.
- Start buying PPE, biohazard solutions, soap and like items and stockpile in secure containers and facility.
- Communication plans. Playbooks that people can follow.
- Funding mechanisms for fuels treatment.
- Preparedness for the aftermath. People remember all of the past 'events' but sometimes become complacent.
- Beetle infestation in the national parks and forest seems to be creating a dangerous amount of fuel.
- Support community action, preparation, mutual aid make it easier to find information about what preparation is happening in my area
- Stop bailing out people who chose to build homes in fire prone areas. make their insurance pay for evacuation and replacement. our hazards are related to CDC, railroad, and lack of water conservation. I don't think we need to develop more water but geez - we can conserve better.
- Reduce the impacts of drought due to climate change through education.
- Support for fire Dept & WUI fuels mitigation
- Interagency communications. Current status is functional but not efficient.
- Education efforts and personal responsibility.
- We need everyone in the county to be getting basic information, both on a regular basis and in an emergency. Do we have the capacity for emergency text push alerts? How do we teach people without cell phones? There should be a real paper monthly newsletter, written and edited by actual trained journalists, that arrives automatically to every address in the county.
- Enforcement of mask & social distancing
- Forest and brush thinning, flood mitigation ie culverts road shoulder work etc
- Please consider wild fire forest mitigation reimbursement. It makes no sense that Boulder County neighbors have this we do not.
- Pandemic or Local Epidemic response as far as non-medical related issues. Possible issues- not enough workers to maintain essential services, possibility of riots, economic shortfall for the county, etc
- Reducing air pollution from combustion of fossil fuels.
- Wildlife concerns. Such as overpopulation, extinction and disease.

- Educate mountain area homeowners about defensible space. Perhaps provide grants to enable local VFDs to help homeowners with risk assessment surveys, and advise on wildfire mitigation work that could be done, and evacuation strategies & routes.
- I appreciate LETA fire and emergency updates via text! Fire and flood evacuation routes, utility info, and up-to-date communication are super important. Hail, floods, and fires will only get worse with climate change, are carbon and methane reduction efforts part of the plan?
- Education in many forms to reach citizens - with today's communication environment, there needs to be a variety as not any one form would reach everyone.
- Identify facilities that could serve as a safe shelter in the event that people need shelter away from home.
- Flood risk properties continue to get variances. I like being near water also, but it is not fair to use limited resources to rescue and rebuild after the number of issues created by floods.
- The most critical issue facing Crystal Lakes during a disastrous incident would be/is evacuation of residents and visitors. CR73C from CR74E to the Crystal Lakes main entrance is the only viable escape route from Crystal Lakes. The extension of CR73C to CR67J is not a viable route of egress for emergency evacuation, and is nearly impassible at times. There are no other routes for evacuation, due in large part to USFS closure of forest roads.
- I believe that in these times of political division, efforts at real education and access to actual scientific realities and possibilities and defenses need to be front and center. Too many people these days seem to think that being educated and informed is a waste of time - sad to say but we see it every day...
- Wildfire mitigation and maintenance is critical.
- Ensure dam's and bridges are maintained and exit routes from the city and across the city are known
- Big Thompson River Maintenance: development of a yearly maintenance plan to remove and dispose of downed trees/debris within the overall river corridor and removal of sediment deposited beneath bridges and/or in culverts.
- Clear and consistent communication, enforcement of regulations for policies, e.g. water conservation, fire mitigation in the foothills, bring in wood and other plants with potential pathogens like the ash borer
- That a volunteer group be established to drive the evacuation routes that residents are directed to use in the mountains, and to evaluate these routes as to type of terrain, existing natural hazards, and mitigation of those hazards insofar as possible. For instance, very tall grass growing right up to the edges of the road in late summer are a substantial additional fire hazard; farm equipment could be used to cut down that grass, as well as tall grass which grows in the middle of some two-track dirt roads. Trees which now lean out over a road could be removed; these trees might be the first to fall in high winds, during a snowstorm or wildfire emergency, due to shallow unstable root systems [i.e., Ponderosas].
    - Community awareness, community-wide planning and involvement, and strong community support of emergency preparedness, such as is being done by North 40 Mountain Alliance, is crucial. Much more needs to be done, but the N40MA has an

excellent start. More community members hopefully will register in the database so that they can be contacted and aided during an emergency, if they need to be -- and to offer their help to aid others if they have the resources to do so. If the N40MA doesn't know who they are, where they live, how many people are in the household and what their needs might be in case of an emergency, aid will be limited or delayed in reaching those people, if they are reached at all. More community members will hopefully realize the importance of advance planning and taking action well in advance of an emergency occurring.

- I think you should include basic information regarding disasters and contact information for who to reach out to in order to learn more about a given type of disaster within the change of address confirmation packets the post office sends when you update your mailing address. That way people receive that information as they are moving into the area.
- Don't allow any structure building near rivers.
- Public education and awareness campaigns.
- There is an emergency broadcast notification system on TV & radio; however, maybe consider adding LIGHTED signals & signage for such warnings / notices, for people who are DRIVING, or BIKING, or WALKING, and possibly DEAF people, who are NOT listening to radio, or watching TV. That way, people can visibly SEE / READ / HEAR any warnings! This could also be used for AMBER ALERTS, to hopefully generate a faster response for recovery!
    - I would suggest placing such SOLAR operated devices on main through streets, such as: Harmony, Horsetooth, Drake, Mulberry, Timberline, Lemay, College, Shields, & Taft Hill. Even the I-25 corridor in Larimer County.
- Planting fire & flood hazard areas with more diversity to help mitigate damage. Keylining areas to help with moisture retention in dry areas. Including more areas for natural runoff mitigation in parking areas such as gravel or permeable stone swaths to help localized planting areas & reduce pressure on storm water runoff. Essentially with our arid climate retaining water naturally in the landscape where it lands can not only help local microclimates and runoff management, but also on a larger scale start to rebuild some of our soils to eventually sustain a larger system. With soil loss being a huge issue, we need to be thinking on a larger scale about how in our cities, on their boundaries and in the open areas surrounding them we can start to repair our ecosystems. Community composting could assist with some of this as well. :)
- Floodproofing existing buildings; watershed restoration.

From: Shayle Sabo
To: cggarvey@aol.com
Cc: Field, Scott; Carr, Amy
Subject: Re: A Word of Explanation
Date: Tuesday, June 09, 2020 2:39:44 PM

CAUTION: External email. Please do not click on links/attachments unless you know the content is genuine and safe.

Hi Carole,

Thank you very much for this. I will make sure we incorporate your response and further explanation.

I'm also glad to hear that you are part of the N40MA! Thank you for contributing to making your community a more resilient place.

Kindest regards,
Shayle

Larimer County

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 3rd Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

On Tue, Jun 9, 2020 at 2:35 PM <cggarvey@aol.com> wrote:

> Hello, Shayle
>
> When I responded to the hazards mitigation survey questionnaire, I made a comment about a volunteer group taking a tour of evac routes before an incident takes place, and [if possible] mowing down tall dry grass that might be growing right up to the edge of the road, or growing in the middle of a narrow two-track road.
>
> The reason for the comment is that, in a crisis, evacuees may be driving vehicles which have very hot tail pipes, especially during warm weather. If these hot pipes come in contact with tall grass for even a brief time, the road-grass may then be set on fire, so the emergency folks could be fighting two or more fires in remote areas at the same time. This would be even more serious if the fire locations were on or near evac routes, thus preventing use of an evac route or being a life-threatening situation to people already using that route with no alternative evac route nearby, often without a place to even pull over to the side.
>
> Carole Garvey

From: Shayle Sabo
Cc: Field, Scott
Subject: Follow up to Public Hazard Mitigation Plan Meeting
Date: Friday, May 29, 2020 3:01:37 PM
Attachments: image.png

Hi everyone,

Thank you SO much again for joining us for last night's public meeting. We sincerely appreciate it!

Here is what was promised as follow up:

1. Here is the link to the public survey. We would love your feedback, and your help circulating this to your networks! https://forms.office.com/Pages/ResponsePage.aspx?id=7KxDCD79vkm9VBjGBIo_0NsElmYufTdBqeHx9-Gb9ZdUNlQ1OExDM0dIQU9ZN0dEMlFLVDBLSDJMSS4u

2. Here is the link to the Hazard Mitigation Update Information on our website. https://www.larimer.org/emergency/hazard-mitigation-plan

3. Last but not least, here is the link to the recorded webinar: https://youtu.be/n3xOT8e6LlY

Please feel free to contact me with any questions you may have. My contact information is in my signature!

Have a wonderful weekend,

Shayle Sabo

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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sabosn@co.larimer.co.us | www.larimer.org/emergency

Attendee Report

Report Generated: 5/28/2020 18:31

Topic	Webinar ID	Actual Start Time	Actual Duration (minutes)	# Registered	# Cancelled	Unique Vie	Total Users	Max Concurrent Views
Larimer County Hazard Mitigation Public Meeting	943 4919 0764	5/28/2020 16:52	94	33	0	18	26	0

Host Details

Attended	User Name	Email	Join Time	Leave Time	Time in Session (minutes)	Country/Region Name
Yes	Michelle Bird	birdmi@co.larimer.co.us	5/28/2020 16:52	5/28/2020 18:26	94	United States of America

Panelist Details

Attended	User Name	Email	Join Time	Leave Time	Time in Session (minutes)	Country/Region Name
Yes	Shayle Sabo	sabosn@co.larimer.co.us	5/28/2020 16:54	5/28/2020 18:26	92	United States of America
Yes	Scott Field	scott.field@woodplc.com	5/28/2020 16:57	5/28/2020 18:26	90	United States of America
Yes	Scott Field	scott.field@woodplc.com	5/28/2020 17:01	5/28/2020 18:26	85	United States of America

Attendee Details

Attended	First Name	Last Name	Email	City	Registration Time	Approval S	Join Time	Leave Time	Time in Se	Do you nee	If you neec	Country/Region Name
Yes	Miriam L	Douglass	mdouglass@new.rr.com	Glen Haven	5/26/2020 22:04	approved	5/28/2020 17:02	5/28/2020 18:16	75	No	CO	United States of America
Yes	Heidi	Hansen	Hhansen@fcgov.com	Fort Collins	5/28/2020 17:05	approved	5/28/2020 17:07	5/28/2020 17:09	2	No	No	United States of America
Yes	Nicholas	Sporer	nsporer@fcgov.com	Fort Collins	5/28/2020 16:46	approved	5/28/2020 17:02	5/28/2020 18:26	84	No	No	United States of America
No	Lee Anne	Kempton	Leeanne@safetykat-LLC.com	Fort Collins	5/27/2020 19:41	approved	--	--	--	--	No	None
Yes	Adam	Thodey	adamt@thodeylodge.com	Lyons	5/16/2020 11:39	approved	5/28/2020 17:01	5/28/2020 17:33	32	No	United Stat	United States of America
Yes	Justin	Zakoren	jzakoren@earthforce.org	Aurora	5/15/2020 15:56	approved	5/28/2020 17:01	5/28/2020 18:19	78	No	none	United States of America
No	Charles	Reynolds	csrey56@msn.com	Loveland	5/15/2020 9:22	approved	--	--	--	--	No	None needed
No	Sharon	Brubaker	Blbrub@msn.com	Estes Park	5/14/2020 17:54	approved	--	--	--	--	No	Blbrub@msn.com
Yes	Jim	Paulmeno	jpaulmeno@live.com	Loveland	5/19/2020 20:06	approved	5/28/2020 18:01	5/28/2020 18:26	25	No	i have no n	United States of America
Yes	Erik	Lode	erik@lodenado.com	Fort Collins	5/15/2020 15:25	approved	5/28/2020 17:08	5/28/2020 18:26	78	No	United Stat	United States of America
Yes	Tron	Clark	tclark@ctehrm.com	Fort Collins	5/27/2020 15:54	approved	5/28/2020 17:01	5/28/2020 17:41	40	No	NA	United States of America
Yes	Roseann	Ostransky	rddegraff@hotmail.com	Drake	5/27/2020 16:01	approved	5/28/2020 17:01	5/28/2020 18:26	85	No	N/a	United States of America
No	Brian	McNiff	brian.mcniff2@gmail.com	Estes Park	5/15/2020 14:56	approved	--	--	--	--	No	No
Yes	Sherry	Fuller	esfuller62@aol.com	Fort Collins	5/15/2020 12:25	approved	5/28/2020 17:56	5/28/2020 18:02	7	No	No	United States of America
No	KRISTEN	WESTHOFF	crescenthealth@msn.com	Lyons	5/28/2020 10:15	approved	--	--	--	--	No	no
No	Heather	Washburn	hwashburn715@gmail.com	Fort Collins	5/14/2020 12:36	approved	--	--	--	--	No	na
No	Amy	Carr	amy.carr@woodplc.com	Denver	5/26/2020 18:08	approved	--	--	--	--	No	N/A
No	Marty	Rendino	mrendino@sbcglobal.net	Estes Park	5/18/2020 9:24	approved	--	--	--	--	No	I do not need other accomodation
Yes	Kevin	Gingery	kevin.gingery@cityofloveland.org	Loveland	5/20/2020 13:39	approved	5/28/2020 17:02	5/28/2020 17:08	6	No	None	United States of America
Yes	Kevin	Gingery	kevin.gingery@cityofloveland.org				5/28/2020 17:05	5/28/2020 18:26	81			United States of America
Yes	Mary	Makris	Marymakris@comcast.net	Ft. Collins	5/28/2020 7:52	approved	5/28/2020 17:01	5/28/2020 17:49	49	No	United Stat	United States of America
No	Jeanne	Kekesi	Jeannekekesi@gmail.com	Timnath	5/14/2020 22:14	approved	--	--	--	--	No	None needed
Yes	Eileen	Jones	gail56@hotmail.com	Fort Collins	5/16/2020 8:25	approved	5/28/2020 17:01	5/28/2020 18:26	85	No	United Stat	United States of America
No	Bruce	Brown	Colo.bruce@gmail.com	Glen Haven	5/15/2020 9:51	approved	--	--	--	--	No	None
No	andrea	longo	larimer@feorlen.org	Loveland	5/18/2020 18:16	approved	--	--	--	--	No	no
Yes	Tina	Kurtz	tkurtz@larimer.org	Fort Collins	5/14/2020 9:41	approved	5/28/2020 17:01	5/28/2020 18:26	85	No	NA	United States of America
Yes	Rachael	Gonzales	Rgonzales@wfpd.org	Wellington	5/28/2020 17:07	approved	5/28/2020 17:07	5/28/2020 18:26	80	No	None	United States of America
Yes	Miles	Mewherter	mmewherter@verizon.net	Estes Park	5/18/2020 7:49	approved	5/28/2020 17:01	5/28/2020 17:03	3	No	None	United States of America
Yes	Miles	Mewherter	mmewherter@verizon.net				5/28/2020 17:03	5/28/2020 17:11	8			United States of America
Yes	Miles	Mewherter	mmewherter@verizon.net				5/28/2020 17:10	5/28/2020 18:26	76			United States of America
No	William	Howell	bill.howell@redcross.org	Estes Park	5/14/2020 21:30	approved	--	--	--	--	No	None
No	Luke	Skywalker	redone@rebellion.net	Fort Collins	5/26/2020 16:17	approved	--	--	--	--	Yes	Land of the Free. Home of the Bravest people on Earth! MERICA!
Yes	Darlene	Kilpatrick	darlene@redfeatherlibrary.org	Livermore	5/14/2020 13:26	approved	5/28/2020 17:06	5/28/2020 18:26	80	No	United Stat	United States of America
No	Mike	Gavin	mike_gavin@me.com	Windsor	5/27/2020 22:39	approved	--	--	--	--	No	None
Yes	Denise	Kusnir	mary.kusnir@usda.gov	Fort Collins, CO	5/15/2020 14:47	approved	5/28/2020 17:01	5/28/2020 17:25	25	No	N/A	United States of America
Yes	Denise	Kusnir	mary.kusnir@usda.gov				5/28/2020 17:07	5/28/2020 17:34	28			United States of America
No	Steven	Detkowski	Steven@eppruners.com	Estes Park	5/17/2020 21:02	approved	--	--	--	--	No	Steven@eppruners.com

Larimer County Hazard Mitigation Public Meeting										
Report Generat	3/4/2021 12:21									
Topic	Webinar ID	Scheduled Time	Duration (minutes)	# Registered	# Cancelled	# Approved	# Denied			
Attendee Detai	962 8328 066	10/13/2020 17:00	120	25	1	25	0			
First Name	Last Name	Email	City	Registration Time	Approval Status	Are there any questions you would like to have answered during the presentation portion of this event?	Do you need closed captioning services to participate in this event? *	If you need other reasonable accommodations to participate in this event please include contact information and we will be in touch.	¿Necesita un traductor en español disponible para participar en este evento?	Attendance Type
Anita	Lindley	Anita.Lindley@va.gov	Bellvue	10/12/2020 16:41	approved	No	yes	N/A	no	Live
Erika	Williamson	Burros4me@gmail.com	Red feather lakes	10/12/2020 16:22	approved	What is the mitigation rules for red feather lakes	no	Erika Williamson	no	Live
George	Eckhardt	Gweckhardt@hotmail.com	Windsor	10/12/2020 15:26	approved	Air Quality (smoke warning)	no	no	no	Live
Joann	Cole	Jlschauer@yahoo.com.au		10/13/2020 12:07	approved	No	no	No	no	Live
ALEXANDER	MYHR	alexmyhr@gmail.com	Loveland	10/6/2020 19:40	approved	Has Loveland ever had a wildfire breach the city? Or in neighborhoods? I wonder if the Cameron Peak Fire continues on its course	no	N/a	no	Live
Cody	Bird	birdca@wellingtoncolorado.gov	Wellington	9/28/2020 16:17	approved	N/A	no	N/A	no	Live
Caitlin	Langmead	caitlinlangmead@gmail.com	Fort Collins	10/2/2020 16:02	approved	No	no	No	no	Live
Cathleen M	Powers	cathleenpowers@yahoo.com		9/25/2020 9:12	approved	no	no	no	no	Live
KRISTEN	WESTHOFF	crescenthealth@msn.com	LYONS	10/12/2020 16:52	cancelled by	no	no	NA	no	Live
Evelyn	Mitchell	efmphone@gmail.com	Fort Collins	9/28/2020 15:03	approved	Will you be addressing Internet, Operating Systems and other Cyber hazards?	no	None	no	Live
Jason	Mabry	jasonmmabry@icloud.com	Estes Park	10/12/2020 15:30	approved	How to prepare for fire threats.	no	No thanks	no	Live
Jennifer	Kovecses	jenk@poudrewatershed.org	Fort Collins	9/29/2020 7:46	approved	no	no	no	no	Live
Kenneth	Rusch	kenorphyllis@gmail.com	Berthoud	10/13/2020 17:14	approved	CO	no	nothing needed	no	Live
Lish	Early	lishster2002@gmail.com	Broomfield	9/29/2020 14:54	approved	Labor or Financial assistance for property owners with more beetle kill trees than they are physically able to get rid of?	no	N/A	no	Live
Chloe	Mattia	mattiaceae@gmail.com	Longmont	10/16/2020 13:23	approved	Source for NOAA dataset	no	NA	no	On demand
Max	Erickson	max.erickson@colostate.edu	Fort Collins	9/15/2020 11:15	approved	none	no	none	no	Live
Melissa	Borgmann	melissa.l.borgmann@gmail.com	Loveland	10/6/2020 10:58	approved	N/A	no	N/A	no	Live
Michael	Gavin	mike_gavin@me.com	Windsor	10/7/2020 19:09	approved	Not yet	no	NA	no	Live
Melissa	Ryder	mryder@arvada.org		10/13/2020 12:06	approved	na	no	no	no	Live
Melinda	Cooper	mtrcooper@gmail.com	Ft Collins	10/12/2020 17:15	approved	No.	no	970-217-5439	no	Live
Melinda	Van Horn	mvmama4@gmail.com	Loveland	10/5/2020 22:04	approved	Yes	no	Ok	no	Live
Craig	Bastian	rbastian56@comcast.net		10/12/2020 18:09	approved	Who cleans up the government land?	no	No	no	Live
vicki	bastian	sammivlb@comcast.net	loveland	10/12/2020 18:06	approved	Who is running this meeting the state of Colorado or the USFS	no	970-667-5305	no	Live
Matthew	Savage	savagematthewd@gmail.com	Bellvue	10/13/2020 19:37	approved	Private owners get help?	no	No	no	On demand
Smita	Skrivanek	smita_2874@yahoo.com	Lyons	10/8/2020 12:48	approved	How does BLM land feature in your mitigation plans?	no	Don't need any accommodations.	no	Live
Elizabeth	Young Winne	winnee@wellingtoncolorado.gov		10/13/2020 16:26	approved	no	no	no	no	Live

LARIMER COUNTY



SEEKING PUBLIC INPUT

LARIMER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

PUBLIC REVIEW PERIOD

PROVIDE COMMENT TO OUR PLAN
OPEN 2.1.2021 - 2.22.2021

CLICK HERE FOR MORE INFO

WWW.LARIMER.ORG/EMERGENCY/HAZARD-MITIGATION-PLAN

From: Shayle Sabo

To: Adam Olinger; Andrew Glendenning; Andrew Kamei; Andrew Lucas; Ashley Macdonald; Bernie Lodge; Bette Blinde; Bill McCormick; Bob Gowing; Brian Phillips; Brislawn, Jeff P; Carr, Amy; Cheryl Franz; Cheryl Poage; Chief Warren Jones (GVM); Chris Bieker; Chris Kirk; Chris Sturm; Chris Wolf; Christian Samora; Claudia Quezada; Corey Pass; Courtney Gutman; Dan Taranto; Daniel Bowker; Danielle May; David Wolf; Derek Rosenquist; Devin Traff; Diana Royvol; Donn Maynard; Doug Race; Eddie Taylor; Eric Fried; Eric Rose; Errin Henggeler; Escobedo - CDPS, Dan; Everitt Pettit; Field, Scott; Gary Green; Gary Hall; Gregg Stonecipher; Gretchen Stanford; Guy Beesley; Heather Schinkel; Heidi Hansen; Hugh Collins; Jason Eisenbach; Jason Graham; Jean Lever; Jen Kovecses; Jennifer Waters; Jessica Bologna; Jim Byrne; Jim Struble; John Feeney; Kallie Bauer; Katie O"Donnell; Katy McLaren; Keith Dunn; Kelli Curl; Ken Quintana; Kevin Gingery; Kevin Sullivan; Kohl Parrott; Larry Rogstad; Lesli Ellis; Lisa Rosintoski; Livermore Fire Dept.; Lori Hodges; Marco Carani; Marian Kelly; Mark Kempton; Mark Peterson; Mark Peterson; Mark Rode; Mark Turner; Marsha Hilmes-Robinson; Matt Allen; Matt Blakely; Matt Lafferty; Matt LeCerf; Matt Norville; Matt Zoccali; Melissa Peters-Garcia; Mike Blackwill; Nick Sporer; Pat Mialy; Patricia Gavelda; Randy Lesher; Rick Klimeck; Rick Life; Rick Vander Velde; Rob Stumpf; Robert Shainline; Rusty McDaniel; Rusty McDaniel; Sandi Good; Scott Benton; Shayle Sabo; Steve Charles; Terry Jones; Terry Walker; Thomas Hickey; Thompson - CDPS, Mark; Tim Morales; Tina Kurtz; Tom Carosello; Tom DeMint; Tony Bradley; Traci Shambo; Tracy Hays; Wesley LaVanchy; Will Davis; William Vieth; Wilson Branch - CDPS; Wilynn Formeller

Cc: Greggory Allen Turnbull; Michelle Bird

Subject: HMP Public Review Period Open

Date: Monday, February 1, 2021 4:58:28 PM

Attachments: HMP public review SM .png
HMP Public Review E-Flyer.pdf

CAUTION: External email. Please do not click on links/attachments unless you know the content is genuine and safe.

Hi HMP Planning Team!

Thank you all for your patience. Unfortunately we were dealing with a bit of a technical issue this morning that prevented us from getting these up until now. The public draft of the 2021 HMP is up on our website! We have the plan open for comment and feedback for 3 weeks, between today and February 22nd.

Here is the link to the Larimer County HMP webpage: https://www.larimer.org/emergency/hazard-mitigation-plan

Here is the link to the Virtual Engagement Room (Thanks to the Wood team for this cool feature!) This virtual engagement space is new, so please let me know if you come across any bugs or errors with the room: https://virtual.woodplc.com/VirtualSpace/158165

Here is the link to the Google Form where folks can provide input (This is also accessible via the above link in the virtual engagement room.) https://forms.office.com/Pages/ResponsePage.aspx?id=7KxDCD79vkm9VBjGBIo_0DHT9xotkFJHmYfqRV2Z7JlUQzlFSUVaSUNFTEJHQTZUMTBHSjY2RFVLTC4u

I have also attached a social media graphic and E-Flyer for your use. Please share the virtual room link through all your public outreach channels. Thank you again for all your help throughout this process – we're in the home stretch now!

Let me know if you have any questions!

Kindest regards,
Shayle

Larimer County

Shayle Nelson Sabo
Emergency Management Coordinator
COVID-19 Pandemic Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
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W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

www.larimerrecovers.org

From:	Shayle Sabo
To:	sheriffpoley@jacksoncountyco.gov; jcochran@co.grand.co.us; mchard@bouldercounty.org; Roy Rudisill; ema@co.albany.wy.co; Jeanine West; Lenny Layman; John Hoffman; Leo Touzjian; Michael West; nunnfire@ezlink.com
Cc:	Field, Scott; Carr, Amy
Subject:	Invitation to Participate in Larimer Hazard Mitigation Plan
Date:	Tuesday, February 23, 2021 8:46:17 AM

CAUTION: External email. Please do not click on links/attachments unless you know the content is genuine and safe.

Good morning neighbors!

I wanted to reach out to you all to make sure you are aware that the Larimer County Hazard Mitigation Plan is open for public comment, and invite you all as neighboring jurisdictions to comment on the plan. If you have already done so, thank you so much and you can disregard this email.

Here is the webpage with the information regarding this planning update: https://www.larimer.org/emergency/hazard-mitigation-plan

To provide comment, we invite you to participate in our COVID-friendly virtual engagement room (set up like a virtual open house). Here you can review the plan, see previous public meetings, view maps, and more! https://virtual.woodplc.com/VirtualSpace/158165
Please feel free to send to any of your local jurisdictions that you think would be interested. This review period will be open until Sunday, February 28th.

We really appreciate your feedback, and have a wonderful week! Please let me know if you have any questions.

Kindest regards,
Shayle

Larimer County

Shayle Nelson Sabo
Emergency Management Coordinator
COVID-19 Pandemic Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
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sabosn@co.larimer.co.us | www.larimer.org/emergency

www.larimerrecovers.org

Info needed for HMP

Adam Olinger <aolinger@berthoud.org> Tue, Jul 14, 2020 at 9:05 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Shayle,

In preparation for the meeting in a couple of hours, I was able to watch the video for Meeting #2. I agreed with the consensus of attendees that all of the hazards listed should be included if at all possible, as it does not hurt to have them on there in case a disaster does strike. I've logged my meeting hours on my tracker spreadsheet; do you need me to send you this updated one, or wait until you collect them before Meeting #4?

[Quoted text hidden]

Bcc: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.org>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Doug Race <drace@clvfd.org>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, Katie O'Donnell <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>

Good afternoon all,

I still have not received timesheets from several folks regarding time dedicated to the HMP planning process outside of the planning meetings. Please note that this includes such things as time spent collecting data/filling out data worksheets or any internal meetings you may have had. We are submitting time from March 1st - June 30th. Please do not hesitate to reach out with any questions.

I have attached the timesheets for your convenience, one is blank, one is an example. If you have had no time allotted to the HMP process outside of the large group planning meetings, please let me know so I don't keep bothering you. If you have already turned in a timesheet please disregard this message.

Thank you,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor

The response from the remote server was:
[Quoted text hidden]

Final-Recipient: rfc822; b.blinde@poudrecanyonfiredistrict.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; maila1.newtekwebhosting.com. (216.119.106.20, the server for
 the domain poudrecanyonfiredistrict.com.)
Diagnostic-Code: smtp; 550 <b.blinde@poudrecanyonfiredistrict.com> No such user here
Last-Attempt-Date: Tue, 21 Jul 2020 13:25:44 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: undisclosed-recipients:;
Cc:
Bcc: b.blinde@poudrecanyonfiredistrict.com
Date: Tue, 21 Jul 2020 14:25:31 -0600
Subject: Re: Follow up from HMP Meeting #3
----- Message truncated -----

Daniel Bowker <daniel@poudrewatershed.org> Tue, Jul 21, 2020 at 2:27 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

Hope you're doing well. So far, I don't have any time to count outside of the large group planning meetings. Jen may have, but I don't know for sure about her.

Thanks!
Daniel
[Quoted text hidden]
--
Daniel Bowker
Forest and Fire Project Manager
Coalition for the Poudre River Watershed
320 East Vine Drive Suite 317
Fort Collins, CO 80524
daniel@poudrewatershed.org
https://www.poudrewatershed.org/
(o) 970-222-5754
(c) 502-395-0018

Kevin Sullivan <ksullivan@estesvalleyfire.org> Tue, Jul 21, 2020 at 2:28 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle,

Thank you for the courtesy reminder. We will complete these as soon as feasible, but we are currently extremely busy with our primary fire prevention bureau functions.

Thanks for your patience.

Kevin Sullivan, Fire Marshal

Estes Valley Fire Protection District

901 North Saint Vrain Avenue

Estes Park, CO 80517

C: (970) 238-0678

O: (970) 577-3689

E: ksullivan@estesvalleyfire.org

https://www.estesvalleyfire.org

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Disclaimer

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Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jul 21, 2020 at 2:35 PM
To: Daniel Bowker <daniel@poudrewatershed.org>

Thanks Daniel! I very much appreciate it!

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jul 21, 2020 at 2:36 PM
To: Kevin Sullivan <ksullivan@estesvalleyfire.org>

No worries Kevin - it's a crazy time. I appreciate you working on getting those to me when you can.

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE

[Quoted text hidden]

Kevin Gingery <Kevin.Gingery@cityofloveland.org> Tue, Jul 21, 2020 at 2:48 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle:

I have had no Āme alloĀed to the HMP process outside of the large group planning mee. ngs.

So on another note, am I supposed to be collec ng data/filling out data worksheets and if so, what data as this is news to me?

Thank you,

Kevin Gingery, P.E. | Senior Civil Engineer

Stormwater Engineering

2525 West 1st Street

Loveland, CO 80537

(970) 962-2771

kevin.gingery@cityofloveland.org

www.cityofloveland.org

City of Loveland

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, July 21, 2020 2:26 PM
Subject: Re: Follow up from HMP Mee ng #3

Good afternoon all,

I still have not received timesheets from several folks regarding time dedicated to the HMP planning process outside of the planning meetings. Please note that this includes such things as time spent collecting data/filling out data worksheets or any internal meetings you may have had. We are submitting time from March 1st - June 30th. Please do not hesitate to reach out with any questions.

I have attached the timesheets for your convenience, one is blank, one is an example. If you have had no time allotted to the HMP process outside of the large group planning meetings, please let me know so I don't keep bothering you. If you have already turned in a timesheet please disregard this message.

Thank you,

Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

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sabosn@co.larimer.co.us | www.larimer.org/emergency

On Tue, Jul 14, 2020 at 2:55 PM Shayle Sabo <sabosn@co.larimer.co.us> wrote:

> Good afternoon everyone!
>
> Thank you for a very productive meeting today! Please see below/attached for the following:
>
> 1. Link to Mitigation Action Worksheet. We are requesting all participants submit at least 1 - **DEADLINE IS JULY 28th**: https://forms.office.com/Pages/ResponsePage.aspx?id=7KxDCD79vkm9VBjGBIo_0B53D7F45nlKshvPr2mtKcFURVlMRDhPTlhZWUpDM0hFTUdDVFJXRjhKMSQlQCN0PWcu

2. Mitigation Action Tracker (attached) - Please review and make sure the information for your jurisdiction is relevant.

3. FEMA Alternative Actions Document (attached)

Additionally, if you have not yet turned in your time tracking - which all of you should have time outside of the planning meetings since you all worked on such things as data collection worksheets **- please turn those into me as soon as possible.**

Also, if you have not yet turned in a data collection sheet for your jurisdiction, we also need those **as soon as possible** so that the folks at Wood can develop the section for your jurisdiction in our plan.

Let me, or the Wood team (cc'd), know if you have any questions!

Have a great rest of your week,

Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

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sabosn@co.larimer.co.us | www.larimer.org/emergency

Gretchen Stanford <GStanford@fcgov.com> Tue, Jul 21, 2020 at 2:51 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle,

I don't have additional time to capture.

Thanks,

. . . . . .

GRETCHEN STANFORD

Interim Utilities Customer Connections Deputy Director

(970) 744-1835 (cell)

(970) 416-2627 (office)

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, July 21, 2020 2:26 PM

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[Quoted text hidden]

Glacier 1 <gvfdchief1@gmail.com> Tue, Jul 21, 2020 at 3:58 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Warren Jones timesheet

Warren D. Jones
Fire Chief (Glacier 1)
Glacier View Fire Department
1414 Green Mountain Dr.
Livermore, Co 80536
Office - 970-493-3353
Cell - 970-397-3114
gvfdchief1@gmail.com

"Together We Succeed"

[Quoted text hidden]

Participant Cost Tracking - BLANK .xlsx
13K

Glacier 1 <gvfdchief1@gmail.com> Tue, Jul 21, 2020 at 4:00 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Warren Jones HMP timesheet

Warren D. Jones
Fire Chief (Glacier 1)
Glacier View Fire Department
1414 Green Mountain Dr.
Livermore, Co 80536
Office - 970-493-3353
Cell - 970-397-3114
gvfdchief1@gmail.com

"Together We Succeed"

[Quoted text hidden]

Participant Cost Tracking - Warren Jones.xlsx

13K

Gary Hall <GHall@eph.org> Tue, Jul 21, 2020 at 9:21 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

I would be me and only me, and I probably have spent only 2 – 3 hours just in communication and emailing and understanding the components and needs, Shayle. Is that a sufficient report? I do not have a staff to deploy to this at EPH, so no, no hourly folks dedicated to this.

Gary M. Hall

CIO / COO

Estes Park Health

Phone: 970-577-4443

Cell: 970-744-9052

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, July 21, 2020 2:26 PM

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Jennifer Kovecses <jenk@poudrewatershed.org> Tue, Jul 21, 2020 at 9:34 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

I sent this info to you right? If not, I will get it done tomorrow.

Jen

Jennifer Kovecses
executive director
320 East Vine Dr, ste 317
jenk@poudrewatershed.org
https://www.poudrewatershed.org/
(o) 970-222-5754
(c) 858-775-7965

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Lever - DNR, Jean <jean.lever@state.co.us> Wed, Jul 22, 2020 at 6:28 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

I haven't spent any time outside of the meetings on this.
Thanks

Jean Lever
Water Commissioner, District 4

COLORADO
Division of Water Resources
Department of Natural Resources

C 970.290.7397 | P 970.352.8712 | F 970.392.1815
810 9th Street, Suite 200, Greeley, CO 80531
jean.lever@state.co.us | www.water.state.co.us

[Quoted text hidden]

Heather Schinkel <heather@peakstopeople.org> Wed, Jul 22, 2020 at 7:30 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

I have no time other than the meetings to report, thanks!
[Quoted text hidden]
--

Peaks to People Water Fund

Heather Schinkel
Executive Director

970-829-0020

Errin Henggeler <EHENGGELER@fcgov.com> Wed, Jul 22, 2020 at 10:44 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hello,

I have not put any extra time as I am just to help facilitate where needed.

With that said if you need to help remind any Utility employees to give you their time I will

Thanks,

Errin

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, July 21, 2020 2:26 PM

[Quoted text hidden]

[Quoted text hidden]

Heidi Hansen <hhansen@fcgov.com> Thu, Jul 23, 2020 at 2:48 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>, Chris Wolf <cwolf@poudre-fire.org>

Hi Shayle and Chris,

I can't seem to access the form with the link below, it says that I don't have permission. If you can send me the fields from the form so I can make sure I'm gathering all the correct information then someone else could enter them into the form for me, or if you can fix it so that I have permission to access the form, that works too.

Also, I'm coordinating with Stormwater Master Planning, Flood Warning and LID to try to get all of our action plans revised/updated/new and I highly doubt they will be complete by the deadline next Tuesday…can I push for the end of next week to have them all in?

Thanks,

Heidi

Heidi Hansen, PE, CFM

Engineer III – Floodplain Management

City of Fort Collins - Utilities

700 Wood St.

Fort Collins, CO 80521

970.221.6854 (desk)



From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, July 14, 2020 2:56 PM
Cc: Carr, Amy <amy.carr@woodplc.com>; Field, Scott <scott.field@woodplc.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>

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Lori Hodges <hodgeslr@co.larimer.co.us> Fri, Jul 24, 2020 at 9:45 AM
To: Derek Rosenquist <rosenqdc@co.larimer.co.us>, Shayle Tee Sabo <sabosn@co.larimer.co.us>

Derek - Eric Fried also had concerns about the Fire Marshal comments. I do not believe we will be including this in the HMP. I have cc'd Shayle who is leading the planning project in case she has other information.

Lori H.

On Tue, Jul 21, 2020 at 1:06 PM Derek Rosenquist <rosenqdc@co.larimer.co.us> wrote:

> Lori,
> Saw the comment about a County fire marshal. I have a bit of experience with that in Estes, prior to adoption of a fire code, and then working alongside the Fire Marshal once hired. I believe it would take a full staff to be able to do the job if the County adopted the code. Estes alone has a Fire Marshal as well as an inspector and they are just keeping ahead of the EVFPD response area with annual inspections as well as reviews and enforcement. I'm not saying it can't be done, but would require a staff of more than one to be successful.
>
> On Thu, Jul 16, 2020 at 10:23 AM Lori Hodges <hodgeslr@co.larimer.co.us> wrote:
> [Quoted text hidden]
>
> --
> Derek Rosenquist
> Emergency Services Specialist
> 1303 N Shields Ave.
> Ft Collins, CO 80524
> 970.498.5301

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:02 PM
To: Lori Hodges <hodgeslr@co.larimer.co.us>
Cc: Derek Rosenquist <rosenqdc@co.larimer.co.us>

Hi Derek and Lori,

Per Eric, I think we are going to hold off on including that in this iteration of the plan. I think this is a concept that needs further review. Thanks!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:05 PM
To: Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Pat Mialy <Pat.Mialy@lfra.org>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Kevin,

Yes we have not yet received a worksheet back from Loveland to my knowledge. We sent these worksheets out back in Late April, early May so it may have gotten lost in the shuffle. I have attached the worksheet below. Please do not hesitate to reach out with any questions!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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2 attachments

Larimer County HMP Data Collection Guide - Template (7).docx
118K

Larimer County 2016 Hazard Rankings (4).pdf
169K

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:07 PM
To: Glacier 1 <gvfdchief1@gmail.com>

Fantastic, thank you, Warren!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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sabosn@co.larimer.co.us | www.larimer.org/emergency

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:08 PM
To: Gary Hall <GHall@eph.org>

Hi Gary, you are good - I sent this out to the larger group, but I have received sufficient reporting from you in previous emails so you can disregard :) Have a good weekend!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:08 PM
To: "Lever - DNR, Jean" <jean.lever@state.co.us>

Thank you, Jean!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 24, 2020 at 3:08 PM
To: Heather Schinkel <heather@peakstopeople.org>

Thank you, Heather!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
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W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

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[RESPONSE NEEDED] Time Tracking for HMP Match

47 messages

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, Katie O'Donnell <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>

Good afternoon all,

At the beginning of this process, we let folks know that it was crucially important to be tracking time related to Hazard Mitigation Planning activities. I wanted to send out a note asking for folks to please provide their time tracking from March until the end of June for any Hazard Mitigation Plan related processes. As a reminder, we have a significant in-kind match for the grant to conduct this HMP update, so any time tracked can be allocated to this and will be immensely helpful. Please try to email those to me by **Friday, July 10th at the latest** so we can submit what we have so far to the State.

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Kinde

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Mon, Jun 29, 2020 at 1:54 PM
To: sabosn@co.larimer.co.us

Address not found

Your message wasn't delivered to **livermorchief@gmail.com** because the address couldn't be found, or is unable to receive mail.

LEARN MORE

The response was:

```
550 5.1.1 The email account that you tried to reach does not exist. Please try double-checking
the recipient's email address for typos or unnecessary spaces. Learn more at
https://support.google.com/mail/?p=NoSuchUser l75sor323741otl.83 - gsmtp
```

Final-Recipient: rfc822; livermorchief@gmail.com
Action: failed
Status: 5.1.1
Diagnostic-Code: smtp; 550-5.1.1 The email account that you tried to reach does not exist. Please try
550-5.1.1 double-checking the recipient's email address for typos or
550-5.1.1 unnecessary spaces. Learn more at
550 5.1.1 https://support.google.com/mail/?p=NoSuchUser l75sor323741otl.83 - gsmtp
Last-Attempt-Date: Mon, 29 Jun 2020 12:54:32 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew

Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
Cc:
Bcc:
Date: Mon, 29 Jun 2020 13:54:20 -0600
Subject: [RESPONSE NEEDED] Time Tracking for HMP Match
Good afternoon all,

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Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
<p style="font-size:11px;l ----- Message truncated -----

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Mon, Jun 29, 2020 at 1:54 PM
To: sabosn@co.larimer.co.us

Address not found

Your message wasn't delivered to **b.blinbe@poudrecanyonfiredistrict.com** because the address couldn't be found, or is unable to receive mail.

The response from the remote server was:

```
550 <b.blinbe@poudrecanyonfiredistrict.com> No such user here
```

Final-Recipient: rfc822; b.blinbe@poudrecanyonfiredistrict.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; maila1.newtekwebhosting.com. (216.119.106.20, the server for
the domain poudrecanyonfiredistrict.com.)
Diagnostic-Code: smtp; 550 <b.blinbe@poudrecanyonfiredistrict.com> No such user here
Last-Attempt-Date: Mon, 29 Jun 2020 12:54:33 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford

<gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
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Bcc:
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LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
<p style="font-size:11px;l ----- Message truncated -----

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Mon, Jun 29, 2020 at 1:54 PM
To: sabosn@co.larimer.co.us

Address not found

Your message wasn't delivered to **b.blinde@poudrecanyonfiredistrict.com** because the address couldn't be found, or is unable to receive mail.

The response from the remote server was:

```
550 <b.blinde@poudrecanyonfiredistrict.com> No such user here
```

Final-Recipient: rfc822; b.blinde@poudrecanyonfiredistrict.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; maila1.newtekwebhosting.com. (216.119.106.20, the server for
 the domain poudrecanyonfiredistrict.com.)
Diagnostic-Code: smtp; 550 <b.blinde@poudrecanyonfiredistrict.com> No such user here
Last-Attempt-Date: Mon, 29 Jun 2020 12:54:33 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia

<MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
Cc:
Bcc:
Date: Mon, 29 Jun 2020 13:54:20 -0600
Subject: [RESPONSE NEEDED] Time Tracking for HMP Match
Good afternoon all,

At the beginning of this process, we let folks know that it was crucially important to be tracking time related to Hazard Mitigation Planning activities. I wanted to send out a note asking for folks to please provide their time tracking from March until the end of June for any Hazard Mitigation Plan related processes. As a reminder, we have a significant in-kind match for the grant to conduct this HMP update, so any time tracked can be allocated to this and will be immensely helpful. Please try to email those to me by **Friday, July 10th at the latest** so we can submit what we have so far to the State.

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Please don't hesitate to reach out with any questions.Thank you so much for your support and participation in this effort!

Kinde

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
<p style="font-size:11px;l ----- Message truncated -----

Kevin Gingery <Kevin.Gingery@cityofloveland.org> Mon, Jun 29, 2020 at 1:58 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle:

Thus far I have only par cipated in one overall group planning mee ng and one public open house mee ng.

Thank you,

Kevin Gingery, P.E. | Senior Civil Engineer

Stormwater Engineering

2525 West 1st Street

Loveland, CO 80537

(970) 962-2771

kevin.gingery@cityofloveland.org

www.cityofloveland.org

City of Loveland

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Be. e Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Be. e Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Chris an Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royvol <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <ehenggeler@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <gstonecipher@fcgov.com>; Gretchen Stanford <gstanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <jbyrne@fcgov.com>; Jim Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Ka e O'Donnell < odonnekm@co.larimer.co.us>; Katy McLaren <kmclaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <lrosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <mzoccali@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <Nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde

<rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <Sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <tmorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom DeMint <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>
Subject: [External] [RESPONSE NEEDED] Time Tracking for HMP Match

Good afternoon all,

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Kinde

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 2:00 PM
To: Kevin Gingery <Kevin.Gingery@cityofloveland.org>

Hi Kevin,

You can also count the time spent in the public open house planning meeting we conducted, or any of the time spent working on the data collection sheets as well. Do you have the number of hours total you have contributed so far?

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

[Quoted text hidden]

Kevin Gingery <Kevin.Gingery@cityofloveland.org> Mon, Jun 29, 2020 at 2:04 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle:

I was referring to the public open house planning mee ng that you conducted.

I have not spent any me on data collec on nor has any data been requested from the City of Loveland that I am aware of.

Thus far I have not spent any me on anything other than the two mee ngs you conducted that I have attended.

Kevin

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 2:00 PM
To: Kevin Gingery <Kevin.Gingery@cityofloveland.org>
Subject: Re: [External] [RESPONSE NEEDED] Time Tracking for HMP Match

Hi Kevin,

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Kindest regards,
Shayle

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[Quoted text hidden]

Pat Mialy <Pat.Mialy@lfra.org> Mon, Jun 29, 2020 at 2:05 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

No addional me t o report for Loveland OEM.

Respectfully,

Pat Mialy, CEM

Emergency Manager / Captain

Loveland Fire Rescue Authority

970-962-2534 - office

970-290-0738 - cell

www.LFRA.org

https://twitter.com/LovelandFRA

Inspire, Innovate, Facilitate

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz

<gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Christian Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royvol <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <ehenggeler@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <gstonecipher@fcgov.com>; Gretchen Stanford <gstanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <jbyrne@fcgov.com>; Jim Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Katie O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <kmclaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <lrosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <mzoccali@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <Nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <Sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <tmorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom DeMint <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>
Subject: [External] [RESPONSE NEEDED] Time Tracking for HMP Match

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Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

Devin Traff <traffdc@co.larimer.co.us> Mon, Jun 29, 2020 at 2:10 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

My time has been primarily the overall group meetings plus 2 hours that have gone into meetings outside of that. Thanks!
[Quoted text hidden]
--

LARIMER COUNTY

Devin Traff, PE, CFM
Civil Engineer

Engineering Department
200 W Oak St, Fort Collins, 80521 | 3rd Floor
W: (970) 498-5731
traffdc@larimer.org | www.larimer.org

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 2:20 PM
To: Kevin Gingery <Kevin.Gingery@cityofloveland.org>

Okay great,

Thank you Kevin!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
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[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 2:21 PM
To: Pat Mialy <Pat.Mialy@lfra.org>

Thank you Pat!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 2:21 PM
To: Devin Traff <traffdc@co.larimer.co.us>

Great, thank you Devin!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 29, 2020 at 2:24 PM
To: Devin Traff <traffdc@co.larimer.co.us>

Also, do you mind just confirming what the other meetings were? Just in case I need to document it?

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE

[Quoted text hidden]

Devin Traff <traffdc@co.larimer.co.us> Mon, Jun 29, 2020 at 2:26 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Sure - one hour of internal staff meeting and one hour CRS meeting with Wood last week.

[Quoted text hidden]

Gmail <keithfdunn@gmail.com> Mon, Jun 29, 2020 at 3:00 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle,
If it helps I have reviewed the prior meetings and read up on the project for about a total of 5 hours. This upcoming meeting will be my first actual real time meeting.

Keith Dunn

Livermore FD
[Quoted text hidden]

Cheryl Poage <cheryl@poage.com> Mon, Jun 29, 2020 at 3:40 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Do you want everyone's time that is involved with our sapling re-forestation project.

Regards,

Cheryl Poage

(303) 829-0126

From: Shayle Sabo [mailto:sabosn@co.larimer.co.us]
Sent: Monday, June 29, 2020 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Chris an Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist

<rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royvol <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <ehenggeler@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <gstonecipher@fcgov.com>; Gretchen Stanford <gstanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <jbyrne@fcgov.com>; Jim Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Ka e O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <kmclaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <lrosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <mzoccali@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <Nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <Sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <tmorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom DeMint <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>

Subject: [RESPONSE NEEDED] Time Tracking for HMP Match

Good afternoon all,

At the beginning of this process, we let folks know that it was crucially important to be tracking time related to Hazard Mitigation Planning activities. I wanted to send out a note asking for folks to please provide their time tracking from March until the end of June for any Hazard Mitigation Plan related processes. As a reminder, we have a significant in-kind match for the grant to conduct this HMP update, so any time tracked can be allocated to this and will be immensely helpful. Please try to email those to me by **Friday, July 10th at the latest** so we can submit what we have so far to the State.

I have tracked everyone's time as far as overall group planning meetings, so you will not have to track those, however, any internal time allocated toward this project, or any time allocated to HMP-related activities outside of large group planning meetings will need to be tracked and turned in.

Please don't hesitate to reach out with any questions.Thank you so much for your support and participation in this effort!

Kinde

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

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sabosn@co.larimer.co.us | www.larimer.org/emergency

Hugh Collins <H.Collins@poudrecanyonfiredistrict.org> Mon, Jun 29, 2020 at 5:43 PM
Reply-To: H.Collins@poudrecanyonfiredistrict.org
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shale,
See attached.

Hugh

From: "Shayle Sabo" <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 1:55 PM
To: "Adam Olinger" <aolinger@berthoud.org>, "Andrew Glendenning" <andrew.glendenning@bannerhealth.com>, "Andrew Kamei" <andrew.kamei@uchealth.org>, "Andrew Lucas" <chief@pinewoodspringsfire.org>, "Ashley Macdonald" <amacdonald@wfpd.org>, "Bernie Lodge" <blodge@northernwater.org>, "Bette Blinde" <b.blinbe@poudrecanyonfiredistrict.com>, "Bette Blinde" <b.blinde@poudrecanyonfiredistrict.com>, "Bill McCormick" <bill.mccormick@state.co.us>, "Bob Gowing" <gowingbj@wellingtoncolorado.gov>, "Brian Phillips" <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, "Cheryl Franz" <gvfdoffice1@gmail.com>, "Cheryl Poage" <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, "Chris Bieker" <chris@utsd.org>, "Chris Kirk" <ckirk@berthoud.org>, "Chris Sturm" <chris.sturm@state.co.us>, "Chris Wolf" <cwolf@poudre-fire.org>, "Christian Samora" <csamora@berthoud.org>, "Claudia Quezada" <cquezada@fcgov.com>, "Corey Pass" <cpass@estes.org>, "Courtney Gutman" <courtney.gutman@bigthompson.co>, "Daniel Bowker" <daniel@poudrewatershed.org>, "Danielle May" <Danielle.May@bannerhealth.com>, "David Wolf" <chief@estesvalleyfire.org>, "Derek Rosenquist" <rosenqdc@co.larimer.co.us>, "Devin Traff" <traffdc@co.larimer.co.us>, "Diana Royvol" <DROYVAL@fcgov.com>, "Donn Maynard" <livermorchief@gmail.com>, "Eddie Taylor" <egtaylordvm@gmail.com>, "Eric Fried" <friedeb@co.larimer.co.us>, "Eric Rose" <erose@estes.org>, "Errin Henggeler" <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, "Everitt Pettit" <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, "Gary Green" <ggreen@wfpd.org>, "Gary Hall" <ghall@eph.org>, "Gregg Stonecipher" <gstonecipher@fcgov.com>, "Gretchen Stanford" <gstanford@fcgov.com>, "Guy Beesley" <gbeesley@eph.org>, "Heather Schinkel" <heather@peakstopeople.org>, "Heidi Hansen" <hhansen@fcgov.com>, "Hugh Collins" <h.collins@poudrecanyonfiredistrict.org>, "Jason Eisenbach" <eisenbja@co.larimer.co.us>, "Jason Graham" <jgraham@fcgov.com>, "Jean Lever" <jean.lever@state.co.us>, "Jen Kovecses" <jenk@poudrewatershed.org>,

"Jennifer Waters" <jwaters@estes.org>, "Jessica Bologna" <jessica.bologna@pinewoodspringsfire.org>, "Jim Byrne" <jbyrne@fcgov.com>, "Jim Struble" <jstruble@northernwater.org>, "John Feeney" <john@evrpd.com>, "Kallie Bauer" <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, "Katy McLaren" <kmclaren@fcgov.com>, "Keith Dunn" <keithfdunn@gmail.com>, "Kelli Curl" <curlkb@co.larimer.co.us>, "Ken Quintana" <Ken.Quintana@colostate.edu>, "Kevin Gingery" <Kevin.Gingery@cityofloveland.org>, "Kevin Sullivan" <ksullivan@estesvalleyfire.org>, "Kohl Parrott" <parrotck@co.larimer.co.us>, "Larry Rogstad" <9fingerslars@gmail.com>, "Lesli Ellis" <ellislk@larimer.org>, "Lisa Rosintoski" <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, "Lori Hodges" <hodgeslr@co.larimer.co.us>, "Marco Carani" <mcarani@townofjohnstown.com>, "Marian Kelly" <mkelly@clvfd.org>, "Mark Kempton" <mkempton@fcgov.com>, "Mark Peterson" <mpeterson@larimer.org>, "Mark Peterson" <petersmr@co.larimer.co.us>, "Mark Rode" <markrode58@gmail.com>, "Mark Turner" <Mturner@tvems.com>, "Marsha Hilmes-Robinson" <mhilmesrobinson@fcgov.com>, "Matt Allen" <matt@utsd.org>, "Matt Lafferty" <laffermn@co.larimer.co.us>, "Matt LeCerf" <mlecerf@townofjohnstown.com>, "Matt Norville" <Matt.Norville@colostate.edu>, "Matt Zoccali" <mzoccali@fcgov.com>, "Melissa Peters-Garcia" <MPeters@timnathgov.com>, "Mike Blackwill" <mblackwill@wsfr.us>, "Nick Sporer" <Nsporer@fcgov.com>, "Pat Mialy" <Pat.Mialy@lfra.org>, "Patricia Gavelda" <patricia.gavelda@state.co.us>, "Randy Lesher" <rlesher@tvems.com>, "Rick Klimeck" <rklimek@windsorgov.com>, "Rick Life" <rlife@estes.org>, "Rick Vander Velde" <rvandervelde@poudre-fire.org>, "Rob Stumpf" <rstumpf@berthoudfire.org>, "Robert Shainline" <rshainline@windsorgov.com>, "Rusty McDaniel" <mcdanird@co.larimer.co.us>, "Rusty McDaniel" <rmcdaniel@larimer.org>, "Sandi Good" <sandi@peakstopeople.org>, "Scott Benton" <Sbenton@fcgov.com>, "Shayle Sabo" <sabosn@co.larimer.co.us>, "Steve Charles" <scharles@berthoudfire.org>, "Terry Jones" <tjones@timnathgov.com>, "Terry Walker" <twalker@windsorgov.com>, "Thomas Hickey" <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, "Tim Morales" <tmorales@fcgov.com>, "Tina Kurtz" <kurtztm@co.larimer.co.us>, "Tom Carosello" <tomc@evrpd.com>, "Tom DeMint" <tdemint@poudre-fire.org>, "Tony Bradley" <anthony.bradley@bannerhealth.com>, "Traci Shambo" <shambotl@co.larimer.co.us>, "Tracy Hays" <Tracy.Hays@bannerhealth.com>, "Will Davis" <wwdavis4992@gmail.com>, "William Vieth" <william@wlrv.org>, "Wilson Branch - CDPS" <wilson.branch@state.co.us>, "Wilynn Formeller" <wilynn.formeller@evwatershed.org>
Subject: [RESPONSE NEEDED] Time Tracking for HMP Match

[Quoted text hidden]

PCFPD Cost Tracking .xlsx
13K

Livermore Fire Dept. <livermorechief@gmail.com> Mon, Jun 29, 2020 at 9:32 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Howdy Shayle,
Our board of directors recently has gotten involved with our long range plan for LFPD. Glade, Halligan, and Seaman Reservoirs are all planning to increase in size and use by the public.
This Will increase the demand on our local responders and types of calls,we respond to. We hope to be proactive in this process and piggyback with the County HMP.
Our wish is for our representatives to maintain contact and the board adjust to ideas and concerns for our local district.
We have spent about 20 total hours so far on this project and will let you know of our progress and time spent as we move forward.
Thanks for undertaking this monster and we look forward to a great vision and outcome.
Sincerely,
Donn Maynard/Chief
LFPD

Sent from my iPhone

> On Jun 29, 2020, at 1:54 PM, Shayle Sabo <sabosn@co.larimer.co.us> wrote:
>
> [Quoted text hidden]

Tom Carosello <tomc@evrpd.com> Tue, Jun 30, 2020 at 12:01 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle,

Attached is the spreadsheet tracking my time spent thus far on the HMP – it does not include the meeting attendance, as you mentioned you were tracking that portion of the time. Thanks – and let me know if you have any questions.

Tom Carosello

Executive Director

Estes Valley Recreation and Park District

660 Community Drive

P.O. Box 1379

Estes Park, CO 80517

970.586.8191 Ext. 117

tomc@evrpd.com

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Christian Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royvol <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <ehenggeler@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <gstonecipher@fcgov.com>; Gretchen Stanford <gstanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <jbyrne@fcgov.com>; Jim Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Katie O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <kmclaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <lrosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani

<mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <mzoccali@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <Nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <Sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <tmorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom DeMint <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>
Subject: [RESPONSE NEEDED] Time Tracking for HMP Match

Good afternoon all,

[Quoted text hidden]

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EVRPD HMP Cost Tracking.xlsx
12K

Katy McLaren <KMcLaren@fcgov.com> Tue, Jun 30, 2020 at 2:26 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

I've got 4 hrs logged toward this so far.

Hope you're well.

Katy McLaren

City of FC

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, June 29, 2020 1:54 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@

poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Christian Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royval <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <EHENGGELER@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <GSTONECIPHER@fcgov.com>; Gretchen Stanford <GStanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <JByrne@fcgov.com>; Jim L. Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Katie O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <KMcLaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <LRosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <MHILMESROBINSON@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <MZOCCALI@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <TMorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom Demint - Contact <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Lynn Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>
Subject: [EXTERNAL] [RESPONSE NEEDED] Time Tracking for HMP Match

Good afternoon all,

At the beginning of this process, we let folks know that it was crucially important to be tracking time related to Hazard Mitigation Planning activities. I wanted to send out a note asking for folks to please provide their time tracking from March until the end of June for any Hazard Mitigation Plan related processes. As a reminder, we have a significant in-kind match for the grant to conduct this HMP update, so any time tracked can be allocated to this and will be immensely helpful. Please try to email those to me by **Friday, July 10th at the latest** so we can submit what we have so far to the State.

I have tracked everyone's time as far as overall group planning meetings, so you will not have to track those, however, any internal time allocated toward this project, or any time allocated to HMP-related activities outside of large group planning meetings will need to be tracked and turned in.

Please don't hesitate to reach out with any questions.Thank you so much for your support and participation in this effort!

Kinde

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

Chris Wolf <Chris.Wolf@poudre-fire.org> Wed, Jul 1, 2020 at 7:57 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

Outside of the mee□ngs, here is the me I have spent on the HMP

May 4 – 1 hour, 22 minutes

May 7 – 1 hour

May 8 - 30 minutes

Total – 2 hours 52 minutes

Chris Wolf, MEP

Emergency Management Specialist

City of Fort Collins Emergency Preparedness and Security

300 Laporte Ave.

Fort Collins, CO 80521

970-416-2859

cwolf@poudre-fire.org

From: Shayle Sabo [mailto:sabosn@co.larimer.co.us]
Sent: Monday, June 29, 2020 1:55 PM
To: Adam Olinger; Andrew Glendenning; Andrew Kamei; Andrew Lucas; Ashley Macdonald; Bernie Lodge; Bette Blinde; Bette Blinde; Bill McCormick; Bob Gowing; Brian Phillips; Brislawn, Jeff P; Carr, Amy; Cheryl Franz; Cheryl Poage; Chief Warren Jones (GVM); Chris Bieker; Chris Kirk; Chris Sturm; Chris Wolf; Christian Samora; Claudia Quezada; Corey Pass; Courtney Gutman; Daniel Bowker; Danielle May; David Wolf; Derek Rosenquist; Devin Traff; Diana Royval; Donn Maynard; Eddie Taylor; Eric Fried; Eric Rose; Errin Henggeler; Escobedo - CDPS, Dan; Everitt Pettit; Field, Scott; Gary Green; Gary Hall; Gregg Stonecipher; Gretchen Stanford; Guy Beesley; Heather Schinkel; Heidi Hansen; Hugh Collins; Jason Eisenbach; Jason Graham; Jean Lever; Jen Kovecses; Jennifer Waters; Jessica Bologna; James Byrne; Jim Struble; John Feeney; Kallie Bauer; Katie O'Donnell; Katy McLaren; Keith Dunn; Kelli Curl; Ken Quintana; Kevin Gingery; Kevin Sullivan; Kohl Parrott; Larry Rogstad; Lesli Ellis; Lisa Rosintoski; Livermore Fire Dept.; Lori Hodges; Marco Carani; Marian Kelly; Mark Kempton; Mark Peterson; Mark Peterson; Mark Rode; Mark Turner; Marsha Hilmes-Robinson; Matt Allen; Matt Lafferty; Matt LeCerf; Matt Norville; Matt Zoccali; Melissa Peters-Garcia; Mike Blackwill; Nick Sporer; Pat Mialy; Patricia Gavelda; Randy Lesher; Rick Klimeck; Rick Life; Rick Vander Velde; Rob Stumpf; Robert Shainline; Rusty McDaniel; Rusty McDaniel; Sandi Good; Scott Benton; Shayle Sabo; Steve Charles; Terry Jones; Terry Walker; Thomas Hickey; Thompson - CDPS, Mark; Tim Morales; Tina Kurtz; Tom Carosello; Tom Demint; Tony Bradley; Traci Shambo; Tracy Hays; Will Davis; William Vieth; Wilson Branch - CDPS; Wilynn Formeller
Subject: [EXTERNAL] [RESPONSE NEEDED] Time Tracking for HMP Match

Good afternoon all,

[Quoted text hidden]

Jennifer Kovecses <jenk@poudrewatershed.org> Wed, Jul 1, 2020 at 9:09 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

I have not had too much time outside of the actual HMP meetings. I would say one hour to review the materials/respond to your request for updates. Do you need specific dates, form filled out (sorry if I missed it) or is this email enough?

Jen

Jennifer Kovecses
executive director
320 East Vine Dr, ste 317
jenk@poudrewatershed.org
https://www.poudrewatershed.org/
(o) 970-222-5754
(c) 858-775-7965

On Mon, Jun 29, 2020 at 1:54 PM Shayle Sabo <sabosn@co.larimer.co.us> wrote:
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 1:25 PM
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, Katie O'Donnell <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>

Hi everyone,

I just wanted to send a friendly reminder to folks to please turn in your time tracking if you have not yet already. Also, please note this is only time required for the hazard mitigation planning process, not individual hazard mitigation projects conducted by your agency/entity.

Also as a friendly reminder, we have our next meeting scheduled for next Tuesday, 7/14 from 1 pm - 3 pm. Let me know if you do not have the invite on your calendar for any reason. We will also get virtual meeting information, slides, etc to the group prior to the meeting.

Thank you all!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE

On Mon, Jun 29, 2020 at 1:54 PM Shayle Sabo <sabosn@co.larimer.co.us> wrote:
[Quoted text hidden]

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Wed, Jul 8, 2020 at 1:25 PM
To: sabosn@co.larimer.co.us

Address not found

Your message wasn't delivered to **livermorchief@gmail.com** because the address couldn't be found, or is unable to receive mail.

LEARN MORE

The response was:

```
550 5.1.1 The email account that you tried to reach does not exist. Please try double-checking
the recipient's email address for typos or unnecessary spaces. Learn more at
https://support.google.com/mail/?p=NoSuchUser l26sor521860oti.29 - gsmtp
```

Final-Recipient: rfc822; livermorchief@gmail.com
Action: failed
Status: 5.1.1
Diagnostic-Code: smtp; 550-5.1.1 The email account that you tried to reach does not exist. Please try
550-5.1.1 double-checking the recipient's email address for typos or
550-5.1.1 unnecessary spaces. Learn more at
550 5.1.1 https://support.google.com/mail/?p=NoSuchUser l26sor521860oti.29 - gsmtp
Last-Attempt-Date: Wed, 08 Jul 2020 12:25:54 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm

<chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
Cc:
Bcc:
Date: Wed, 8 Jul 2020 13:25:42 -0600
Subject: Re: [RESPONSE NEEDED] Time Tracking for HMP Match
Hi everyone,

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Thank you all!

Kindest regards,
Shayle

LARIMER COUNTY

< ----- Message truncated -----

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Wed, Jul 8, 2020 at 1:25 PM
To: sabosn@co.larimer.co.us



Address not found

Your message wasn't delivered to **b.blinbe@poudrecanyonfiredistrict.com** because the address couldn't be found, or is unable to receive mail.

The response from the remote server was:
[Quoted text hidden]

Final-Recipient: rfc822; b.blinbe@poudrecanyonfiredistrict.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; maila1.newtekwebhosting.com. (216.119.106.20, the server for the domain poudrecanyonfiredistrict.com.)
Diagnostic-Code: smtp; 550 <b.blinbe@poudrecanyonfiredistrict.com> No such user here
Last-Attempt-Date: Wed, 08 Jul 2020 12:25:55 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges

<hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
Cc:
Bcc:
Date: Wed, 8 Jul 2020 13:25:42 -0600
Subject: Re: [RESPONSE NEEDED] Time Tracking for HMP Match
Hi everyone,

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Thank you all!

Kindest regards,
Shayle

LARIMER COUNTY

< ----- Message truncated -----

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Wed, Jul 8, 2020 at 1:25 PM
To: sabosn@co.larimer.co.us

Address not found

Your message wasn't delivered to **b.blinde@poudrecanyonfiredistrict.com** because the address couldn't be found, or is unable to receive mail.

The response from the remote server was:

[Quoted text hidden]

Final-Recipient: rfc822; b.blinde@poudrecanyonfiredistrict.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; maila1.newtekwebhosting.com. (216.119.106.20, the server for
 the domain poudrecanyonfiredistrict.com.)
Diagnostic-Code: smtp; 550 <b.blinde@poudrecanyonfiredistrict.com> No such user here
Last-Attempt-Date: Wed, 08 Jul 2020 12:25:55 -0700 (PDT)

---------- Forwarded message ----------
From: Shayle Sabo <sabosn@co.larimer.co.us>
To: Adam Olinger <aolinger@berthoud.org>, Andrew Glendenning <andrew.glendenning@bannerhealth.com>, Andrew Kamei <andrew.kamei@uchealth.org>, Andrew Lucas <chief@pinewoodspringsfire.org>, Ashley Macdonald <amacdonald@wfpd.org>, Bernie Lodge <blodge@northernwater.org>, Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>, Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>, Bill McCormick <bill.mccormick@state.co.us>, Bob Gowing <gowingbj@wellingtoncolorado.gov>, Brian Phillips <bphillips@townofjohnstown.com>, "Brislawn, Jeff P" <jeff.brislawn@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>, Cheryl Franz <gvfdoffice1@gmail.com>, Cheryl Poage <cheryl@poage.com>, "Chief Warren Jones (GVM)" <gvfdchief1@gmail.com>, Chris Bieker <chris@utsd.org>, Chris Kirk <ckirk@berthoud.org>, Chris Sturm <chris.sturm@state.co.us>, Chris Wolf <cwolf@poudre-fire.org>, Christian Samora <csamora@berthoud.org>, Claudia Quezada <cquezada@fcgov.com>, Corey Pass <cpass@estes.org>, Courtney Gutman <courtney.gutman@bigthompson.co>, Daniel Bowker <daniel@poudrewatershed.org>, Danielle May <Danielle.May@bannerhealth.com>, David Wolf <chief@estesvalleyfire.org>, Derek Rosenquist <rosenqdc@co.larimer.co.us>, Devin Traff <traffdc@co.larimer.co.us>, Diana Royvol <DROYVAL@fcgov.com>, Donn Maynard <livermorchief@gmail.com>, Eddie Taylor <egtaylordvm@gmail.com>, Eric Fried <friedeb@co.larimer.co.us>, Eric Rose <erose@estes.org>, Errin Henggeler <ehenggeler@fcgov.com>, "Escobedo - CDPS, Dan" <dan.escobedo@state.co.us>, Everitt Pettit <epettit@wfpd.org>, "Field, Scott" <scott.field@woodplc.com>, Gary Green <ggreen@wfpd.org>, Gary Hall <ghall@eph.org>, Gregg Stonecipher <gstonecipher@fcgov.com>, Gretchen Stanford <gstanford@fcgov.com>, Guy Beesley <gbeesley@eph.org>, Heather Schinkel <heather@peakstopeople.org>, Heidi Hansen <hhansen@fcgov.com>, Hugh Collins <h.collins@poudrecanyonfiredistrict.org>, Jason Eisenbach <eisenbja@co.larimer.co.us>, Jason Graham <jgraham@fcgov.com>, Jean Lever <jean.lever@state.co.us>, Jen Kovecses <jenk@poudrewatershed.org>, Jennifer Waters <jwaters@estes.org>, Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>, Jim Byrne <jbyrne@fcgov.com>, Jim Struble <jstruble@northernwater.org>, John Feeney <john@evrpd.com>, Kallie Bauer <kallie.bauer@state.co.us>, "Katie O'Donnell" <odonnekm@co.larimer.co.us>, Katy McLaren <kmclaren@fcgov.com>, Keith Dunn <keithfdunn@gmail.com>, Kelli Curl <curlkb@co.larimer.co.us>, Ken Quintana <Ken.Quintana@colostate.edu>, Kevin Gingery <Kevin.Gingery@cityofloveland.org>, Kevin Sullivan <ksullivan@estesvalleyfire.org>, Kohl Parrott <parrotck@co.larimer.co.us>, Larry Rogstad <9fingerslars@gmail.com>, Lesli Ellis <ellislk@larimer.org>, Lisa Rosintoski <lrosintoski@fcgov.com>, "Livermore Fire Dept." <livermorechief@gmail.com>, Lori Hodges <hodgeslr@co.larimer.co.us>, Marco Carani <mcarani@townofjohnstown.com>, Marian Kelly <mkelly@clvfd.org>, Mark Kempton <mkempton@fcgov.com>, Mark Peterson <mpeterson@larimer.org>, Mark Peterson <petersmr@co.larimer.co.us>, Mark Rode <markrode58@gmail.com>, Mark Turner <Mturner@tvems.com>, Marsha Hilmes-Robinson <mhilmesrobinson@fcgov.com>, Matt Allen <matt@utsd.org>, Matt Lafferty <laffermn@co.larimer.co.us>, Matt LeCerf <mlecerf@townofjohnstown.com>, Matt Norville <Matt.Norville@colostate.edu>, Matt Zoccali <mzoccali@fcgov.com>, Melissa Peters-Garcia <MPeters@timnathgov.com>, Mike Blackwill <mblackwill@wsfr.us>, Nick Sporer <Nsporer@fcgov.com>, Pat Mialy <Pat.Mialy@lfra.org>, Patricia Gavelda <patricia.gavelda@state.co.us>, Randy Lesher <rlesher@tvems.com>, Rick Klimeck <rklimek@windsorgov.com>, Rick Life <rlife@estes.org>, Rick Vander Velde <rvandervelde@poudre-fire.org>, Rob Stumpf <rstumpf@berthoudfire.org>, Robert Shainline <rshainline@windsorgov.com>, Rusty McDaniel <mcdanird@co.larimer.co.us>, Rusty McDaniel <rmcdaniel@larimer.org>, Sandi Good <sandi@peakstopeople.org>, Scott Benton <Sbenton@fcgov.com>, Shayle Sabo <sabosn@co.larimer.co.us>, Steve Charles <scharles@berthoudfire.org>, Terry Jones <tjones@timnathgov.com>, Terry Walker <twalker@windsorgov.com>, Thomas Hickey <thomas.hickey@colostate.edu>, "Thompson - CDPS, Mark" <markw.thompson@state.co.us>, Tim Morales <tmorales@fcgov.com>, Tina Kurtz <kurtztm@co.larimer.co.us>, Tom Carosello <tomc@evrpd.com>, Tom DeMint <tdemint@poudre-fire.org>, Tony Bradley <anthony.bradley@bannerhealth.com>, Traci Shambo <shambotl@co.larimer.co.us>, Tracy Hays <Tracy.Hays@bannerhealth.com>, Will Davis <wwdavis4992@gmail.com>, William Vieth <william@wlrv.org>, Wilson Branch - CDPS <wilson.branch@state.co.us>, Wilynn Formeller <wilynn.formeller@evwatershed.org>
Cc:
Bcc:

Date: Wed, 8 Jul 2020 13:25:42 -0600
Subject: Re: [RESPONSE NEEDED] Time Tracking for HMP Match
Hi everyone,

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Thank you all!

Kindest regards,
Shayle

LARIMER COUNTY

< ----- Message truncated -----

Heidi Hansen <hhansen@fcgov.com> Wed, Jul 8, 2020 at 1:40 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

You said that you tracked us for the group planning meetings…does that include the CRS specific meeting?

Thanks,

Heidi

Heidi Hansen, PE, CFM

Engineer III – Floodplain Management

City of Fort Collins - Utilities

700 Wood St.

Fort Collins, CO 80521

970.221.6854 (desk)

City of Fort Collins

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Wednesday, July 08, 2020 1:26 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Christian Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royval <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <EHENGGELER@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <GSTONECIPHER@fcgov.com>; Gretchen Stanford <GStanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <JByrne@fcgov.com>; Jim L. Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Katie O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <KMcLaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <LRosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <MHILMESROBINSON@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <MZOCCALI@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <TMorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom Demint - Contact <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Lynn Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>

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[Quoted text hidden]

Eric Fried <friedeb@co.larimer.co.us> Wed, Jul 8, 2020 at 1:46 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Just to check, you don't need my time (or other county staff time) tracked, right? I have not done anything outside of attending the meetings, which you already track.

Eric Fried
Chief Building Official

Community Development Department Building Division
200 W Oak St., Suite 3100
Fort Collins, CO 80521
Phone: (970) 498-7705 | Fax: 498-7667
efried@larimer.org
www.larimer.org/building

[Quoted text hidden]

Pat Mialy <Pat.Mialy@lfra.org> Wed, Jul 8, 2020 at 2:23 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

No additional time to report for Loveland.

Thanks Shayle.

_____
From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Wednesday, July 8, 2020 1:25:42 PM
To: Adam Olinger; Andrew Glendenning; Andrew Kamei; Andrew Lucas; Ashley Macdonald; Bernie Lodge; Bette Blinde; Bette Blinde; Bill McCormick; Bob Gowing; Brian Phillips; Brislawn, Jeff P; Carr, Amy; Cheryl Franz; Cheryl Poage; Chief Warren Jones (GVM); Chris Bieker; Chris Kirk; Chris Sturm; Chris Wolf; Christian Samora; Claudia Quezada; Corey Pass; Courtney Gutman; Daniel Bowker; Danielle May; David Wolf; Derek Rosenquist; Devin Traff; Diana Royvol; Donn Maynard; Eddie Taylor; Eric Fried; Eric Rose; Errin Henggeler; Escobedo - CDPS, Dan; Everitt Pettit; Field, Scott; Gary Green; Gary Hall; Gregg Stonecipher; Gretchen Stanford; Guy Beesley; Heather Schinkel; Heidi Hansen; Hugh Collins; Jason Eisenbach; Jason Graham; Jean Lever; Jen Kovecses; Jennifer Waters; Jessica Bologna; Jim Byrne; Jim Struble; John Feeney; Kallie Bauer; Katie O'Donnell; Katy McLaren; Keith Dunn; Kelli Curl; Ken Quintana; Kevin Gingery; Kevin Sullivan; Kohl Parrott; Larry Rogstad; Lesli Ellis; Lisa Rosintoski; Livermore Fire Dept.; Lori Hodges; Marco Carani; Marian Kelly; Mark Kempton; Mark Peterson; Mark Peterson; Mark Rode; Mark Turner; Marsha Hilmes-Robinson; Matt Allen; Matt Lafferty; Matt LeCerf; Matt Norville; Matt Zoccali; Melissa Peters-Garcia; Mike Blackwill; Nick Sporer; Pat Mialy; Patricia Gavelda; Randy Lesher; Rick Klimeck; Rick Life; Rick Vander Velde; Rob Stumpf; Robert Shainline; Rusty McDaniel; Rusty McDaniel; Sandi Good; Scott Benton; Shayle Sabo; Steve Charles; Terry Jones; Terry Walker; Thomas Hickey; Thompson - CDPS, Mark; Tim Morales; Tina Kurtz; Tom Carosello; Tom DeMint; Tony Bradley; Traci Shambo; Tracy Hays; Will Davis; William Vieth; Wilson Branch - CDPS; Wilynn Formeller
Subject: [External] Re: [RESPONSE NEEDED] Time Tracking for HMP Match

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Thank you all!

Kindest regards,
Shayle
[Larimer County]

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us<mailto:sabosn@co.larimer.co.us> | www.larimer.org/emergency<http
s://urldefense.proofpoint.com/v2/url?u=http-3A__www.larimer.org_emergency&d=DwMFaQ&c=bzx181Ycl3I-5o-
tgG8UzrCycjjP9MepY78NUJhv95Q&r=___UkX4dAARI30k1JnenH3Bu6wh6XQH2gOA-Vy45-9A&m=
YRAz5p1ARPmCmTNNiq72aPVOtvDSawr65oLb9SSi_sw&s=NXNf0j3SfqXDDgkA_SJ6IKpn5lScDd-kbeolUr714MQ&e=>

[https://docs.google.com/uc?export=download&id=1o-apUOkHhkk8ijmry9f0OvBUzqnsAypP&revid=
0B4URYfmH12ssVEZMcXBTLzJIcWsvWUZFNCtlOFIwMHRVcmZFPQ]

On Mon, Jun 29, 2020 at 1:54 PM Shayle Sabo <sabosn@co.larimer.co.us<mailto:sabosn@co.larimer.co.us>> wrote:
Good afternoon all,

At the beginning of this process, we let folks know that it was crucially important to be tracking time related to Hazard Mitigation Planning activities. I wanted to send out a note asking for folks to please provide their time tracking from March until the end of June for any Hazard Mitigation Plan related processes. As a reminder, we have a significant in-kind match for the grant to conduct this HMP update, so any time tracked can be allocated to this and will be immensely helpful. Please try to email those to me by Friday, July 10th at the latest so we can submit what we have so far to the State.

I have tracked everyone's time as far as overall group planning meetings, so you will not have to track those, however, any internal time allocated toward this project, or any time allocated to HMP-related activities outside of large group planning meetings will need to be tracked and turned in.

Please don't hesitate to reach out with any questions.Thank you so much for your support and participation in this effort!

Kinde
[Larimer County]

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

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sabosn@co.larimer.co.us<mailto:sabosn@co.larimer.co.us> | www.larimer.org/emergency<http
s://urldefense.proofpoint.com/v2/url?u=http-3A__www.larimer.org_emergency&d=DwMFaQ&c=bzx181Ycl3I-5o-
tgG8UzrCycjjP9MepY78NUJhv95Q&r=___UkX4dAARI30k1JnenH3Bu6wh6XQH2gOA-Vy45-9A&m=
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[https://docs.google.com/uc?export=download&id=1o-apUOkHhkk8ijmry9f0OvBUzqnsAypP&revid=
0B4URYfmH12ssVEZMcXBTLzJIcWsvWUZFNCtlOFIwMHRVcmZFPQ]

Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 2:52 PM
To: "Livermore Fire Dept." <livermorechief@gmail.com>

Hey Chief Maynard,

Thank you for your response! So far I have the time broken down for LFPD as follows:

Donn Maynard: Kick-Off Meeting, Planning Meeting 2 - Total of 4 hours

Eddie Taylor: Kick-Off Meeting, Planning Meeting 2 - Total of 4 hours
Keith Dunn: Kick-Off Meeting, Planning Meeting 2, Review of Project - Total of 5 hours.

Can you please provide a bit more additional information including names of who else is involved for your project as well as a brief description of the activities you did as they relate to the HMP to date for the rest of the 20 hours?

Thank you so much, hope things are going well for you!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 3:04 PM
To: Katy McLaren <KMcLaren@fcgov.com>

Hi Katy!

Thank you so much - do you mind providing a brief breakdown of activities and the hours (i.e. internal meeting - 1 hour)

I appreciate it! Hope you are also well, and thank you for participating!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 3:05 PM
To: Chris Wolf <Chris.Wolf@poudre-fire.org>

Hey Chris,

Thank you - Can you please provide a brief description of activities for each time amount allotted? I appreciate it!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 3:07 PM
To: Jennifer Kovecses <jenk@poudrewatershed.org>

Hi Jen,

I think this email should suffice, if not I'll let you know. Thank you!

In the future, here is a link to forms you can use to track time if it helps! https://drive.google.com/drive/folders/1YhG_ioTPG0AvtEMva-Els7zNVk1ptgUR

I appreciate your participation in this effort!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 3:11 PM
To: Eric Fried <friedeb@co.larimer.co.us>

If you dedicate any time outside of the planning meetings, which yes, you are correct, I am already tracking, we will want to track that. So any of the time you put toward that data collection document for example, is track-able. Let me know if that makes sense. Happy to answer any additional questions!

LARIMER COUNTY

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Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jul 8, 2020 at 3:11 PM
To: Pat Mialy <Pat.Mialy@lfra.org>

Thank you, Pat!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

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Chris Wolf <Chris.Wolf@poudre-fire.org> Thu, Jul 9, 2020 at 8:16 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

See below.

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>
> May 4 – 1 hour, 22 minutes – Research and work on data collec on sheet
>
> May 7 – 1 hour – work on data collec on sheet
>
> May 8 - 30 minutes – finalize and submit data collec on sheet
>
> [Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 9, 2020 at 12:53 PM
To: Chris Wolf <Chris.Wolf@poudre-fire.org>

Thank you, Chris!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

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Katy McLaren <KMcLaren@fcgov.com> Fri, Jul 10, 2020 at 11:57 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle it's pretty simplified as it's all virtual. It's essentially a brainstorming session for the hour with orientation to Zoom and the topics for each session. There's one breakout session to cast a wide net of ideas based on two questions framed under normal and disruptive conditions.

Next week has two related to climate impacts - resilience and water.

Hope you can join one!

Thanks,
Katy

On Jul 8, 2020, at 3:05 PM, Shayle Sabo <sabosn@co.larimer.co.us> wrote:

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Kinde

<image001.jpg>

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

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2 attachments

image001.jpg
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image002.jpg
1K

Scott Benton <sbenton@fcgov.com> Fri, Jul 10, 2020 at 2:07 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Afternoon Shayle,

Could you send the invite for the July 14th my way?

Much appreciated, and have a good weekend,

Scott

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Wednesday, July 8, 2020 1:26 PM
To: Adam Olinger <aolinger@berthoud.org>; Andrew Glendenning <andrew.glendenning@bannerhealth.com>; Andrew Kamei <andrew.kamei@uchealth.org>; Andrew Lucas <chief@pinewoodspringsfire.org>; Ashley Macdonald <amacdonald@wfpd.org>; Bernie Lodge <blodge@northernwater.org>; Bette Blinde <b.blinbe@poudrecanyonfiredistrict.com>; Bette Blinde <b.blinde@poudrecanyonfiredistrict.com>; Bill McCormick <bill.mccormick@state.co.us>; Bob Gowing <gowingbj@wellingtoncolorado.gov>; Brian Phillips <bphillips@townofjohnstown.com>; Brislawn, Jeff P <jeff.brislawn@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>; Cheryl Franz <gvfdoffice1@gmail.com>; Cheryl Poage <cheryl@poage.com>; Chief Warren Jones (GVM) <gvfdchief1@gmail.com>; Chris Bieker <chris@utsd.org>; Chris Kirk <ckirk@berthoud.org>; Chris Sturm <chris.sturm@state.co.us>; Chris Wolf <cwolf@poudre-fire.org>; Christian Samora <csamora@berthoud.org>; Claudia Quezada <cquezada@fcgov.com>; Corey Pass <cpass@estes.org>; Courtney Gutman <courtney.gutman@bigthompson.co>; Daniel Bowker <daniel@poudrewatershed.org>; Danielle May <Danielle.May@bannerhealth.com>; David Wolf <chief@estesvalleyfire.org>; Derek Rosenquist <rosenqdc@co.larimer.co.us>; Devin Traff <traffdc@co.larimer.co.us>; Diana Royval <DROYVAL@fcgov.com>; Donn Maynard <livermorchief@gmail.com>; Eddie Taylor <egtaylordvm@gmail.com>; Eric Fried <friedeb@co.larimer.co.us>; Eric Rose <erose@estes.org>; Errin Henggeler <EHENGGELER@fcgov.com>; Escobedo - CDPS, Dan <dan.escobedo@state.co.us>; Everitt Pettit <epettit@wfpd.org>; Field, Scott <scott.field@woodplc.com>; Gary Green <ggreen@wfpd.org>; Gary Hall <ghall@eph.org>; Gregg Stonecipher <GSTONECIPHER@fcgov.com>; Gretchen Stanford <GStanford@fcgov.com>; Guy Beesley <gbeesley@eph.org>; Heather Schinkel <heather@peakstopeople.org>; Heidi Hansen <hhansen@fcgov.com>; Hugh Collins <h.collins@poudrecanyonfiredistrict.org>; Jason Eisenbach <eisenbja@co.larimer.co.us>; Jason Graham <jgraham@fcgov.com>; Jean Lever <jean.lever@state.co.us>; Jen Kovecses <jenk@poudrewatershed.org>; Jennifer Waters <jwaters@estes.org>; Jessica Bologna <jessica.bologna@pinewoodspringsfire.org>; Jim Byrne <JByrne@fcgov.com>; Jim L. Struble <jstruble@northernwater.org>; John Feeney <john@evrpd.com>; Kallie Bauer <kallie.bauer@state.co.us>; Katie O'Donnell <odonnekm@co.larimer.co.us>; Katy McLaren <KMcLaren@fcgov.com>; Keith Dunn <keithfdunn@gmail.com>; Kelli Curl <curlkb@co.larimer.co.us>; Ken Quintana <Ken.Quintana@colostate.edu>; Kevin Gingery <Kevin.Gingery@cityofloveland.org>; Kevin Sullivan <ksullivan@estesvalleyfire.org>; Kohl Parrott <parrotck@co.larimer.co.us>; Larry Rogstad <9fingerslars@gmail.com>; Lesli Ellis <ellislk@larimer.org>; Lisa Rosintoski <LRosintoski@fcgov.com>; Livermore Fire Dept. <livermorechief@gmail.com>; Lori Hodges <hodgeslr@co.larimer.co.us>; Marco Carani <mcarani@townofjohnstown.com>; Marian Kelly <mkelly@clvfd.org>; Mark Kempton <mkempton@fcgov.com>; Mark Peterson <mpeterson@larimer.org>; Mark Peterson <petersmr@co.larimer.co.us>; Mark Rode <markrode58@gmail.com>; Mark Turner <Mturner@tvems.com>; Marsha Hilmes-Robinson <MHILMESROBINSON@fcgov.com>; Matt Allen <matt@utsd.org>; Matt Lafferty <laffermn@co.larimer.co.us>; Matt LeCerf <mlecerf@townofjohnstown.com>; Matt Norville <Matt.Norville@colostate.edu>; Matt Zoccali <MZOCCALI@fcgov.com>; Melissa Peters-Garcia <MPeters@timnathgov.com>; Mike Blackwill <mblackwill@wsfr.us>; Nick Sporer <nsporer@fcgov.com>; Pat Mialy <Pat.Mialy@lfra.org>; Patricia Gavelda <patricia.gavelda@state.co.us>; Randy Lesher <rlesher@tvems.com>; Rick Klimeck <rklimek@windsorgov.com>; Rick Life <rlife@estes.org>; Rick Vander Velde <rvandervelde@poudre-fire.org>; Rob Stumpf <rstumpf@berthoudfire.org>; Robert Shainline <rshainline@windsorgov.com>; Rusty McDaniel <mcdanird@co.larimer.co.us>; Rusty McDaniel <rmcdaniel@larimer.org>; Sandi Good <sandi@peakstopeople.org>; Scott Benton <sbenton@fcgov.com>; Shayle Sabo <sabosn@co.larimer.co.us>; Steve Charles <scharles@berthoudfire.org>; Terry Jones <tjones@timnathgov.com>; Terry Walker <twalker@windsorgov.com>; Thomas Hickey <thomas.hickey@colostate.edu>; Thompson - CDPS, Mark <markw.thompson@state.co.us>; Tim Morales <TMorales@fcgov.com>; Tina Kurtz <kurtztm@co.larimer.co.us>; Tom Carosello <tomc@evrpd.com>; Tom Demint - Contact <tdemint@poudre-fire.org>; Tony Bradley <anthony.bradley@bannerhealth.com>; Traci Lynn Shambo <shambotl@co.larimer.co.us>; Tracy Hays <Tracy.Hays@bannerhealth.com>; Will Davis <wwdavis4992@gmail.com>; William Vieth <william@wlrv.org>; Wilson Branch - CDPS <wilson.branch@state.co.us>; Wilynn Formeller <wilynn.formeller@evwatershed.org>

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 10, 2020 at 2:10 PM
To: Scott Benton <sbenton@fcgov.com>

You bet, sending now!

Have a great weekend as well!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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sabosn@co.larimer.co.us | www.larimer.org/emergency

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jul 10, 2020 at 2:12 PM
To: Katy McLaren <KMcLaren@fcgov.com>

Great thank you, Katy! I hope I'll be able to as well! Have a lovely weekend!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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Gary Hall <GHall@eph.org> Sat, Jul 11, 2020 at 8:57 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle, I was looking to see if there was an online tool for this, but couldn't find it. The only thing I would add for us is a couple things:

(1) Time spent in discussion with the Town of Estes experts on the HMP about Estes Park Health's role: Two hours (Gary Hall)

(2) Time spent educating my senior team (of which I am the oldest, longest continuous part, 10 years now on the admin team) about the HMP and our involvement, in spirit or in actual action: Two hours (Gary Hall and EPH senior team)

Let me know if this satisfies the method of reporting? Anything else?

Gary M. Hall

CIO / COO

Estes Park Health

Phone: 970-577-4443

Cell: 970-744-9052

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Glacier 1 <gvfdchief1@gmail.com> Tue, Jul 14, 2020 at 12:36 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

Can you resend me the meeting link for today on the HMP?

Thanks, Warren

Warren D. Jones
Fire Chief (Glacier 1)
Glacier View Fire Department
1414 Green Mountain Dr.
Livermore, Co 80536
Office - 970-493-3353
Cell - 970-397-3114
gvfdchief1@gmail.com

"Together We Succeed"

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jul 14, 2020 at 12:38 PM
To: Glacier 1 <gvfdchief1@gmail.com>

Just re-sent! Let me know if you got it.

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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Glacier 1 <gvfdchief1@gmail.com> Tue, Jul 14, 2020 at 12:52 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Didn't get it, did you send email?

Warren D. Jones
Fire Chief (Glacier 1)
Glacier View Fire Department
1414 Green Mountain Dr.
Livermore, Co 80536
Office - 970-493-3353
Cell - 970-397-3114
gvfdchief1@gmail.com

"Together We Succeed"

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jul 14, 2020 at 12:55 PM
To: Glacier 1 <gvfdchief1@gmail.com>

Here I will try copy and pasting it:

Join Microsoft Teams Meeting

https://teams.microsoft.com/l/meetup-join/19%3ameeting_NWZmYjk0ZTItY2UzOC00ZTE5LWE4NzgtOTNhZjI2OTNkNTll%40thread.v2/0?context=%7b%22Tid%22%3a%220843acec-fd3e-49be-bd54-18c6048a3fd0%22%2c%22Oid%22%3a%221af7d331-902d-4752-9987-ea455d99ec99%22%7d

Or Join by phone:

+1 281-810-1627 United States, Houston (Toll)

(866) 670-1764 United States (Toll-free)

Conference ID: 765 097 177#

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Shayle Nelson Sabo
Emergency Management Coordinator
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[Quoted text hidden]

Eric Fried <friedeb@co.larimer.co.us> Tue, Jul 14, 2020 at 3:26 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

I looked at my calendar, emails and old time cards in Ultipro. Besides the meetings on April 10 and May 15, I dedicated 2.5 hours to gathering data and filling in Worksheet #4. I spent 1.5 hours on April 30, and 1 hour on May 4. Can you please put that on the spreadsheet, or do you need me to? And would you need any more documentation from me?
[Quoted text hidden]

LARIMER COUNTY

Shayle Sabo <sabosn@co.larimer.co.us>

Mitigation Plan Input

7 messages

Milissa Peters <mpeters@timnathgov.com> Thu, May 21, 2020 at 3:14 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: Terry Jones <tjones@timnathgov.com>

Shayle,

I have included our Police Chief, Terry Jones, on this email. We are still trying to determine the best person to take part in the Emergency management process. Infrastructure seems to be a major part of the planning and I'm inquiring about an engineer taking part in the group.

I listened to the planning meeting. I can't remember if we had anything from the 2016 plan but I wanted to say that the Town has finished widening Harmony Road, we have work with Boxelder to mitigate the flood plain, we have and still are working with the railroad to upgrade our crossings and are working on a comp plan update.

The hazards I see for the Town is the Poudre flooding, train derailment and the possibility of a tornado.

Is the next planning meeting next Thursday?

Milissa Peters-Garcia, CMC

Town/Court Clerk

Town of Timnath

4750 Signal Tree Drive

Timnath, CO 80547

970-224-3211 ext. 1202

970-224-3218 fax

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, May 22, 2020 at 8:16 AM
To: Milissa Peters <mpeters@timnathgov.com>
Cc: Terry Jones <tjones@timnathgov.com>

Hi Milissa, and thank you.

I just want to clarify which planning meeting you listened to, did you listen to the kick-off or the most recent planning meeting (the Hazard Identification meeting)? I just want to make sure I mark you off for the right one.

Thank you for doing that and providing input!

Hi Chief Jones, thank you for being willing to take part in the planning process for Timnath. I'll get you added to the distribution list and our partners folder which will have everything you need to participate in the process, including meeting notes, access to the current iteration of the plan, etc. You can access that here: https://drive.google.com/drive/folders/18LIXnuG3ya6zODkJgP3K8smCBpJ9jn_7?usp=sharing

The next planning meeting is scheduled for June 12th, but we have a public workshop coming up on May 28th. If you could help circulate the attached E-flyer, we would be most grateful!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 3rd Floor
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sabosn@co.larimer.co.us | www.larimer.org/emergency

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5.28.2020 CRS Public Meeting E-Flyer.pdf
77K

Shayle Sabo <sabosn@co.larimer.co.us> Sat, Sep 19, 2020 at 9:38 AM
To: Terry Jones <tjones@timnathgov.com>

Hi Chief Jones,

I apologize for not getting this to you last night. Please see below for the link to the Google Drive that will have the videos for you to review. Please watch them and then provide input back via email and I can mark you as having participated in these meetings.

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

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5.28.2020 CRS Public Meeting E-Flyer.pdf
77K

Terry Jones <tjones@timnathgov.com> Mon, Sep 21, 2020 at 12:54 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hello Shayle-

Thanks for sending me the link. I did have a chance to look at all E-Flyer, commentary, and the associated video. I have reviewed the material and admittedly zoomed through the 2 hour presentation. Clearly lots of valuable information from the emergency management point of view along with the Home Land Security Emergency Management information. I think it would be safe to count me in as having reviewed.

I agree with the Hazards and the associated Risk Assessment--- disasters surrounding primarily natural ones… Flooding would be the top of our list. Likely followed by major snow storms and then tornadoes.

Thank you again for your patience with us.

Looking forward to meeting you or Zooming in sometime the not too distant future.

Cheers,

Terry

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Saturday, September 19, 2020 9:38 AM
To: Terry Jones <tjones@timnathgov.com>
Subject: Fwd: Mitigation Plan Input

Hi Chief Jones,

I apologize for not getting this to you last night. Please see below for the link to the Google Drive that will have the videos for you to review. Please watch them and then provide input back via email and I can mark you as having participated in these meetings.

Kindest regards,
Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

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W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

---------- Forwarded message ---------
From: **Shayle Sabo** <sabosn@co.larimer.co.us>
Date: Fri, May 22, 2020 at 8:16 AM
Subject: Re: Mitigation Plan Input
To: Milissa Peters <mpeters@timnathgov.com>
Cc: Terry Jones <tjones@timnathgov.com>

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Kindest regards,

Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Larimer Connects Program Manager

Larimer County Office of Emergency Management

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Shayle Sabo <sabosn@co.larimer.co.us> Mon, Sep 21, 2020 at 1:05 PM
To: Terry Jones <tjones@timnathgov.com>

Chief Jones,

Thank you so much for taking the time to review these materials! I sincerely appreciate it. Can you please specify which presentation you watched? That way I mark you for the correct one. Thanks!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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Terry Jones <tjones@timnathgov.com> Mon, Sep 21, 2020 at 1:18 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hello Shayle-

It was the two hour-- Hazard Mitigation and Planning committee #2. Risk Assessment and goals… The heading was Rock and landslides.

TJ

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Shayle Sabo <sabosn@co.larimer.co.us> Mon, Sep 21, 2020 at 1:21 PM
To: Terry Jones <tjones@timnathgov.com>

Perfect, thank you!

Shayle Nelson Sabo
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Shayle Sabo <sabosn@co.larimer.co.us>

Spotlight

6 messages

Thomas Clayton <claytontm@co.larimer.co.us> Mon, May 18, 2020 at 9:35 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Here ya go, Shayle.

--

Tom Clayton
Communication Specialist, Public Affairs

Commissioners' Office
200 W Oak St, Fort Collins, 80522 | 2nd Floor
W: (970) 498-7005
tclayton@larimer.org | **www.larimer.org**

2020 5-17 Hazard mitigation plan being updated NR.docx
42K

Shayle Sabo <sabosn@co.larimer.co.us> Mon, May 18, 2020 at 9:39 AM
To: Thomas Clayton <claytontm@co.larimer.co.us>

That looks awesome Tom! The only change I request is to change my email to sabosn@co.larimer.co.us - other than that it looks great!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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Shayle Sabo <sabosn@co.larimer.co.us> Mon, May 18, 2020 at 10:21 AM
To: Thomas Clayton <claytontm@co.larimer.co.us>

Also, can you give me an estimate on about how much time it takes to put this together, distribute it, etc? I'm tracking every minute that goes into anything HMP-related since we have such a large in-kind match for this project.

Thanks!
Shayle

Shayle Nelson Sabo
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Larimer Connects Program Manager

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Thomas Clayton <claytontm@co.larimer.co.us> Mon, May 18, 2020 at 10:31 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

It took me a couple of hours to write, format, and maybe another or so hour to get everything sent off to media, posted to spotlight, pictures/visuals chosen, etc. Grant projects love to have definitive data!



[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, May 18, 2020 at 10:49 AM
To: Thomas Clayton <claytontm@co.larimer.co.us>

Haha! Thanks for the laugh, that's awesome. So I'm safe to assume around 3-ish hours on your end?

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Thomas Clayton <claytontm@co.larimer.co.us> Mon, May 18, 2020 at 10:56 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Thought you'd enjoy that. Gotta have fun!

Yea, that's a safe bet. [time] You provided the information and so forth and there aren't any revisions. If I have to interview someone, then put it together, edit, plus revisions, then it can t 4-5 hours. And some departments that get cranky it can go as far as 8-9 hours --- not a good use of my time. [which, we've put a stop to].

I'll look for a pic for the spotlight and try to push it out today.

Cheers!

T

[Quoted text hidden]

URGENT - Hazard Mitigation Plan Participation

10 messages

Shayle Sabo <sabosn@co.larimer.co.us> Mon, May 18, 2020 at 3:38 PM
To: "Livermore Fire Dept." <livermorechief@gmail.com>

Hi there,

We were going through the list and double-checking participation in the Hazard Mitigation Plan up to this point and noticed that Livermore Fire has not been a participant. I take responsibility for this as I had missed you on my distribution list. Finalizing the contact lists was what I was in the middle of when COVID-19 hit, and I apologize sincerely for not checking in to get a point of contact for Livermore fire.

Can I please get a primary point of contact and a secondary point of contact to get on the distribution list ASAP?

We should still be good so long as Livermore Fire participates in the next 2 planning meetings (the next one is scheduled for June 12, 1pm - 3pm).

Additionally, due to the virtual nature of the meetings the previous 2 have been recorded. If you watch them and provide input to me via email, we should be able to use that as justification for your participation.

I apologize again.

Kindest regards,
Shayle

Shayle Nelson Sabo
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Shayle Sabo <sabosn@co.larimer.co.us> Tue, May 19, 2020 at 2:07 PM
To: "Livermore Fire Dept." <livermorechief@gmail.com>, "Dr. Edward Taylor" <egtaylordvm@gmail.com>

Hi Chief Maynard and Dr. Taylor,

Here is the link to the first recorded webinar. If you watch this meeting and provide input, I think we will be able to use this as a way to document participation https://drive.google.com/drive/u/0/folders/1bztOd18LStN0QNO-NqGdSAe3iRTp4b2t

I don't have the second meeting link quite yet, I'll get that from our consultant and get that to you ASAP.

Otherwise, here is the partners folder link. Let me know if you have any trouble accessing it. This will have everything you should need to get up to speed. https://drive.google.com/drive/u/0/folders/18LIXnuG3ya6zODkJgP3K8smCBpJ9jn_7

Thank you! Let me know if you have any questions. I sincerely apologize for any inconvenience.

Also, I have the livermorechief@gmail.com email on the distribution list, let me know if this one is good moving forward, or if there is a different one preferred. It would also be great to have a secondary point of contact on this in case Chief Maynard is unable to attend for any reason, so we can still document Livermore's participation in the future meetings.

Kindest regards,
Shayle



Shayle Nelson Sabo
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Larimer Connects Program Manager

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[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, May 19, 2020 at 3:21 PM
To: "Livermore Fire Dept." <livermorechief@gmail.com>, "Dr. Edward Taylor" <egtaylordvm@gmail.com>

Here is the link to the second folder with the second webinar: https://drive.google.com/drive/u/0/folders/1yEBgCPmM1XI8A8HShO6fNvi6sd5t6pwa



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[Quoted text hidden]

Livermore Fire Dept. <livermorechief@gmail.com> Thu, May 21, 2020 at 11:01 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Second contact person is Eddie Taylor Asst. Chief. Email "egtaylordvm@gmail.com".
Thanks Shayle.
Donn M

Sent from my iPad
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Fri, May 22, 2020 at 8:06 AM
To: "Livermore Fire Dept." <livermorechief@gmail.com>

Thank you, Chief!



Shayle Nelson Sabo
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Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 1, 2020 at 9:52 AM
To: "Livermore Fire Dept." <livermorechief@gmail.com>, "Dr. Edward Taylor" <egtaylordvm@gmail.com>

Hi Chief Maynard and Dr. Taylor,

I just wanted to touch base to see if you both had an opportunity to review the webinars? If so, please let me know what your input is and I can get you marked for having attended both meetings. Let me know if you have any questions.

Thank you!

Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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[Quoted text hidden]

Livermore Fire Dept. <livermorechief@gmail.com> Mon, Jun 1, 2020 at 11:07 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Howdy Shayle,
I, Donn, have watched them and told Eddie to watch them too.
Donn
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 1, 2020 at 1:54 PM
To: "Livermore Fire Dept." <livermorechief@gmail.com>

Great, thank you, Donn! Do you have any input/comments you'd like to provide upon watching the videos? That way I can just document that you provided input 😊

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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[Quoted text hidden]

Livermore Fire Dept. <livermorechief@gmail.com> Mon, Jun 1, 2020 at 2:18 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Howdy Shayle,
It was very interesting to see each areas ideas of their hazards and how they were dealing/planning to deal with them.
We have a very diverse needs/hazards in each area. I was pleased that we had accomplished of 5 goals either completely or partially.
Any idea where I can get a 8 passenger snow cat? LOL. I look forward to our next plan and the needs/hazards o come.
Sincerely.
Donn Maynard/Chief
LFPD
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 1, 2020 at 3:03 PM

To: "Livermore Fire Dept." <livermorechief@gmail.com>, "Field, Scott" <scott.field@woodplc.com>

Thank you so much for your input, Donn! I appreciate it.

Ha! I will definitely keep my eyes peeled for that and you will be the first to know! Have a great rest of your week. We look forward to "seeing" you at the next meeting.

Kindest regards,
Shayle

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Larimer Connects Program Manager

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Data Collection Sheet Needed

5 messages

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 30, 2020 at 2:33 PM
To: Mark Rode <markrode58@gmail.com>, Doug Race <drace@clvfd.org>, Marian Kelly <mkelly@clvfd.org>
Cc: "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>

Hi Chief Rode, Marian, and Doug,

I am reaching out because we have not yet received a data collection sheet back for Crystal Lakes Fire. Wood is currently in process of writing out the community profiles part of the Hazard Mitigation Plan and these are needed as soon as possible. I have attached the data collection sheet for your reference. I have cc'd Scott and Amy with Wood in case you have any questions.

I know times are crazy right now, let us know how we can support you to get these completed.

I also wanted to follow up to see if anyone from CLVFD was able to watch the videos from the previous meetings to ensure attendance. If you have, please respond to this email with input from those meetings so I can mark your attendance.

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

Larimer County HMP Data Collection Guide - Template (8).docx
118K

Doug Race <cdrscooby@gmail.com> Thu, Jul 30, 2020 at 3:33 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: Mark Rode <markrode58@gmail.com>, Doug Race <drace@clvfd.org>, Marian Kelly <mkelly@clvfd.org>, "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>

Shayle-
I have "attended" the first two HMPC meetings, and am reviewing the HMPC draft document. I have submitted two worksheets that have identified CLVFDs mitigation efforts for the current year. I will review and complete and submit the HMPC data collection worksheets to the best or the department's ability. Bear in mind, as has been mentioned previously, most of the mitigation projects in Crystal Lakes--and there have been several--have been carried out by the Road and Recreation Association, with the support of CLVFD. Crystal Lakes itself is unincorporated and is not a special district. As such, Road and Recreation governs Crystal Lakes and creates and enforces

development policies. CLVFD supports R&R programs whenever possible, but the implementation of the development's policies belongs to R&R.
CLVFD actually serves five areas within its special district boundaries. Crystal Lakes is the largest area served, by far, however, there are four other areas, only two of which have a governing board. While the mitigation projects R&R has carried out have carried the Crystal Lakes label, the projects have provided benefit to the entire mountain community, which includes all five of the areas CLVFD serves.

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 30, 2020 at 3:45 PM
To: Doug Race <cdrscooby@gmail.com>
Cc: Mark Rode <markrode58@gmail.com>, Doug Race <drace@clvfd.org>, Marian Kelly <mkelly@clvfd.org>, "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>

Hi Doug,

Thank you for this input and I completely understand. Since CLVFD is a special district and the "qualifying" entity for FEMA eligible re-imbursement funding, this is why we have CLVFD as a participating jurisdiction and the "lens" through which we approaching mitigation work in Crystal Lakes. R&R not being a special district is not eligible, and that is why it is important for CLVFD to participate as outlined by FEMA.

Thank you for submitting the Mitigation Actions, that is perfect! These worksheets that I have attached were due back in May, before you were made the lead for this project, which is why there may be some confusion there. Not all of the information in the worksheets will be relevant to you, so just fill out what you can. These worksheets will be used to inform the community profile for Crystal Lakes in the plan. As you review the worksheets, please do not hesitate to reach out with any questions, we are here to support you and answer any questions you may have!

Do you have any comments from reviewing the first two meeting videos? If so, please respond with those and I will be able to mark you as having attended the meeting.

I appreciate your patience as we work through this planning process!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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Doug Race <cdrscooby@gmail.com> Thu, Jul 30, 2020 at 3:58 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: Mark Rode <markrode58@gmail.com>, Doug Race <drace@clvfd.org>, Marian Kelly <mkelly@clvfd.org>, "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>

Shayle-
Thanks for the follow up. I must admit, my initial reaction to the first two meetings was: "...and this applies to us how?" (Because of the R&R issues I've mentioned.) However, Cheryl Pogue, the R&R board member who has mentored most the mitigation

projects in CL during the 2016-2020 reporting period, and I are teaming up to provide the most accurate information we can. I realize some of the data will not be HMP-qualifying, but it nonetheless will reflect the mitigation/hazard reduction programs CL has employed during the reporting period--and CLVFD has had a hand in a few of those.....
Stay tuned. Film at eleven...
--dr
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 30, 2020 at 4:01 PM
To: Doug Race <cdrscooby@gmail.com>
Cc: Mark Rode <markrode58@gmail.com>, Doug Race <drace@clvfd.org>, Marian Kelly <mkelly@clvfd.org>, "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>

Ha! Thank you for the comments, Doug. 😊

As we continue on if there is anything we can do to make the process more clear, let us know. In the meantime, we look forward to hearing more about the mitigation actions you are doing in partnership with the R&R.

Kindest regards,
Shayle

LARIMER COUNTY

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Deputy Recovery Manager - Larimer Recovery Collaborative

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Shayle Sabo <sabosn@co.larimer.co.us>

Mitigation Plan Input

2 messages

Milissa Peters <mpeters@timnathgov.com> Thu, May 21, 2020 at 3:14 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: Terry Jones <tjones@timnathgov.com>

Shayle,

I have included our Police Chief, Terry Jones, on this email. We are still trying to determine the best person to take part in the Emergency management process. Infrastructure seems to be a major part of the planning and I'm inquiring about an engineer taking part in the group.

I listened to the planning meeting. I can't remember if we had anything from the 2016 plan but I wanted to say that the Town has finished widening Harmony Road, we have work with Boxelder to mitigate the flood plain, we have and still are working with the railroad to upgrade our crossings and are working on a comp plan update.

The hazards I see for the Town is the Poudre flooding, train derailment and the possibility of a tornado.

Is the next planning meeting next Thursday?

Milissa Peters-Garcia, CMC

Town/Court Clerk

Town of Timnath

4750 Signal Tree Drive

Timnath, CO 80547

970-224-3211 ext. 1202

970-224-3218 fax

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Shayle Sabo <sabosn@co.larimer.co.us> Fri, May 22, 2020 at 8:16 AM
To: Milissa Peters <mpeters@timnathgov.com>
Cc: Terry Jones <tjones@timnathgov.com>

Hi Milissa, and thank you.

I just want to clarify which planning meeting you listened to, did you listen to the kick-off or the most recent planning meeting (the Hazard Identification meeting)? I just want to make sure I mark you off for the right one.

Thank you for doing that and providing input!

Hi Chief Jones, thank you for being willing to take part in the planning process for Timnath. I'll get you added to the distribution list and our partners folder which will have everything you need to participate in the process, including meeting notes, access to the current iteration of the plan, etc. You can access that here: https://drive.google.com/drive/folders/18LIXnuG3ya6zODkJgP3K8smCBpJ9jn_7?usp=sharing

The next planning meeting is scheduled for June 12th, but we have a public workshop coming up on May 28th. If you could help circulate the attached E-flyer, we would be most grateful!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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5.28.2020 CRS Public Meeting E-Flyer.pdf
77K

EPH participation in HMP

2 messages

Gary Hall <GHall@eph.org> Sun, May 24, 2020 at 1:20 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: Gary Hall <GHall@eph.org>

Shayle, I've gone through all of the meeting presentation materials. I'll add a few comments below. Note that I really actually love this stuff. I was appointed our Emergency Prep executive oversight in 4Q 2017, but I'd already been involved for many years, through many crises (the flood, the fiber outage of March 2016, fires, multiple electrical events, various others). I've been to Anniston for some of the CDP programs targeted for healthcare management and first responders. I've taken FEMA 100, 200, 300, 400, 700, 800 online or various places in the state (Steamboat, CO Springs). I really enjoy being part of this process, personally. It was only that, when I had the luxury of having Catherine Cornell for 15 months or so, that I was letting her handle the frontline collaborations. Also, she did an amazing job of helping clean up my Emergency Management Plan (written in 2018), organizing and updating our Emergency Ops plan, and writing our own EPH all-hazards risk analysis. (On the latter, our accreditation firm, DNV, would not tolerate using the 2016 Larimer County one, they demand that we have an EPH one each year, but we of course modeled it from yours. And I think you have a new one coming in 2021.

Anyway, I like this stuff, and we need to be active, so I will commit to being part of the effort, of course. Guy Beesley and some of his EMS team of course have lots of interaction, for obvious reasons, and our E Prep Committee is made up of administration, clinical leaders, support teams and more.

I believe Catherine already provided a preliminary document on the pre-mitigation side, correct? Or am I mistaking that with one of the other efforts? I know she presented to me a document that showed our ICs or other disaster work of the last few years, and other components. Was that a document aimed toward HMP?

April 10, 2020, HMP Meeting #1

What's the High Hazards Potential Dam?

I like the fact that we may be able to copy and paste some aspects of broader (already written) plans.

I like that it's a collaborative efforts that does NOT create new regulations. We are already massively well-regulated by state, CDPHE, CMS, DNV, CAP, and so many more agencies.

I like that there's no punitive effect of failing to meet some of the actions in the plan, that's a good step. This should all be positive.

We have a very fresh EPH Risk Assessment from 4Q 2019, so we're ready on that part.

Involving the public will be one of our bigger hurdles up here, especially with the very high distraction in 2020 of COVID. I'd guess that 30% or 40% of our local businesses will go out of business this year, barring an incredible summer surge, without EP becoming a hot spot. Still, we work closely with the Town of EP and many other agencies, and we would certainly offer public forums or opportunities to engage as required by the process. I see in slide…whatever it is, the "plan for public involvement", the specifics around that, including public participation in planning committee. How many members of the public are suggested in a little town like ours? Would a couple good diverse representatives be enough? Or more? Reading the subsequent slides, yes, that's going to be a challenging piece. We lost our Marketing Director, CNO, Infection Control officer, and E Prep liaison, all in the last month, so managing that piece is going to be very challenging. But….we'll try.

Staff and time will be our greatest hurdle. There are those of us who are already in perpetual 60, 70-hour weeks making ends meet and wearing a dozen hats, and that shows no sign of letting up, ever, especially losing 50% of revenues in March/April. Send good vibes….

Establishing our own HMPC is going to require lots of time, I'm afraid, so I also have trepidation about that piece. But again, I'm committing EPH to be part of this as best we can.

I read and understand the duties (role of the HMP Committee).

Seems like the all-hazards risk assessment helps with the hazard identification piece of this substantially. 😊 So, one good piece in place.

Having the Town of EP already participating is a great help. Who is the contact there? Ah, looks like Eric Rose, Corey Pass, Rick Life. I know them all quite well.

I note the 2016 review in the 4/10 meeting presentation. Since this is a every five-year efforts, is that saying the next would culminate in 2026, after the current one?

I see my current CRS rating is 10. What does that mean? Is that good or bad? What does the $135K mean, and the potential class savings? Not clear in the presentation, or I missed that piece.

CRS Meeting April 10, 2020

Ah, I see there was a meeting directed at the CRS stuff. That adds some understanding, but still not sure what my current rating means, and the $$$ amounts, when we get or don't get that.

May 15, 2020, HMP Meeting #2

Had trouble with the video, but it appears to track to the presentation, so I did get through that OK.

Do you still want me to do that survey (Larimer HMP Post Mtg2 Survey), it was due May 22, so I missed the deadline.

Same with the Public Survey, is that something I'm supposed to try to get out to our stakeholders….?

What is the May 28 public meeting (with virtual options), is that just for Front Range, or anyone in Larimer County?

The hazard definition, prioritization, impact, is of course quite familiar, though some of the hazards are low consideration, of course, in the high mountains. Funny how pandemics and cybersecurity are moving up in the ranks. Not so funny.

Which brings up the point. You don't even mention cybersecurity on here. Parkview got hit in April. Several other hospitals in the last year or two, including Estes. Hmmm. I'd recommend that be added.

So, there you go. I'm caught up in terms of understanding the program, but probably already behind in terms of taking any of the current expected actions. You're welcome to advise next steps, but I will certainly continue to absorb, share as appropriate, and participate actively in the future meetings (or send someone in my place, if we don't lose all of our staff options), and step along properly. Thanks for the help, advice, patience.

Gary M. Hall

Chief Information Officer

Estes Park Health

Phone: 970-577-4443

Cell: 970-744-9052

ESTES PARK HEALTH

From: Gary Hall <GHall@eph.org>
Sent: Sunday, May 24, 2020 10:32 AM
To: Gary Hall <GHall@eph.org>
Subject: FW: [EXT] Contact List - Please Review

Gary

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Tuesday, May 19, 2020 8:16 AM
To: Gary Hall <GHall@eph.org>
Cc: Guy Beesley <GBeesley@eph.org>
Subject: Re: [EXT] Contact List - Please Review

Hi Gary,

I totally understand. I wish we could delay this a bit until things were less crazy for everyone involved. I know you are all running on all cylinders up there. If there is anything I can do to help support you, please let me know. Hang in there, and thank you for everything you do. Know that it is sincerely appreciated.

Kindest regards,

Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Larimer Connects Program Manager

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 3rd Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

On Mon, May 18, 2020 at 6:11 PM Gary Hall <GHall@eph.org> wrote:

> We'll listen to the recordings before next Monday, and respond with commentary as appropriate. Thanks for the heads-up, I assumed (always a bad thing) that it was being covered. Sorry 'bout that, but we will catch, and my plan would be to listen and respond no later than end of this week.
>
> *Gary M. Hall*
>
> Chief Information Officer
>
> Estes Park Health
>
> Phone: 970-577-4443
>
> Cell: 970-744-9052

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, May 18, 2020 4:51 PM
To: Gary Hall <GHall@eph.org>
Subject: Re: [EXT] Contact List - Please Review

Unfortunately I don't think she has been able to attend. I'll double-check, but I don't think she was listed at the kick-off meeting, and she had stepped away from her position before our second planning meeting last Friday.

Shayle Nelson Sabo

Emergency Management Coordinator

Larimer Connects Program Manager

Larimer County Office of Emergency Management

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sabosn@co.larimer.co.us | www.larimer.org/emergency

On Mon, May 18, 2020 at 4:32 PM Gary Hall <GHall@eph.org> wrote:

> Hmmm. Odd. I was under the impression that Catherine attended those. Is that not the case?
>
> *Gary M. Hall*
>
> Chief Information Officer
>
> Estes Park Health
>
> Phone: 970-577-4443
>
> Cell: 970-744-9052
>
> **From:** Shayle Sabo <sabosn@co.larimer.co.us>
> **Sent:** Monday, May 18, 2020 4:10 PM
> **To:** Gary Hall <GHall@eph.org>
> **Subject:** Re: [EXT] Contact List - Please Review

Thank you, Gary. I have made that change.

I do also want to let you know that we were looking through our rosters to see who has been participating in the Hazard Mitigation Plan planning meetings thus far. We noticed that we have not yet had representation from Estes Park Health.

I want to stress how critical it is that EPH participates in the planning meetings, as your participation ensures your eligibility for mitigation funding as recognized by FEMA. Unfortunately if you do not attend the future planning meetings, we will not be able to consider you as having participated in this plan. Please let us know if there are any discrepancies.

However, we have recorded the previous two meetings. We think that if you watch these meetings and provide input via email that we can count you as having participated. The meetings can be found here: https://drive.google.com/drive/u/0/folders/16VDFHB44wdqAkxnLurNPPotzHF8OwNGK

I know times are tough right now, and please let us know if there is anything we can do to help support your participation.

Kindest regards,
Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Larimer Connects Program Manager

LARIMER COUNTY

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sabosn@co.larimer.co.us | www.larimer.org/emergency

On Mon, May 18, 2020 at 11:27 AM Gary Hall <GHall@eph.org> wrote:

> You'll need to remove Catherine Cornell, who has stepped away from her role as our emergency prep liaison. I do not yet have a replacement for her. In the meantime, having Guy Beesley and me (Gary Hall) on there should suffice, unless Guy wants to add another EMS person.
>
> Gary Hall
>
> CIO / Estes Park Health

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, May 18, 2020 10:43:41 AM
Subject: [EXT] Contact List - Please Review

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi everyone,

I hope you all had a good weekend!

Now that we've had a couple planning meetings, I wanted to reach out to you all and ask if you would please review the current contact list. I've noticed some folks that were new on the call this last Friday that I didn't originally have on my list, so just want to make sure that I have correct email addresses and whatnot. Please review and make sure everything is current.

Please also review meeting participation. I am doing my best to make sure that everyone is tracked from the virtual meetings, but it can be tricky (or glitchy as technology can be at times) and just want to make sure that everyone is properly accounted for. If you notice any discrepancies, please let me know.

Here is the link to the contact list: https://docs.google.com/spreadsheets/d/148N8ZgWutir2g9IHvtnaLGKTm2zMy4b9nlLjSYnrZWQ/edit?usp=sharing

Kindest regards,

Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Larimer Connects Program Manager

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sabosn@co.larimer.co.us | www.larimer.org/emergency

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 1, 2020 at 2:19 PM
To: Gary Hall <GHall@eph.org>, "Field, Scott" <scott.field@woodplc.com>

Hi Gary,

Firstly, I apologize that it's taken me a bit to get back to you. Now that I'm shifting into more of a recovery role vs response, I'm getting backed up in my email inbox a bit again.

Thank you so much for a comprehensive comment! This is excellent and I will mark you as having attended both of the initial meetings. I really appreciate the cybersecurity comment. Scott, is this added under civil disturbance/terrorism, or do you recommend making this it's own profile?

As far as the questions you had, please see my responses below, any questions I can't answer I will defer to Scott:

I see in slide…whatever it is, the “plan for public involvement”, the specifics around that, including public participation in planning committee. How many members of the public are suggested in a little town like ours? Would a couple good diverse representatives be enough? Or more? Reading the subsequent slides, yes, that’s going to be a challenging piece. We lost our Marketing Director, CNO, Infection Control officer, and E Prep liaison, all in the last month, so managing that piece is going to be very challenging. But….we’ll try.
I will defer to Scott for this question as he may have better suggestions on how to approach this than I might.

Since this is a every five-year efforts, is that saying the next would culminate in 2026, after the current one?
Yes, that is correct!

I see my current CRS rating is 10. What does that mean? Is that good or bad? What does the $135K mean, and the potential class savings? Not clear in the presentation, or I missed that piece
This is not necessarily a "good" or "bad" rating. CRS stands for Community Rating System, it comes out of the National Flood Insurance Program and is a FEMA-run initiative. Essentially what this is, is that any community that participates in flood mitigation for their community gets a score based on the activities the community completes in the program. To get a high rating requires a lot of resources and capacity, so to get really high is not necessarily feasible for many communities. However, the higher your score, the more the members of your community save in flood insurance premiums. That is the savings piece. For example, Fort Collins is a Level 2, which is really high, only a few communities in the nation have that rating, and so on average, they save each member of their community a little over $40k per year on flood insurance premiums. You can find more info on CRS here: https://www.fema.gov/media-library-data/1535126505943-439b296e7778b037d05f698f65c7891b/2018NFIP_CRS_Brochure_June_2018_508OK.pdf

Let me know if all that rambling made sense, Scott may be able to clarify anything further :)

Same with the Public Survey, is that something I’m supposed to try to get out to our stakeholders….?
If you can help distribute the public survey to your stakeholders, members of the community, on your social media platforms, etc that would be helpful! We are just trying to get as much input from the public as possible on how our local folks perceive risk and hazards in Larimer County.

What is the May 28 public meeting (with virtual options), is that just for Front Range, or anyone in Larimer County?
Sorry to be late in answering this question. As part of the HMP update process, we are required to do at least 2 public meetings to get input and feedback from the community on our planning process. This is open to anyone who wants to attend really. We will have another public meeting this late summer, early fall-ish when we have the final draft of the plan for folks to provide input on as well.

I think I caught all your questions, let me know if there were any I missed! Thank you again, it means a lot and I'm glad to hear you enjoy this stuff. I know you have a lot on your plate (understatement I know) as is, so it makes me feel a little better about adding something else!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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Time Tracking for HMP

2 messages

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 30, 2020 at 12:58 PM
To: Lori Hodges <hodgeslr@co.larimer.co.us>

Lori,

Here is what I have for you for your time dedicated to the HMP project up to June 30, 2020. I based your numbers for things like vendor proposal review and grant application development off of my numbers, let me know if you want these adjusted in any way. Also I have you just at the standard rate of 28.02, but let me know if you want this changed also.

		Grant app development	10	**$28.02**	$280.20
		Planning Mtg 2	2	**$28.02**	$56.04
		Review of Proposals & Vendor Decision	10	**$28.02**	$280.20
Lori	Hodges	RFR meeting with State on process submittal	2	**$28.02**	$56.04

I'm hoping to get what I have turned over to the State by tomorrow so that that can get processing before I leave. Let me know if you have questions.

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

Lori Hodges <hodgeslr@co.larimer.co.us> Sat, Aug 1, 2020 at 3:43 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Sorry I was late getting this information to you. I sent the details in an earlier email.

Lori H.
[Quoted text hidden]
--

Lori Hodges, CEM, PMP
Director

Office of Emergency Management
200 W. Oak St., Ste. 200
W: 970-498-7147 | C: 303-656-3214
hodgeslr@co.larimer.co.us
www.larimer.org/emergency

Shayle Sabo <sabosn@co.larimer.co.us>

Hazard Mitigation Plan

4 messages

Mark Turner <Mturner@tvems.com> Tue, May 19, 2020 at 2:57 PM
To: "sabosn@co.larimer.co.us" <sabosn@co.larimer.co.us>
Cc: Randy Lesher <rlesher@tvems.com>

Shayle,

Chief Lesher has asked that I take on the Hazard Mitigation Plan project moving forward. I will take a look in the Google drive and review the meeting materials and recordings. Could you please send me an invite for future meetings? I will get them on my calendar.

Thanks,

Mark

Mark Turner

Battalion Chief

General Operations

Thompson Valley EMS

4480 Clydesdale Parkway

Loveland, CO 80538

(970) 663-6025

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Thompson Valley EMS | 4480 Clydesdale Pkwy | Loveland, CO 80538 | USA www.tvems.com

---

Shayle Sabo <sabosn@co.larimer.co.us> Tue, May 19, 2020 at 3:12 PM
To: Mark Turner <Mturner@tvems.com>
Cc: Randy Lesher <rlesher@tvems.com>

Sounds great, thank you Mark!

Here are the links to the previously recorded meetings to make it easy. If you just review these and send commentary via email, that will hopefully work as documentation of your participation.
Kick-Off Meeting: https://drive.google.com/drive/u/0/folders/1bztOd18LStN0QNO-NqGdSAe3iRTp4b2t
Planning Meeting #2 Risk & Goals: https://drive.google.com/drive/u/0/folders/1yEBgCPmM1XI8A8HShO6fNvi6sd5t6pwa

I'll also add you to the distribution lists moving forward. Thank you so much!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
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Larimer Connects Program Manager

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Jun 3, 2020 at 3:31 PM
To: Mark Turner <Mturner@tvems.com>

Hi Mark,

I just wanted to follow up to see if you were able to watch the webinars I provided. If so, please respond with written input/commentary for both meetings and I can mark you off as having attended and participated.

Stay well!

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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Mark Turner <Mturner@tvems.com> Tue, Jun 9, 2020 at 2:52 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

I have watched the 3.5 hours of meetings and have no questions.

Mark

Mark Turner

Battalion Chief

General Operations

Thompson Valley EMS

4480 Clydesdale Parkway

Loveland, CO 80538

(970) 663-6025

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URGENT - Hazard Mitigation Plan Participation

Mike Blackwill <mblackwill@wsfr.us> Tue, May 26, 2020 at 3:12 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: "Field, Scott" <scott.field@woodplc.com>

Shayle,

I have reviewed the information you provided. Also you will find attached the completed worksheets. I am still compiling more information regarding our performance with past goals and plan for the next period. Let me know if you need anything else from me.

Michael E. Blackwill

Operations Chief

Windsor Severance Fire Rescue

100 7th Street

Windsor, CO 80550

Main 970-686-2626 x309

Cell 970-397-4254

www.wsfr.us

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, May 18, 2020 4:00 PM
To: Mike Blackwill <mblackwill@wsfr.us>
Cc: Field, Scott <scott.field@woodplc.com>
Subject: URGENT - Hazard Mitigation Plan Participation

Hi Mike,

[Quoted text hidden]

DCG Windsor Severance Fire.docx
168K

Shayle Sabo <sabosn@co.larimer.co.us>

Info needed for HMP

11 messages

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jun 12, 2020 at 10:39 AM
To: Adam Olinger <aolinger@berthoud.org>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Adam,

I hope all is well. From my records, it looks like we have still not yet received data collection information for the Town of Berthoud. Can you please utilize the attached sheet and get this information back to us prior to the next meeting. Most particularly, we will need information on the status of projects outlined from the previous iteration of the Hazard Mitigation Plan, which can be found here - Berthoud's actions are outlined beginning on page 292: https://www.larimer.org/sites/default/files/larimer-hmp.pdf

Please do not hesitate to reach out to myself or Scott (cc'd) with any questions.

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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Larimer County HMP Data Collection Guide - Template (5).docx
118K

Adam Olinger <aolinger@berthoud.org> Fri, Jun 12, 2020 at 11:33 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Shayle,

I have a couple of questions regarding the worksheets you sent my way. If you or Scott could give me a call sometime today, I can get started on filling these out.

Thanks,

Adam Olinger

Planner I

Town of Berthoud

807 Mountain Avenue

Berthoud CO, 80513

Office: 970-344-5808 // aolinger@berthoud.org

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Jun 12, 2020 at 12:13 PM
To: "Field, Scott" <scott.field@woodplc.com>

Just letting you know I touched base with Adam :) We're all good to go!

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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Adam Olinger <aolinger@berthoud.org> Fri, Jun 12, 2020 at 3:20 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

While filling out my worksheets, I was able to locate the NOAA Storm Events database I used when I used to write Hazard Mitigation Plans myself back in Missouri. I'm not sure if you are familiar with it or not, but it might be a more efficient resource than searching through news stories when locating historic hazard events. https://www.ncdc.noaa.gov/stormevents/

While looking at this, I learned that there have been no storm events in Berthoud in the past four years that have resulted in personal injury, death, property, or crop damage. Because of that, I'm not sure if I should even put down any "significant" hazard events for worksheet two. Let me know your thoughts.

Thanks,

Adam Olinger

Planner I

Town of Berthoud

807 Mountain Avenue

Berthoud CO, 80513

Office: 970-344-5808 // aolinger@berthoud.org

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Friday, June 12, 2020 10:39 AM
To: Adam Olinger <aolinger@berthoud.org>
Cc: Field, Scott <scott.field@woodplc.com>
Subject: Info needed for HMP

Hi Adam,

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jun 16, 2020 at 3:42 PM
To: Adam Olinger <aolinger@berthoud.org>

Adam,

Thank you for passing along this resource! I am definitely going to use it in the future!

Did you come across any other hazard events other than storm? If not, I think you're okay to say that you do not feel that Berthoud has had any significant events since 2016.

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

Larimer County Office of Emergency Management
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Adam Olinger <aolinger@berthoud.org> Tue, Jun 16, 2020 at 4:08 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

There were plenty of winter weather/winter storm events, a couple of wind events, and two hail events that were more severe elsewhere than in Berthoud itself. Because none of these caused any damage or injured anybody, I don't feel like there were any *significant* storm events in the past four years in Berthoud, but I'm open to your thoughts as well.

Thanks!

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Mon, Jun 22, 2020 at 1:38 PM
To: Adam Olinger <aolinger@berthoud.org>

Hi Adam,

I think that's fine, as long as you didn't also feel the same about other hazard events (i.e. fire, human-caused, etc). Our consultants at Wood are also looking into data for this to cross-compare, so we can see what they come up with at the next meeting. Thank you for working on this!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Larimer Connects Program Manager

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sabosn@co.larimer.co.us | www.larimer.org/emergency

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Adam Olinger <aolinger@berthoud.org> Thu, Jul 9, 2020 at 10:52 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

Attached are my completed HMP worksheets and the cost tracking for my time until now. I've been very busy so I haven't had a chance to watch the first two meetings yet, but correct me if I'm wrong, jurisdictions only need to attend three of the five meetings in order to participate, correct? If I plan on attending the remaining ones from here on out, do I need to go back and watch the first two meetings?

[Quoted text hidden]

2 attachments

HMP Worksheets.docx
124K

Berthoud HMP Cost Tracking.xlsx
17K

Shayle Sabo <sabosn@co.larimer.co.us> Thu, Jul 9, 2020 at 1:24 PM
To: Adam Olinger <aolinger@berthoud.org>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Adam,

Thank you very much for passing these along. I really appreciate it.

In regards to meeting attendance, we may be able to get away with that, but it is unknown for sure. Additionally, we may not have 5 meetings, but only 4. For that reason I encourage you to try to review the first two meetings if you can. I understand you are busy and that COVID-19 has made things difficult for everyone, so please let us know how best we can support you.

Kindest regards,
Shayle

LARIMER COUNTY

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

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LARIMER RECOVERY COLLABORATIVE

[Quoted text hidden]

Adam Olinger <aolinger@berthoud.org> Tue, Jul 14, 2020 at 9:05 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>
Cc: "Field, Scott" <scott.field@woodplc.com>

Hi Shayle,

In preparation for the meeting in a couple of hours, I was able to watch the video for Meeting #2. I agreed with the

consensus of attendees that all of the hazards listed should be included if at all possible, as it does not hurt to have them on there in case a disaster does strike. I've logged my meeting hours on my tracker spreadsheet; do you need me to send you this updated one, or wait until you collect them before Meeting #4?

[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Tue, Jul 14, 2020 at 11:37 AM
To: Adam Olinger <aolinger@berthoud.org>
Cc: "Field, Scott" <scott.field@woodplc.com>

Thank you, Adam. I don't think you need to update your tracker, as I think this email will suffice. I appreciate you taking the time to review the meeting!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
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2 attachments

Annex T Town of Wellington.docx
3836K

Annex T Town of Wellington.pdf
13478K

Bob Gowing <gowingbj@wellingtoncolorado.gov> Fri, Dec 11, 2020 at 3:19 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Hi Shayle,

The time spent by Wellington staff on the project is as follows:

8 hours - Bob Gowing

Yes, that would go along way towards explaining our tardiness on some elements of this work. I do plan to work on those edits this weekend, and will follow-up with Wood since I'm not completely sure what you are looking for there.

Thanks,

Bob Gowing, P.E.

Director of Public Works

Town of Wellington, Colorado

[Quoted text hidden]

Bob Gowing <gowingbj@wellingtoncolorado.gov> Fri, Dec 11, 2020 at 3:23 PM
To: "Field, Scott" <scott.field@woodplc.com>, "Carr, Amy" <amy.carr@woodplc.com>
Cc: Shayle Sabo <sabosn@co.larimer.co.us>

Scott,

Yes please, do explain what else is needed. Let me know if we should do that by phone, zoom, etc.

Thanks,

Bob Gowing, P.E.

Director of Public Works

Town of Wellington, Colorado

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, December 7, 2020 4:18 PM
To: Bob Gowing <gowingbj@wellingtoncolorado.gov>; Field, Scott <scott.field@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>
Subject: Re: Follow up to HMP Full Draft Review for Town of Wellington

Hi Bob,

[Quoted text hidden]
[Quoted text hidden]

Shayle Sabo <sabosn@co.larimer.co.us> Wed, Dec 23, 2020 at 4:49 PM
To: Bob Gowing <gowingbj@wellingtoncolorado.gov>

Hi Bob,

I apologize for my belated response on this - Can you give me a breakdown of the activities you have completed for those 8 hours?

Have a happy holiday!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

[Quoted text hidden]

Bob Gowing <gowingbj@wellingtoncolorado.gov> Mon, Dec 28, 2020 at 8:19 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle, not sure how much detail you need … but here's a start:

3.5 hrs. – attended HMP coordination meetings

4.5 hrs. – reviewed draft HMP and provided comments/feedback

Bob Gowing, P.E.

Director of Public Works

Wellington, Colorado

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Wednesday, December 23, 2020 4:50 PM
To: Bob Gowing <gowingbj@wellingtoncolorado.gov>
Subject: Re: Follow up to HMP Full Draft Review for Town of Wellington

Hi Bob,

I apologize for my belated response on this - Can you give me a breakdown of the activities you have completed for those 8 hours?

Have a happy holiday!

Kindest regards,
Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

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W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

On Fri, Dec 11, 2020 at 3:19 PM Bob Gowing <gowingbj@wellingtoncolorado.gov> wrote:

> Hi Shayle,
>
> The time spent by Wellington staff on the project is as follows:
>
> 8 hours - Bob Gowing
>
> Yes, that would go along way towards explaining our tardiness on some elements of this work. I do plan to work on those edits this weekend, and will follow-up with Wood since I'm not completely sure what you are looking for there.

Thanks,

Bob Gowing, P.E.

Director of Public Works

Town of Wellington, Colorado

From: Shayle Sabo <sabosn@co.larimer.co.us>
Sent: Monday, December 7, 2020 4:18 PM
To: Bob Gowing <gowingbj@wellingtoncolorado.gov>; Field, Scott <scott.field@woodplc.com>; Carr, Amy <amy.carr@woodplc.com>
Subject: Re: Follow up to HMP Full Draft Review for Town of Wellington

Hi Bob,

I wanted to follow up on this email as we still need comments back from you for Wellington on your respective annex. Additionally I have cc'd the folks at Wood as it looks like we still need a high hazard action from you to be considered FEMA eligible - they can explain further what is needed for you.

I have attached your annex in both word and pdf format, whichever works best for you. Anywhere we need particular attention is highlighted in yellow. We will give you until December 18th to get these comments back to ensure Wellington can be included in the plan.

Please let us know if you have any questions or need any support in completing this! Thank you for your patience as well. If this was sent previously and I missed it due to the chaos that was caused in my inbox as a result of the Cameron Peak Fire, I apologize!

Kindest regards,
Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

On Fri, Oct 2, 2020 at 4:18 PM Shayle Sabo <sabosn@co.larimer.co.us> wrote:

> Hi Bob,
>
> I wanted to send out a follow up heads up in regards to the full draft I sent out today for the Hazard Mitigation Plan. Please make sure that you review the highlighted parts in your jurisdiction section. Additionally, for Town of Wellington specifically, we are still missing status updates on the actions identified in the 2016 plan. We are required by FEMA to know what the statuses are (i.e. in-progress, completed, not completed, etc). Note that you don't get "points taken" or bad markings or anything if you have not completed projects identified in the last iteration of the plan, but we have to have these for the new one or Town of Wellington will not be considered an eligible participant and have their section FEMA approved.
>
> I have cc'd Scott Field with Wood for any follow up questions you may have related to this.
>
> Kindest regards,
> Shayle

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

Shayle Sabo <sabosn@co.larimer.co.us> Wed, Dec 30, 2020 at 5:25 PM
To: Bob Gowing <gowingbj@wellingtoncolorado.gov>

Thank you, Bob! Have a Happy New Year!

Kindest regards,
Shayle

Shayle Nelson Sabo
Emergency Management Coordinator
COVID-19 Pandemic Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency
LARIMER RECOVERY COLLABORATIVE
www.larimerrecovers.org

hours

6 messages

Rick Klimek <rklimek@windsorgov.com> Fri, Dec 11, 2020 at 1:29 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle I have put in 14 hours on this project.

Thanks,

Rick

Rick Klimek

Chief of Police

Town of Windsor | Police

200 N. 11th Street | Windsor, CO 80550

Office: 970-674-6400 | Fax: 970-686-7478

rklimek@windsorgov.com

www.windsorgov.com

Follow Us www.windsorgov.com/socialmedia

Shayle Sabo <sabosn@co.larimer.co.us> Fri, Dec 11, 2020 at 1:45 PM
To: Rick Klimek <rklimek@windsorgov.com>

Hi Chief Klimek,

Thank you. Just to confirm that is between 6/30 and 9/30 correct? Also can you please provide a breakdown of what activities you did and for how long (i.e. x many hours spent on HIRA review)

Thank you!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

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Rick Klimek <rklimek@windsorgov.com> Fri, Dec 11, 2020 at 1:57 PM
To: Shayle Sabo <sabosn@co.larimer.co.us>

No sorry June to September would be 7 hours. Sorry

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[Quoted text hidden]

Shayle Nelson Sabo

Emergency Management Coordinator

Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management

200 W Oak St, Fort Collins, CO 80522 | 5th Floor

W: (970) 498-7148 | M: (208) 940-2387

sabosn@co.larimer.co.us | www.larimer.org/emergency

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Shayle Sabo <sabosn@co.larimer.co.us> Wed, Dec 23, 2020 at 4:48 PM
To: Rick Klimek <rklimek@windsorgov.com>

Thank you Chief Klimek!

Can you give me a break down of the activities you did for those 7 hours? Thank you and happy holidays!

Shayle Nelson Sabo
Emergency Management Coordinator
Deputy Recovery Manager - Larimer Recovery Collaborative

Larimer County Office of Emergency Management
200 W Oak St, Fort Collins, CO 80522 | 5th Floor
W: (970) 498-7148 | M: (208) 940-2387
sabosn@co.larimer.co.us | www.larimer.org/emergency

[Quoted text hidden]

Rick Klimek <rklimek@windsorgov.com> Thu, Dec 24, 2020 at 8:45 AM
To: Shayle Sabo <sabosn@co.larimer.co.us>

Shayle I went back and pulled up the time spent on the HMP. By bad it is only 3 hours (I included the time I spent on the Weld County Plan also).

I spent 1 hour reviewing the old Larimer County plan and comparing it to the old Weld County Plan.

I also spent 1 hour contacting other departments regarding the old objectives and what potential changes would be reasonable to be added to the new plan.

The last 1 hour was spent on gathering data.

Sorry for rushing to through your request. I have had to put in more time on the Weld County Plan.

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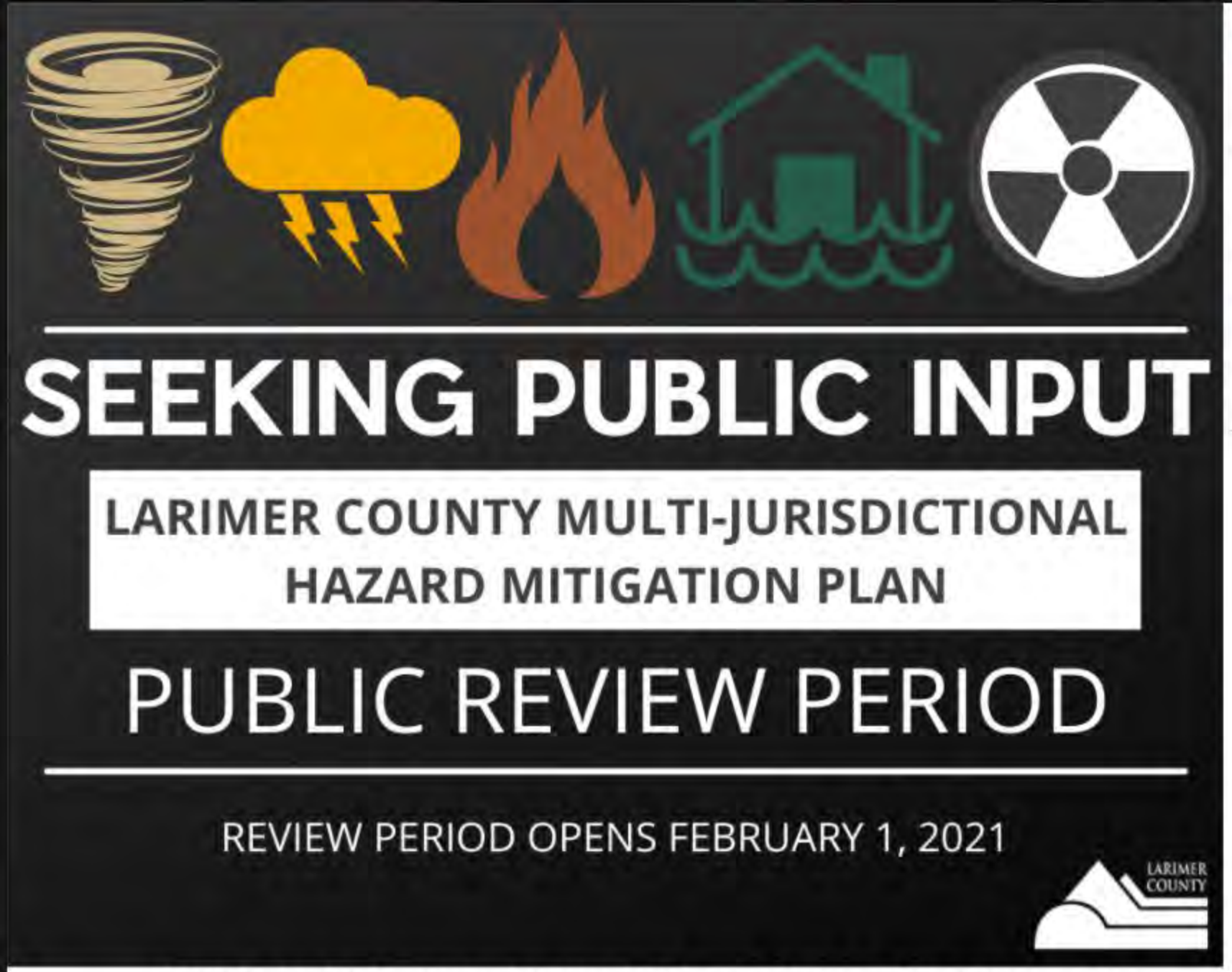
Shayle Sabo <sabosn@co.larimer.co.us> Thu, Dec 24, 2020 at 8:46 AM
To: Rick Klimek <rklimek@windsorgov.com>

No worries at all Chief Klimek! I know we are all pulled in a thousand different directions right now. Thank you so much for your time and help and you have a Merry Christmas!!

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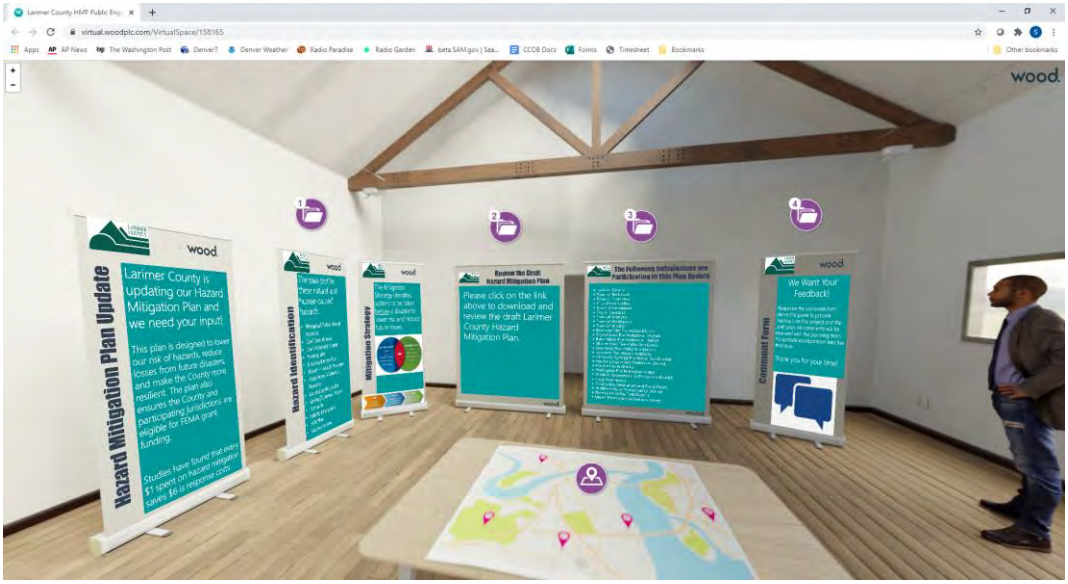


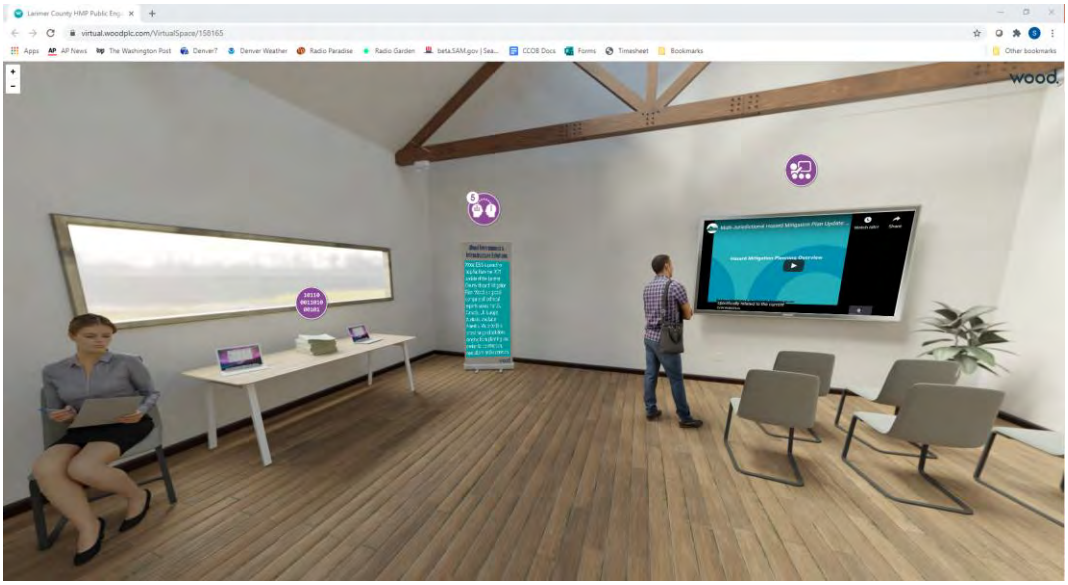
Larimer County Office of Emergency Management

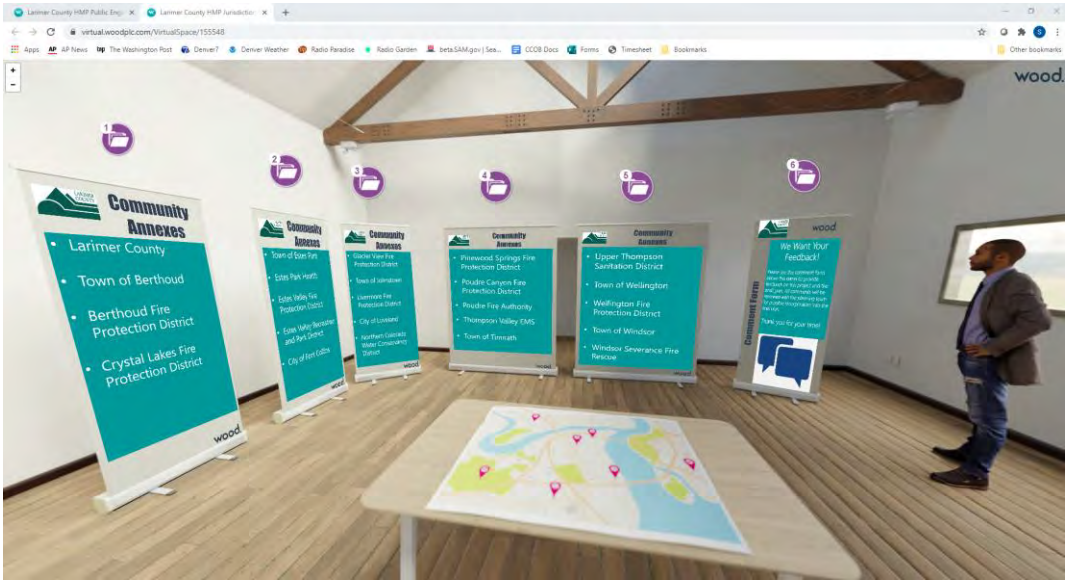
Like This Page · February 1

We need your feedback!
Please provide comments to our final draft of the 2021 Multi-Jurisdictional Hazard Mitigation Plan. This plan addresses hazards and their associated risks in Larimer County. For more information and to participate (See tab that reads "Review Drafts"): https://www.larimer.org/emergency/hazard-mitigation-plan

Open 2.1.2021 - 2.28.2021


Hazard Mitigation Plan Update
Larimer County is updating our Hazard Mitigation Plan and we need your input!
This plan is designed to lower our risk of hazards, reduce losses from future disasters, and make the County more resilient. The plan also ensures the County and participating jurisdictions are eligible for FEMA grant funding.
Studies have found that every $1 spent on hazard mitigation saves $6 in response costs.
Hazard Identification
Mitigation Strategy
Review the Draft Hazard Mitigation Plan
Please click on the link above to download and review the draft Larimer County Hazard Mitigation Plan.
The following Jurisdictions are Participating in this Plan Update:
We Want Your Feedback!
Comment Form
Thank you for your time!
wood.

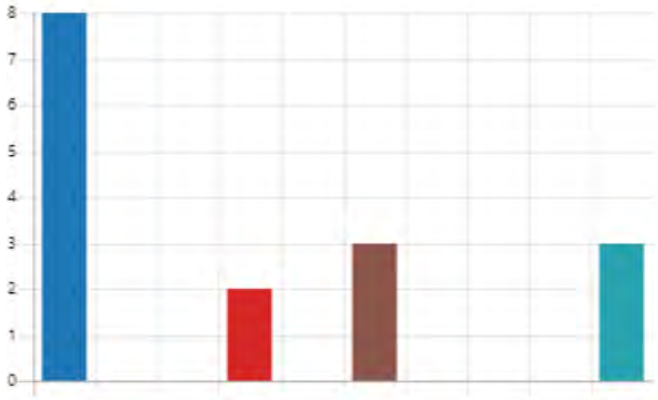

wood.


Community Annexes
Larimer County
Town of Berthoud
Berthoud Fire Protection District
Crystal Lakes Fire Protection District
Estes Park Health
Estes Valley Recreation and Park District
City of Fort Collins
Glacier View Fire Protection District
Town of Johnstown
Loveland Fire Rescue Authority
City of Loveland
Northern Colorado Water Conservancy District
Pinewood Springs Fire Protection District
Poudre Canyon Fire Protection District
Poudre Fire Authority
Thompson Valley EMS
Town of Timnath
Upper Thompson Sanitation District
Town of Wellington
Wellington Fire Protection District
Town of Windsor
Windsor Severance Fire Rescue
We Want Your Feedback!
Comment Form
Thank you for your time!
wood.

1. What part of Larimer County do you reside in?

More Details

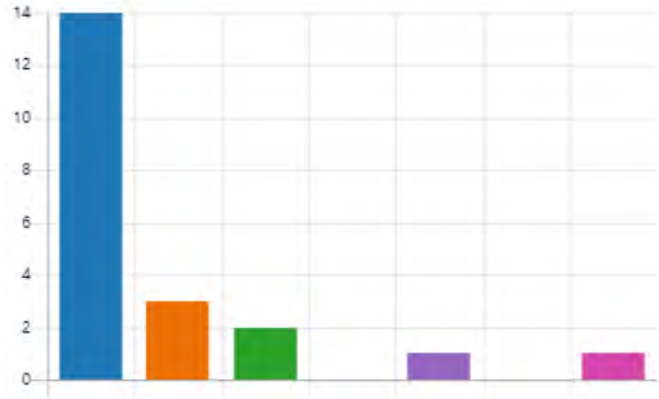
Unincorporated Larimer County	8
Town of Berthoud	0
Town of Estes Park	0
City of Fort Collins	2
Town of Johnstown	0
City of Loveland	3
Town of Timnath	0
Town of Wellington	0
Town of Windsor	0
Other	3



2. Select affiliation (select all that apply):

More Details

Member of the Public	14
Private industry	3
Nonprofit	2
Government-Local	0
Government-State	1
Government-Federal	0
Other	1



3. Please provide comments regarding the Draft Update of the Larimer County Hazard Mitigation Plan here:

Overall, this Draft Update looks like a solid plan.
However, the Draft is clearly missing one key hazard: cyber threats targeting our critical infrastructure. Why should cyber threats be singled out? -- The methods and expertise required to mitigate cyber hazards differ greatly from the typical strategies listed in the Draft.
Looking at the Department of Homeland Security's annual Homeland Threat Assessment (Oct 2020), it lists cyber-based disruption of critical infrastructure as a top concern. Potential targets could include electric/water/gas utilities, dam infrastructure, hazardous materials, induced wildfires, etc. These threats can originate from Nation States or non-State actors, and often it can be extremely difficult to find the culprit. Going forward, we should probably expect future attacks to trend towards being increasingly widespread (regionally and/or functionally) rather than pinpoint localized.

These infrastructure-targeting cyber attacks are currently happening, and it is clear that more are being planned. Just look at what happened to Ukraine's power grid during the winter of 2015... And the 2020 catastrophic Solarwinds hack of U.S. government sites likely opened the door for countless new infrastructure targets here on our soil. I sincerely hope that Larimer County has a task force devoted to critical infrastructure protection from cyber threats. If not, please contact a reputable org, and then build a plan. (as an example, the Idaho National Lab's critical infrastructure group is world-renowned for working with infrastructure stakeholders on this topic) References of interest: - 2020 DHS Threat Assessment: https://www.dhs.gov/sites/default/files/publications/2020_10_06_homeland-threat-assessment.pdf - 2015 Ukraine power grid hack: https://www.wired.com/2016/03/inside-cunning-unprecedented-hack-ukraines-power-grid/ - 2020 U.S. government/industry hack: https://www.nytimes.com/2021/01/02/us/politics/russian-hacking-government.html - Idaho National Lab cyber training: https://inl.gov/critical-infrastructure-protection-training/
1) Why is Lyons Fire District not part of the ""Participating Jurisdictions"" under Fire Authorities? We own property in Larimer Co but are part of LFPD. I understand there is a new Chief process, please include us, we are often forgotten and are in a high fire risk area next to Roosevelt Nat Forest in Spring Gulch. 2) What funding will be provided to incentivize wildfire mitigation and improvements of defensible space for fire? In my opinion (even having lived through the 2013 flood near Lyons) wildfire is our single highest risk threat as evidenced by 2020. Thanks!
It seems to me that since a large portion of Larimer county includes USFS land and much of this land has been greatly impacted by beetles and therefore has excessive fuels that more cleanup in the forest would be beneficial to reduce fuels.
Would like to review and perhaps comment but I can't find a link to the ""Draft Update"" document. Can you help?
I was fortunate to be part of the HMP update process and made contributions for the dam hazards sections. I know this is late in the process, but I would like to suggest adding a section on life safety hazards created Low Head Dams. A small ad hoc group has created a DNR-hosted website on the dangers of low head dams. The site was launched in October, 2020 and also houses an inventory of Low Head dams. Many such dams have been identified in Larimer County, including at least one has had a known fatality. By including this community hazard in the plan, BRIC, HMA and other sources of hazard mitigation funding could be provided to mitigate or eliminate selected high risk LHD's. Without a hazard designation, funding is less likely and more fatalities are also likely given increases in recreation on our rivers.
Hard to mitigate mother nature. I feel the plan is comprehensive and thorough. I am concerned about the amount of silt entering the Big T from Boedecker Reservoir (Mariano Exchange) up stream from Wilson Ave. Bridge. Although this is an annual 3 month occurrence, I'm concerned that the river is rapidly silting in behind the diversion dam (Chubbuck Ditch) which might aggravate any flooding events.
Very informative report with excellent documentation and analysis. Considering this is updated every five years, I expected a more robust mitigation plan section - more than a summary spreadsheet. The mitigation portion of this plan seems thin. I support the proposed Ingress & Egress Mapping and

Solution Implementation, glad to see this finally addressed. Would love to see more 'meat on the bone' about helping private landowners mitigate risk, especially for wildfire and flooding. Thank you for your extensive work on this project!
Overall, it's a very comprehensive plan. I was really happy to see climate change was included for the first time, however I felt like "social equity" was a really light touch and not integrated. So much of the disparities are woven into our existing policies, plans and projects, I would've liked to see this called out and addressed in a better and more comprehensive way. Hopefully this can be improved on in the next process, particularly for the engagement and input from those most negatively impacted during extreme events.
I live in the Blue Mountain area of Larimer county, NW of the town of Lyons. It does not appear that this area is included in the analysis by name. And you also did not include the Lyons Fire Protection District, as a stakeholder. The LFPD covers both properties in Boulder and Larimer counties.
Not sure if this is a item you would consider but offering the thought of a door hanger to be sent out with either electric bills or through a mass mailing for people once a year that has a notice that says "Have Evacuated" and a space to write a note if people have left animals in house and people could have them. Saving Fire, Emergencies Workers time looking for people. Lake Havasu does this every spring.
I would suggest you underground all the power lines is case of strong winds or a large fire a downed power line could add to that danger
we need to increase flood plain areas because of all the construction that has taken place over the last decade. this new construction will increase flooding in areas that were not effected previously. continue to select cut forests and protect our watersheds.
I don't see the Lyons Fire Protection District (LFPD) and our neighborhood areas of Blue Mountain/X-bar etc. represented in this list, although we live in Larimer county. Please address this gap. Thank you!
Will this cost anyone who lives in the county a fee, even though they might NEVER see any benefits, i.e. Boxelder Stormwater Authority?
Please consider this information regarding the public safety hazard of low-head dams: Low head dams are engineered structures built into and across stream and river channels for a variety of purposes. Water flows over low head dams continuously, as they span from one riverbank to the other. Low head dams generally range in height from 1-15 feet. Historically, low head dams were built to divert water from streams to support industrial, municipal, and agricultural water usage. Low head dams are also engineered to prevent erosion and degradation of stream channels. More recently, low head dams have been engineered to provide recreational amenities for boating, rafting and tubing and also to improve aquatic habitat. Low-head dams are a hazard because water flowing over low head dams produces dangerous recirculating currents that can trap recreators. Rafters, kayakers, and those floating our rivers for recreation are often unaware of these structures and the dangers resulting from them. Low head dams can be difficult to detect by uneducated river users approaching from upstream due to their height, and the fact that the relatively tranquil pool they create provides no indication of the dangers just beyond the visual horizon created by the dam and ponded water. This can limit reaction time and boaters' ability to exit the river upstream of the dam. Public safety at low head dams is becoming an increasingly important issue as the population of Colorado increases and citizens recreate more and more on waterways within the state. Safety measures can include anything from upstream signage recommending portage, modifications to the existing structure to eliminate the recirculating current, or removal if the structure is no longer serving its original purpose.

APPENDIX C: APPROVAL AND ADOPTIONS

1. FEMA Plan Review Tool
2. CRS Review
3. FEMA Approval Packet [pending]
4. Adoption Certificates [pending]

APPENDIX C: APPROVAL AND ADOPTIONS

Hazard Mitigation Plan Adoption Sample Resolution

Resolution # _____

Adopting the Larimer County
Hazard Mitigation Plan 2020

Whereas, *(name of county or community) recognizes the threat that natural hazards pose to people and property within our community; and*

Whereas, *undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and*

Whereas, *an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and*

Whereas, *(name of county or community) resides within the Planning Area, and fully participated in the mitigation planning process to prepare this Hazard Mitigation Plan; and*

Whereas, *the Colorado Department of Homeland Security and Emergency Management and Federal Emergency Management Agency, Region VIII officials have reviewed the Larimer County Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body; and*

Now, therefore, be it resolved, *that the (name of board or council), hereby adopts the Larimer County Hazard Mitigation Plan, as an official plan; and*

Be it further resolved, *Larimer County Emergency Management will submit this Adoption Resolution to the Colorado Department of Homeland Security and Emergency Management and Federal Emergency Management Agency, Region VIII officials to enable the Plan's final approval.*

Passed: ___(date)___

_____

Certifying Official

Manual Version: **2017**

Community: Larimer County, CO

Hazard Mitigation Plan

510 FLOODPLAIN MANAGEMENT PLANNING

512.a Floodplain Management Planning (FMP)

Credit Points: *Enter the section or page number in the plan where each credited item can be found. Add notes on AW-510-4.*

CRS Step	Section/Page	Item Score	Step Total
1. Organize to prepare the plan. (15 Max)			
a. Involvment of Office Responsible for Community Planning (4)	Appendix A, Page 1	4	
b. Planning committee of department staff (9)	Appendix A, Page 3	9	
c. Process formally created by the community's governing board (2)	No Documentation to Support Credit		13
2. Involve the public. (120 Max)			
a. Planning process conducted through a planning committee (60)	Chapter 3, Appendix A	60	
b. Public meetings held at the beginning of the planning process (15)	Chapter 3, Page 11 & Appendix B	15	
c. Public meeting held on draft plan (15)	Chapter 3, Page 11 & Appendix B	15	
d . Other public information activities to encourage input (Up to 30)	Chapter 3, Pages 9 - 11 and Appendix B	30	120
3. Coordinate with other agencies. (35 Max)			
a. Review of existing studies and plans (required) (5)	Chapter 3, Pages 12 through 14	5	
b.Coordinating with communities and other agencies (Up to 30)	Chapter 3, Page 12 (only 7 points now)	30	35
C. Plan includes assessment of areas likely to flood (5)			
4. Assess the hazard. (Max 35)			
a. Plan includes an assessment of the flood hazard (REQUIRED) with:			
(1) A map of known flood hazards (5)	Chapter 4, Pages 84-89 & Annexes	5	
(2) A description of known flood hazard (5)	Chapter 4, Pages 79 through 84	5	
(3) A discussion of past floods (5)	Chapter 4, Pages 80 through 83 & Annexes	5	
b. Plan includes assessment of less frequent floods (10)	Chapter 4, Pages 39 - 52 (Dam Hazard)	10	
c. Plan includes assessment of areas likely to flood (5)	Chapter 4, Pages 46-50, 84 - 99 & Annex's	5	
d. The plan describes other natural hazards (REQUIRED FOR DMA) (5)	Chapter 4, Various Pages	5	35

Manual Version: **2017** Community: Larimer County, CO

CRS Step	Section/Page	Score	Total
5. Assess the problem. (Max 52)			
a. Summary of each hazard identified in the hazard assessment and their community impact (REQUIRED) (2)	Chapter 4, Various Pages	2	
b. Description of the impact of the hazards on: (Max 25)			
(1) Life, safety, health, procedures for warning and evacuation (5)	Chapter 4, Pages 49 & 93 through 95	5	
(2) Public health including health hazards to floodwaters/mold (5)	Chapter 4, Pages 93 through 95	5	
(3) Critical facilities and infrastructure (5)	Chapter 4, Pages 15 through 18 & 97 and 98	5	
(4) The community's economy and tax base (5)	Chapter 2 Pages 17-18 & Chapter 4, Pg 98	5	
(5) Number and type of affected buildings (5)	Chapter 4, Pages 95 and 96	5	
**c. Review of all damaged buildings/flood insurance claims (5)	Chapter 4, Pages 14, 15, 95-98 & Annexes	5	
d. Areas that provide natural floodplain functions (5)	Chapter 4, Pages 24 and 25	5	
e. Development/redevelopment/Population Trends (7)	Chapter 4, Pages 4 through 20	7	
f. Impact of future flooding conditions outlined in Step 4, item c (8)	Chapter 4, Pages 46-50, 84- 99 & Annex's	8	52
** RL Category: (Insert A, B or C) **Category B**			
6. Set goals. (required) (2)	Chapter 6, Pages 1 through 4	2	2
7. Review possible activities. (Max 35)			
a. Preventive activities (5)	Appendix D	5	
b. Floodplain Management Regulatory/current & future conditions (5)	Appendix D	5	
c. Property protection activities (5)	Appendix D	5	
d. Natural resource protection activities (5)	Appendix D	5	
e. Emergency services activities (5)	Appendix D	5	
f. Structural projects (5)	Appendix D	5	
g . Public information activities (5)	Appendix D	5	35

CRS Step Section/Page Score Total

Manual Version: **2017** Community: Larimer County, CO

8. Draft an action plan. (Max 60)			
a. Actions must be prioritized (required)			
1. Recommendations for activities from two of the six categories (10)			
2. Recommendations for activities from three of the six categories (20)			
3. Recommendations for activities from four of the six categories (30)			
4. Recommendations for activities from five of the six categories (45)	Chapter 6 and Annex H	45	
b. Post-disaster mitigation policies and procedures (10)	Chapter 4.3.6	10	
c. Action items for mitigation of other hazards (5)	Chapter 6 and Annex H	5	60
9. Adopt the plan. (2)			
10. Implement, evaluate and revise.(Max 26)			
a. Procedures to monitor and recommend revisions (required) (2)	Chapter 7	2	
b. Same planning committee or successor committee that qualifies under Section 511.a.2 (a) does the evaluation (24)	Chapter 7, Page 4	24	26
		FMP=	378

Notes/Comments: Note if step 5c is missed, or if score is capped at 50 points, reference FEMA approval

Community: Larimer County, CO

512 Impact Adjustment:

a. Option 1: rFMP = 1.0 rRLAA = 1.0

b. Option 2: rFMP = 0.25 rRLAA = 0.25

c. Option 3. rRLAA = bAA _____ = #DIV/0!
bRLA _____

513 Credit Calculation:

a. FMP= _____ If any of the step totals in subsections 511.a.1–10 is 0, then FMP = 0.

b. FMP _____ x rFMP _____ cFMP = _____

RLAA _____ x rRLAA _____ cRLAA = _____

NFP _____ cNFP = _____

Add the lines above = _____

c510 = value above rounded to the nearest whole number: c510 = _____

Enter this value on AW-720-1.

Community: Larimer County, CO

512.b Repetitive loss area analysis (RLAA) Credit Points:

Complete one copy of this page for each analysis.

Credit Criteria

_____ Show that all repetitive loss areas are mapped as described in Section 503.b. (RL Cat C) or

_____ Show that the evaluated repetitive loss areas are mapped as described in Section 503.b. (RL Cat A or B)

_____ A memo or other documentation showing that the head of the appropriate department has approved the analysis.

Enter the section or page number in the analysis where each credited item can be found.

		Section/Page
Step 1.	Property owners were advised that the analysis would be conducted, request input	
Step 2.	Agencies or organizations that may have plans that could affect the cause or impacts of the fl were contacted	
Step 3.	Data were collected on each building and the cause(s) of the repetitive flood damage was determined	
Step 4.	Alternative mitigation approaches were reviewed to determine whether any property protection measures or drainage improvements are feasible.	
Step 5.	Document the findings, including a map showing all parcels in the area, recommendations, and how the recommendations will be funded.	

If the community did not conduct analyses of all the repetitive loss areas, provide the following:

a. The number of buildings in the repetitive loss areas where the analyses have been completed (bAA) _____.
b. The number of buildings in all of the community's repetitive loss areas (bRLA)

Appendix D: Mitigation Alternatives

DMA Requirements §201.6(c)(3)(iii):
[The mitigation strategy section shall include] a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

As part of the process of developing the mitigation action plans found in Section 7, the HMPC reviewed and considered a comprehensive range of mitigation options before selecting the actions identified for implementation. This section summarizes the full range of mitigation measures evaluated and considered by the HMPC, including a review of the categories of mitigation measures outlined in the 2017 CRS Coordinator's Manual, a discussion of current local implementation and CRS credits earned for those measures, and a list of the specific mitigation projects considered and recommended for implementation.

Mitigation alternatives identified for implementation by the HMPC were evaluated and prioritized using the criteria discussed in Section 6 of this plan.

Once it was determined which flood hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of mitigation categories from the 2017 CRS Coordinator's Manual.

1. Prevention
2. Property Protection
3. Natural Resource Protection
4. Structural Projects
5. Emergency Services
6. Public Information and Outreach

D.1 Preventative and Regulatory Measures

Preventative measures are designed to keep a problem - such as flooding - from occurring or from getting worse. The objective of preventative measures is to ensure that future development is not exposed to damage and does not cause an increase in damages to other properties. Building, zoning, planning and code enforcement offices usually administer preventative measures. Some examples of types of preventative measures include:

- Building codes
- Zoning ordinance
- Comprehensive or land use plan
- Open space preservation
- Floodplain regulations
- Subdivision regulations
- Stormwater management regulations

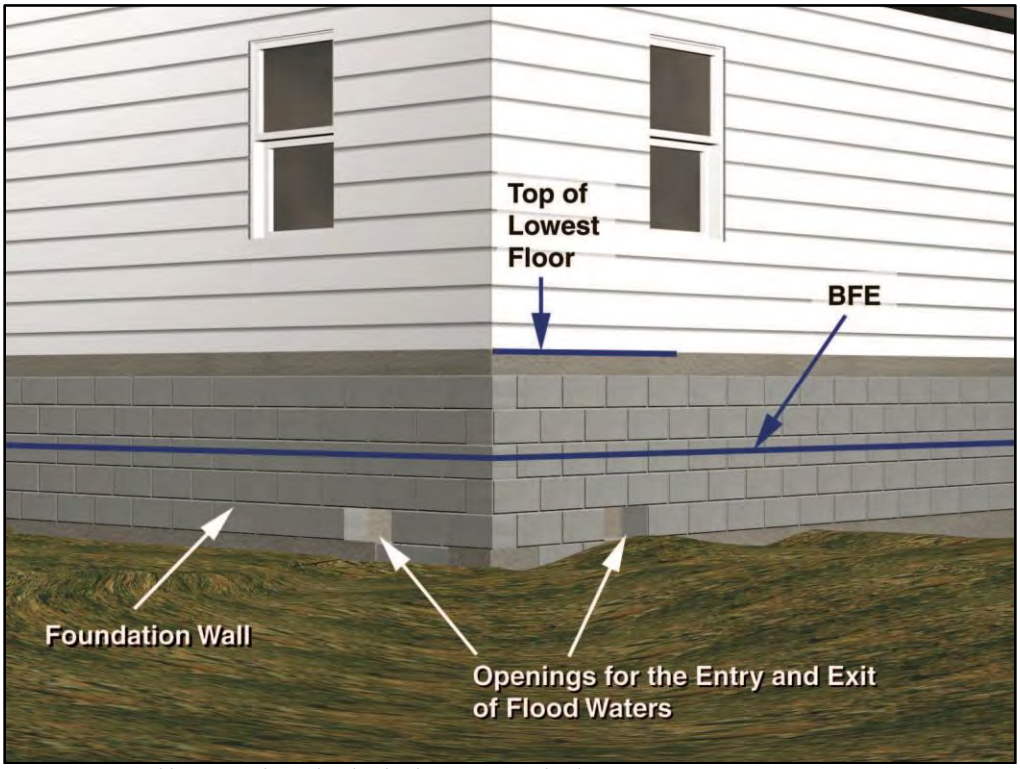
Building Codes

Building codes provide one of the best methods for addressing natural hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are

constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). This is shown in Figure B.1.

Just as important as having code standards is the enforcement of the code. Adequate inspections are needed during the course of construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly elevated and anchored requires site inspections at each step.

Figure D-1 Building Codes and Flood Elevations



Source: FEMA Publication: *Above the Flood: Elevating Your Floodprone House, 2000*

ASCE 24 is a referenced standard in the International Building Code. Any building or structure that falls within the scope of the IBC that is proposed in a flood hazard area is to be designed in accordance with ASCE 24. Freeboard is required as a function of the nature of occupancy and the flood zone. Dwellings and most other buildings have 1-foot of freeboard; certain essential facilities have 2-3 feet; only agricultural facilities, temporary facilities and minor storage facilities are allowed to have their lowest floors at the BFE.

Comprehensive or Land Use Plan

Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, particularly floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation.

Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is free to develop and use private property, but property taxes are reduced or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement.

Although there are some federal programs that can help acquire or reserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes.

Zoning Ordinance

Zoning enables a community to designate what uses are acceptable on a given parcel. Zoning can ensure compatibility of land use with the land's level of suitability for development. Planning and zoning activities can also provide benefits by allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach. Zoning regulations describe what type of land use and specific activities are permitted in each district, and how to regulate how buildings, signs, parking, and other construction may be placed on a lot. Zoning regulations also provide procedures for rezoning and other planning applications. The zoning map and zoning regulations provide properties with certain rights to development.

Floodplain Regulations

A Flood Damage Prevention Ordinance sets development standards for Special Flood Hazard Areas (SFHAs). Communities participating in the National Flood Insurance Program (NFIP) are required to adopt a flood damage prevention ordinance that meets at least the minimum standards of the NFIP; however, a community can incorporate higher standards for increased protection. For example, communities can adopt higher regulatory freeboard requirements, cumulative substantial damage definitions, fill restrictions, and other standards.

Another important consideration in floodplain regulations is the protection of natural and beneficial functions and the preservation of natural barriers such as vegetation. Vegetation along a stream bank is extremely beneficial for the health of the stream. Trees and other plants have an extensive root system that strengthen stream banks and help prevent erosion. Vegetation that has sprouted up near streams should remain undisturbed unless removing it will significantly reduce a threat of flooding or further destruction of the stream channel.

Stormwater Management Regulations

Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality. There are three ways to prevent flooding problems caused by stormwater runoff:

1. Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties;
2. Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions; and
3. Set construction standards so buildings are protected from shallow water.

Reducing Future Flood Losses

Zoning and comprehensive planning can work together to reduce future flood losses by directing development away from hazard prone areas. Creating or maintaining open space is the primary way to reduce future flood losses.

Planning for open space must also be supplemented with development regulations to ensure that stormwater runoff is managed, and that development is protected from flooding. Enforcement of the flood damage prevention ordinance and the flood protection elevation requirement provides an extra level of protection for buildings constructed in the planning area.

Stormwater management and the requirement that post-development runoff cannot exceed pre-development conditions is one way to prevent future flood losses. Retention and detention requirements also help to reduce future flood losses.

CRS Credit

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's Building Code Effectiveness Grading Schedule (BCEGS) classification and points are awarded for adopting the International Code series. The State of Colorado does not mandate the adoption of building codes by local jurisdictions; however Larimer County and its participating jurisdictions have adopted building codes as detailed in Section 5 of the Base Plan and in the various jurisdictional annexes.

CRS credits are available for regulations that encourage developers to preserve floodplains or other hazardous areas away from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan. Communities can receive credit for Activity 430 – Higher Regulatory Standards and for Activity 420 – Open Space Preservation for preserving parcels within the SFHA as open space. Preserving flood prone areas as open space is one of the highest priorities of the Community Rating System. The credits in the 2017 manual have doubled for OSP (Open Space Preservation). The participating Communities can also receive credit for Activity 450 – Stormwater Management for enforcing regulations for stormwater management and soil and erosion control. Several prevention actions considered by the HMPC are detailed below.

Table D.1 – Prevention Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Prevention Measures Considered by HMPC and Not Recommended			
-	Continue enforcement of state building codes and more stringent local building requirements	The County has established this as an ongoing policy and does not need to commit additional resources through this plan update process to complete this activity. Mandating building codes for	n/a

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
		municipalities is not politically feasible.	
-	Mitigation Code Changes.	Larimer County land use, wildfire and building codes were recently updated and are not scheduled to be revisited during the next 5 years.	n/a
Prevention Measures and Funding Recommended for Implementation			
LC-12	**Larimer County Stormwater Design Standards Update.** The County's stormwater design standards last revised in 2006 will be updated to meet current standards per the Mile High Flood District's Urban Storm Drainage Criteria Manual.	Increased design standards will reduce stormwater flooding.	$85,000; General fund
H-31	**Floodplain Regulatory Program.** Enforce current regulations for development in the floodplain and update regulations as necessary.	Increased enforcement will help protect people and structures	$300,000/ year; Utilities Stormwater Budget
L-91	**Review zoning codes and development standards** to limit the risks to development in hazard areas. Add to UBC, consider comprehensive plan.	Limit development in floodplains and other hazard areas.	Staff Time

D.2 Property Protection Measures

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building;
- Modify the building (retrofit) so it can withstand the impacts of the hazard; and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency.

Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. As noted earlier, the major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. For example, a berm can be built to prevent floodwaters from reaching a house.

There are five common methods to keep a flood from reaching and damaging a building:

- Erect a barrier between the building and the source of the flooding.
- Move the building out of the flood-prone area.
- Elevate the building above the flood level.
- Demolish the building.
- Replace the building with a new one that is elevated above the flood level.

The latter three approaches are the most effective types to consider for the planning area.

Appendix D: Mitigation Alternatives

Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier. Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained.



This low floodwall has landscaping to minimize the adverse impact on the property's appearance.

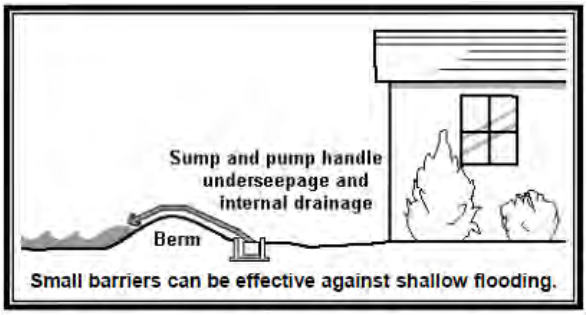
Relocation

Moving a building out of a flood prone area to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.



Small, wood frame buildings are the easiest to relocate

Source: Kennedy House Movers, Huntsville, AL



Small barriers can be effective against shallow flooding.

Building Elevation

Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation.

Appendix D: Mitigation Alternatives

Demolition

Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damages. It is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Demolition is also appropriate for buildings that are difficult to move – such as larger, slab foundation or masonry structures – and for dilapidated structures that are not cost-beneficial to protect.



Demolishing a repetitively flooded home

Pilot Reconstruction

If a building is not in good shape, elevating it may not be worthwhile or it may even be dangerous. An alternative is to demolish the structure and build a new one on the site that meets or exceeds all flood protection codes. FEMA funding programs refer to this approach as "pilot reconstruction." It is still a pilot program, and not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

Retrofitting

An alternative to keeping the hazard away from a building is to modify or retrofit the site or building to minimize or prevent damage. There are a variety of techniques to do this, as described below.

- Dry Floodproofing: Dry floodproofing means making all areas below the flood protection level watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques. Dry floodproofing is only effective for shallow flooding, such as repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms.
- Wet Floodproofing: The alternative to dry floodproofing is wet floodproofing: water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Insurance

Technically, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild, and hopefully afford to incorporate some of the other property protection measures in the process. Insurance offers the advantage of protecting the property, so long as the policy is in force, without requiring human intervention for the measure to work.

- Private Property: Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the NFIP.

Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area. Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Contents coverage can be purchased separately. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. Most people don't realize that there is a 30-day waiting period to purchase a flood insurance policy and there are limits on coverage.

- Public Property: Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

Local Implementation/CRS Credit

The CRS provides the most credit points for acquisition and relocation under Activity 520, because this measure permanently removes insurable buildings from the floodplain. Communities can receive credit for Activity 520 – Acquisition and Relocation, for acquiring and relocating buildings from the SFHA. The HMPC recommended that communities pursue the purchase of repetitive loss buildings and other buildings which are subject to flood damage in order to return this land to open space.

The CRS also credits barriers and elevating existing buildings under Activity 530. The credit for Activity 530 is based on the combination of flood protection techniques used and the level of flood protection provided. Points are calculated for each protected building. Bonus points are provided for the protection of repetitive loss buildings and critical facilities. Communities can receive credit for Activity 360 – Flood Protection Assistance by providing advice and assistance to homeowners who may want to flood proof their home or business. Advice is provided both on property protection techniques and on financial assistance programs to help fund mitigation.

Flood insurance information for each community is provided in Section 5 and in greater detail in each community's annex. There is no credit for purchasing flood insurance, but the CRS does provide credit for local public information programs that, among other topics, explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage. Communities can receive credit for Activity 330 – Outreach Projects. Property protection mitigation options considered by the HMPC are described below.

Table D.2 – Property Protection Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Property Protection Measures Considered by HMPC and Not Recommended			
-	Look for opportunities to mitigate repetitive loss structures	No specific projects have yet been identified, and there is no funding available at this time.	n/a
-	Conduct a groundwater & drainage study, and a floodplain mitigation study for the Cotton Willows Subdivision.	Unable to implement due to private land issues.	
Property Protection Measures and Funding Recommended for Implementation			

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
LC-27	**Cameron Peak Wildfire Recovery.** Coordinate with LCSO, USFS, and other partners to identify and implement post-fire recovery and post-fire flooding mitigation projects as a result of the Cameron Peak Wildfire.	Cameron Peak fire created significant new flood vulnerabilities that have not yet been fully assessed. Specific properties in need of protection are being identified.	Unknown; HMGP, BRIC
H-29	**Oak St Extension Stormwater Project.** This area of Fort Collins has old undersized storm sewers that do not meet current drainage standards. The Oak Street Outfall was completed in 2001 and has not been extend up to Shields per the Downtown Stormwater Improvement Plan (DISP). Install a new storm sewer system to improve the drainage and reduce flooding for storms up to and including the 100-year event and improve water quality for smaller more frequent storm events (2-year and below.	Will reduce flood vulnerability to multiple properties.	$20M; City Stormwater Utility Fees

D.3 Natural Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. These activities enable the naturally beneficial functions of fields, floodplains, wetlands, and other natural lands to operate more effectively. Natural and beneficial functions of watersheds, floodplains and wetlands include:

- Reduction in runoff from rainwater and stormwater in pervious areas
- Infiltration that absorbs overland flood flow
- Removal and filtering of excess nutrients, pollutants and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved through regulatory steps for protecting natural areas or natural functions. This section covers the resource protection programs and standards that can help mitigate the impact of natural hazards, while they improve the overall environment. Six areas were reviewed:

- Wetland protection
- Erosion and sedimentation control
- Stream/River restoration
- Best management practices
- Dumping regulations
- Farmland protection

Wetland Protection



Wetlands are often found in floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and they provide habitat for many species of fish, wildlife and plants.

Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along stream banks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil. Sediment suspended in the water tends to settle out where flowing water slows down. This can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices.

Stream/River Restoration

There is a growing movement that has several names, such as "stream conservation," "bioengineering," or "riparian corridor restoration." The objective of these approaches is to return streams, stream banks and adjacent land to a more natural condition, including the natural meanders. Another term is "ecological restoration," which restores native indigenous plants and animals to an area.

A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

- Reduces the amount of sediment and pollutants entering the water
- Enhances aquatic habitat by cooling water temperature
- Provides food and shelter for both aquatic and terrestrial wildlife
- Can reduce flood damage by slowing the velocity of water
- Increases the beauty of the land and its property value
- Prevents property loss due to erosion
- Provides recreational opportunities, such as hunting, fishing and bird watching
- Reduces long-term maintenance costs

Communities are required by state and federal regulations to monitor storm water drainage outfalls and control storm water runoff.

Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA. Nonpoint source pollutants come from non-specific locations and harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other

chemicals, animal wastes, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple usages of drainage and storage facilities.

Dumping Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "non-objectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

Many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not understand how re-grading their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Farmland Protection

Farmland protection is an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to nonagricultural uses.

Frequently, farm owners sell their land to residential or commercial developers and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can lead to additional stormwater runoff and emergency management difficulties.

Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, and local governments as well as nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land.

Local Implementation/CRS Credit

There is credit for preserving open space in its natural condition or restored to a state approximating its natural condition. The credit is based on the percentage of the floodplain that can be documented as wetlands protected from development by ownership or local regulations. Communities can receive credit for Activity 420 – Open Space Preservation for preserving a portion of the SFHA as open space.

Additionally, credit is available for Activity 540 – Drainage System Maintenance. Having a portion of the drainage system inspected regularly throughout the year and maintenance performed as needed would earn a community credit. Communities can also get credit under this activity for providing a listing of problem sites that are inspected more frequently, and for implementing an ongoing Capital Improvements Program.

Table D.3 – Natural Resource Protection Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Natural Resource Protection Measures Considered by HMPC and Not Recommended			
-	Additional wetlands restoration projects.	Insufficient details were identified to make this an implementable project.	n/a
Natural Resource Protection Measures and Funding Recommended for Implementation			
LC-16	**River Restoration Projects.** As a result of flooding and wildfires in Larimer County since 2013, efforts still continue to conduct river restoration and subsequently forest restoration work for our watersheds. This effort seeks to identify projects in collaboration with local watershed coalitions including the Coalition for the Poudre River Watershed, the Big Thompson Watershed Coalition, and the Estes Valley Watershed Coalition where river restoration could occur that also minimize flood risk and impacts. This also includes outreach and education efforts to involve landowners and the public in understanding risk and being engaged in mitigation efforts	Extensive restoration work needed to recover from 2013 floods.	TBD; USFS, CSFS, CWCB, DOLA
H-2	**Low Impact Development Retrofits.** Retrofitting of Green Infrastructure facilities into existing regional facilities pub. Incorporated into Drainage Master Plan Updates approved by Water Board and City Council.	Reduce urban flooding, improve water quality, and enhance community resiliency by retrofitting green infrastructure into existing City regional drainage facilities.	Varies from project to project can range from S25K to $200K; Utilities, City of Fort Collins Parks and Recreation, Fort Collins Sustainability Services, Grants

D.4 Emergency Services Measures

Emergency services measures protect people during and after a disaster. A good emergency management program addresses all hazards, and it involves all local government departments. This section reviews emergency services measures following a chronological order of responding to an emergency. It starts with identifying an impending problem (threat recognition) and continues through post-disaster activities.

Threat Recognition

The first step in responding to a flood is to know when weather conditions are such that an event could occur. With a proper and timely threat recognition system, adequate warnings can be disseminated.

The National Weather Service (NWS) is the prime agency for detecting meteorological threats. Severe weather warnings are transmitted through NOAA's Weather Radio System. Local emergency managers can then provide more site-specific and timely recognition after the Weather Service issues a watch or a warning. A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On smaller rivers and streams, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

Warning

The next step in emergency response following threat recognition is to notify the public and staff of other agencies and critical facilities. More people can implement protection measures if warnings are early and include specific detail.

The NWS issues notices to the public using two levels of notification:

- Watch: conditions are right for flooding, thunderstorms, tornadoes or winter storms.
- Warning: a flood, tornado, etc., has started or been observed.

A more specific warning may be disseminated by the community in a variety of ways. The following are the more common methods:

- CodeRED countywide mass telephone emergency communication system
- Commercial or public radio or TV stations
- The Weather Channel
- Cable TV emergency news inserts
- Telephone trees/mass telephone notification
- NOAA Weather Radio
- Tone activated receivers in key facilities
- Outdoor warning sirens

- Sirens on public safety vehicles
- Door-to-door contact
- Mobile public address systems
- Email notifications

Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should include a public information component.

StormReady

The National Weather Service (NWS) established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally
- Promote the importance of public readiness through community seminars
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

Being designated an NWS StormReady community is a good measure of a community's emergency warning program for weather hazards.

Response

The protection of life and property is the most important task of emergency responders. Concurrent with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- Activating the emergency operations center (emergency preparedness)
- Closing streets or bridges (police or public works)
- Shutting off power to threatened areas (utility company)
- Passing out sand and sandbags (public works)
- Holding children at school or releasing children from school (school superintendent)
- Opening evacuation shelters (the American Red Cross)
- Monitoring water levels (public works)
- Establishing security and other protection measures (police)

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given various responsibilities.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The end result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

Evacuation and Shelter

There are six key components to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control
- Knowledgeable travelers
- Care for special populations (e.g., disabled persons, prisoners, hospital patients, schoolchildren)

Those who cannot get out of harm's way need shelter. Typically, the American Red Cross will staff a shelter and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a specialized skill. Managers must deal with problems like scared children, families that want to bring in their pets, and the potential for an overcrowded facility.

Local Implementation /CRS Credit

Flash flood warnings are issued by National Weather Service Offices, which have the local and county warning responsibility. Flood warnings are forecasts of coming floods, are distributed to the public by the NOAA Weather Radio, commercial radio and television, and through local emergency agencies. The warning message tells the expected degree of flooding, the affected river, when and where flooding will begin, and the expected maximum river level at specific forecast points during flood crest.

Communities can receive credit for Activity 610 – Flood Warning Program for maintaining a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. Community Rating System credits are based on the number and types of warning media that can reach the community's flood prone population. Depending on the location, communities can receive credit for the telephone calling system and more credits for additional measures, like telephone trees. Being designated as a StormReady community also provides additional credits.

Table D.4 – Emergency Services Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Emergency Services Measures Considered by HMPC and Not Recommended			
-	Increased emergency response capabilities.	Identified as response and rpeparedness, not mitigation activities.	n/a
Emergency Services Measures and Funding Recommended for Implementation			
LC-5	**Rainfall and Stream Gauge Monitoring System.** Larimer County Watersheds. Install rainfall and stream gauges throughout Larimer County's major watersheds, including the Big Thompson River, Little Thompson River and the Cache la Poudre River and connect all with a monitoring system that can provide real-time data and early warning to citizens and emergency responders. Install rainfall and stream gauge monitoring hardware and software in major watersheds throughout Larimer County.	Rainfall and stream gauges exist on a small section of the county's watersheds and many of these gauges were damaged or destroyed during the 2013 Flood.	$300,000; 2015 HMGP funding for partial implementation county funding

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
H-25	**Flood Warning System Enhancement.** The City of Fort Collins' Flood Warning System is in the process of replacing 60 of the older ALERT transmitters used in the 82-gage local network. The new transmitters meet the National Hydrologic Warning Council's ALERT2 protocol. Much of the existing system was installed in the early 2000's and the equipment is in need of renewal to ensure the City can continue to meet its public safety mission for early detection and warning of flood-inducing rainfall and stream flooding.	Benefits: Loss of Life, Property & Infrastructure Damage.	$200,000; City of Fort Collins Stormwater Fund
L-25	**Install Radio Site Near Budweiser Center.** This will fill in several radio dead spots in and around Loveland by all City departments and agencies. In addition to improving communication and coordination during response, it will also improve the reliability of flood notifications and warning, and help coordinate activities such as wildfire fuels reduction.	Improve the reliability of flood notifications and warning.	$150,000-200,000; Grants

D.5 Structural Projects

Four general types of flood control projects are reviewed here: levees, reservoirs, diversions, and dredging. These projects have three advantages not provided by other mitigation measures:

- They can stop most flooding, protecting streets and landscaping in addition to buildings.
- Many projects can be built without disrupting citizens' homes and businesses.
- They are constructed and maintained by a government agency, a more dependable long-term management arrangement than depending on many individual private property owners.

However, as shown below, structural measures also have shortcomings. The appropriateness of using flood control depends on individual project area circumstances.

- Advantages
  - They may provide the greatest amount of protection for land area used
  - Because of land limitations, they may be the only practical solution in some circumstances
  - They can incorporate other benefits into structural project design, such as water supply and recreational uses
  - Regional detention may be more cost-efficient and effective than requiring numerous small detention basins
- Disadvantages
  - They can disturb the land and disrupt the natural water flows, often destroying wildlife habitat
  - They require regular maintenance
  - They are built to a certain flood protection level that can be exceeded by larger floods
  - They can create a false sense of security
  - They promote more intensive land use and development in the floodplain

Levees and Floodwalls

Probably the best-known flood control measure is a barrier of earth (levee) or concrete (floodwall) erected between the watercourse and the property to be protected. Levees and floodwalls confine water to the stream channel by raising its banks. They must be well designed to account for large floods, underground seepage, pumping of internal drainage, and erosion and scour.

Reservoirs and Detention

Reservoirs reduce flooding by temporarily storing flood waters behind dams or in storage or detention basins. Reservoirs lower flood heights by holding back, or detaining, runoff before it can flow downstream. Flood waters are detained until the flood has subsided, and then the water in the reservoir or detention basin is released or pumped out slowly at a rate that the river can accommodate downstream.



Retention pond

Reservoirs can be dry and remain idle until a large rain event occurs. Or they may be designed so that a lake or pond is created. The lake may provide recreational benefits or water supply (which could also help mitigate a drought).

Flood control reservoirs are most commonly built for one of two purposes. Large reservoirs are constructed to protect property from existing flood problems. Smaller reservoirs, or detention basins, are built to protect property from the stormwater runoff impacts of new development.

Diversion

A diversion is a new channel that sends floodwaters to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During floods, the floodwaters spill over to the diversion channel or tunnel, which carries the excess water to a receiving lake or river.

Local Implementation /CRS Credit

Structural flood control projects that provide at least 100-year flood protection and that result in revisions to the Flood Insurance Rate Map are not credited by the CRS so as not to duplicate the larger premium reduction provided by removing properties from the mapped floodplain. Other flood control projects can be accepted by offering a 25-year flood protection.

Table D.5 – Structural Projects Mitigation Options and Recommended Projects

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Structural Project Measures Considered by HMPC and Not Recommended			
-	Incorporate flood risk velocity and depth criteria into floodplain regulations.	This information was presented to the BCC who opted not to change current evaluation criteria.	n/a
Structural Project Measures and Funding Recommended for Implementation			

Appendix D: Mitigation Alternatives

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
H-23	**Boxelder Creek Watershed Dams.** A series of flood control dams were built in the 1970s and 1980s to protect agricultural lands from flooding and erosion damage. At the time, the North Poudre Irrigation Company (NPIC) acted as the local partner with the Soil Conservation Service Implementing these recommendations would change the Consequence Levels from Level 4 to Level 3 for each dam. The risk assessment documented damages of $___ million and the potential for significant loss of life. If this approach is not implemented, potential improvements to the dams could cost between $3 and $25 million. (SCS), now the Natural Resources Conservation Service (NRCS), and with the United States Department of Agricultural (USDA) to build the dams. NPIC currently operates and maintains the dams. In 2014, the State Engineer's Office (SEO) completed a routine review of the dams for certification. The land use changes downstream of Dams B-2, B-3 and B-4 from agricultural use to suburban and urban development required a change in the dam classification from "moderate" to "high hazard". This change in classification of the dams could require expensive rehabilitation and/or reconstruction of the dam emergency spillways and embankments. The SEO Division of Dam Safety recently updated its regulations governing dams of this type to allow for a Risk and Consequence analysis approach. This approach is different than prior prescriptive regulations and introduces the determination of "potential failure modes" and characterizes the "likelihood" of the failure mode within a risk context.	Implementing these recommendations would change the Consequence Levels from Level 4 to Level 3 for each dam. The risk assessment documented damages and the potential for significant loss of life. If this approach is not implemented, potential improvements to the dams could cost between $3 and $25 million.	There are no external construction costs associated with updating the EAP's. There would be potential consulting costs (no estimate yet) to develop the updated EAP plans and documents. The conceptual costs for the monitoring systems are expected to range from $225,000 to $325,000.
H-26	**Forney Pond and Central Flow Path.** This area of Fort Collins was the historic flow path of Solider Creek that has been covered up or redirected by development over the years. This detention pond we capture runoff from upstream contributing area and detain it to reduce flooding downstream.	Overall benefits are to protect people, property, and natural resources; Improve capability to reduce disaster losses; Integrate hazard mitigation into other planning mechanisms	$5M; City Stormwater Utility Fees
L-1	**Railroad Ave Improvements.** During the 2013 and the 1976 Floods, Railroad Ave on both sides of the bridge flooded. During both events, all of the North-South routes across the Big Thompson river were cut off by flood waters. Motorists were forced to drive more than 30 miles east to find a viable river crossing. Emergency vehicles that were on one side of the	This project will provide better flood management along Railroad Ave. It will also provide the City, County, and State with an open route over the Big Thompson River during 50-year and smaller storm events.	$3.6M; FHWA, city internal budget

Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
	river were unable to respond to the opposite side for emergencies. Railroad Ave elevation change on both sides of the bridge and add second bridge. The base height of Railroad Ave roadway will be raised on both sides of the bridge and a second bridge will be added.		

D.6 Public Information

Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and to the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties.

Awareness of the hazard is not enough; people need to be told what they can do about the hazard. Thus, projects should include information on safety, health and property protection measures. Research has shown that a properly run local information program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

Community newsletters/direct mailings: The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

News media: Local newspapers can be strong allies in efforts to inform the public. Local radio stations and cable TV channels can also help. These media offer interview formats and cable TV may be willing to broadcast videos on the hazards.

Libraries and Websites

The two previous activities tell people that they are exposed to a hazard. The next step is to provide information to those who want to know more. The community library and local websites are obvious places for residents to seek information on hazards, hazard protection, and protecting natural resources.

Books and pamphlets on hazard mitigation can be given to libraries, and many of these can be obtained for free from state and federal agencies. Libraries also have their own public information campaigns with displays, lectures and other projects, which can augment the activities of the local government. Today, websites are commonly used as research tools. They provide fast access to a wealth of public and private sites for information. Through links to other websites, there is almost no limit to the amount of up to date information that can be accessed on the Internet.

In addition to online floodplain maps, websites can link to information for homeowners on how to retrofit for floods or a website about floods for children.

Technical Assistance

Hazard Information

Appendix D: Mitigation Alternatives

Residents and business owners that are aware of the potential hazards can take steps to avoid problems or reduce their exposure to flooding. Communities can easily provide map information from FEMA's FIRMs and Flood Insurance Studies. They may also assist residents in submitting requests for map amendments and revisions when they are needed to show that a building is located outside the mapped floodplain.

Some communities supplement what is shown on the FIRM with information on additional hazards, flooding outside mapped areas and zoning. When the map information is provided, community staff can explain insurance, property protection measures and mitigation options that are available to property owners. They should also remind inquirers that being outside the mapped floodplain is no guarantee that a property will never flood.

Property Protection Assistance

While general information provided by outreach projects or the library is beneficial, most property owners do not feel ready to retrofit their buildings without more specific guidance. Local building department staffs are experts in construction. They can provide free advice, not necessarily to design a protection measure, but to steer the owner onto the right track. Building or public works department staffs can provide the following types of assistance:

- Visit properties and offer protection suggestions
- Recommend or identify qualified or licensed contractors
- Inspect homes for anchoring of roofing and the home to the foundation
- Explain when building permits are needed for home improvements.

Public Information Program

A Program for Public Information (PPI) is a document that receives CRS credit. It is a review of local conditions, local public information needs, and a recommended plan of activities. A PPI consists of the following parts, which are incorporated into this plan:

- The local flood hazard
- The property protection measures appropriate for the flood hazard
- Flood safety measures appropriate for the local situation
- The public information activities currently being implemented within the community, including those being carried out by non-government agencies
- Goals for the community's public information program
- The outreach projects that will be done each year to reach the goals
- The process that will be followed to monitor and evaluate the projects

Local Implementation /CRS Credit

Communities can receive credit under Activity 330 – Outreach Projects as well as Activity 350 – Flood Protection Information. Credit is available for targeted and general outreach projects. Credit is also provided for making publications relating to floodplain management available in the reference section of the local library.

Appendix D: Mitigation Alternatives

Table D.6 – Public Information and Outreach Mitigation Options and Recommended Projects

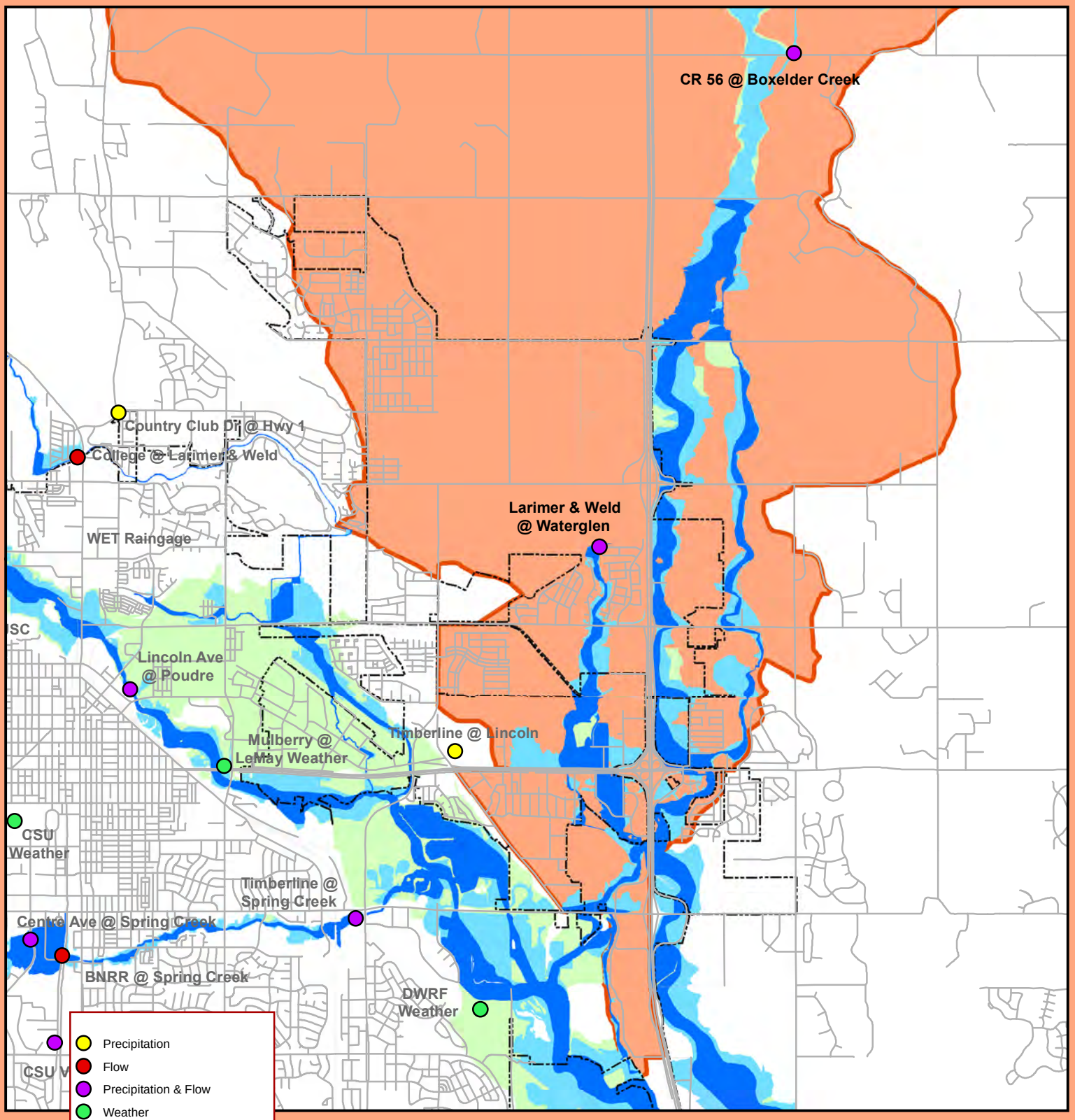
Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
Public Information and Outreach Measures Considered by HMPC and Not Recommended			
-	Flood-specific public education program	HMPC determined this was best done in the context of existing all hazards outreach programs such as Larimer Connect.	n/a
Public Information and Outreach Measures and Funding Recommended for Implementation			
LC-22	Big Thompson Forest Resilience and Wildfire Preparedness Outreach. No Co Fireshed Network and other local collaborative networks are aiming to increase the consistency and accuracy of information sharing around forest health, resilience, management, and community preparedness for wildfire while expanding partnerships and capacity-leveraging across public-private sectors to increase the scale and pace of forest management and wildfire fuel reduction. Watershed Coalitions provide facilitation and communication between resource management partners and local communities within the watershed through one-on-one engagement opportunities, relationship building, and other resources that encourage on-the-ground participation.	BTWC is developing its forestry program, emphasizing community outreach on forest health and wildfire fuel reduction through annual in-person and remote engagement opportunities, project partnership opportunities, and hard-copy resource distribution.	CWCB, USFS
H-24	**Flood Walk App.** Launched in June of 2019, the groundbreaking FloodWalk mobile application uses augmented reality (AR) technology and storytelling to bring flood risk to life and demonstrate the benefits of mitigation. In the FloodWalk application, AR casts 3D visualizations of flooding onto the real world. What was once a familiar location is overtaken by dangerously high waters as a narrator recounts the impact of historic flooding and what has been done to make the area safer. Research shows that it's difficult for people to conceptualize future risk. We also know that those who have experienced flooding are far more likely to take action to prepare. Through AR, users can see how mitigation has transformed the land around them and learn how these critical projects help protect their homes and keep their families safe from disaster. Fort Collins has been selected as the second location to be showcased in the app. Locations along Spring Creek, the Poudre River and on the CSU Campus will be included. Past flood events such as the 1997 Spring Creek flood and the 2013 flood on the Poudre River will demonstrated using the AR technology.	The FloodWalk app allows users to see risk in a way that isn't possible from data and maps alone. By bringing the experience of flooding directly to the hands of the public, flood risk becomes something people can see, feel, and become motivated to reduce. The app can also help users visualize risk reduction projects that mitigate the risk of flooding in the community.	$200,000; City of Fort Collins Stormwater Fund

Appendix D: Mitigation Alternatives

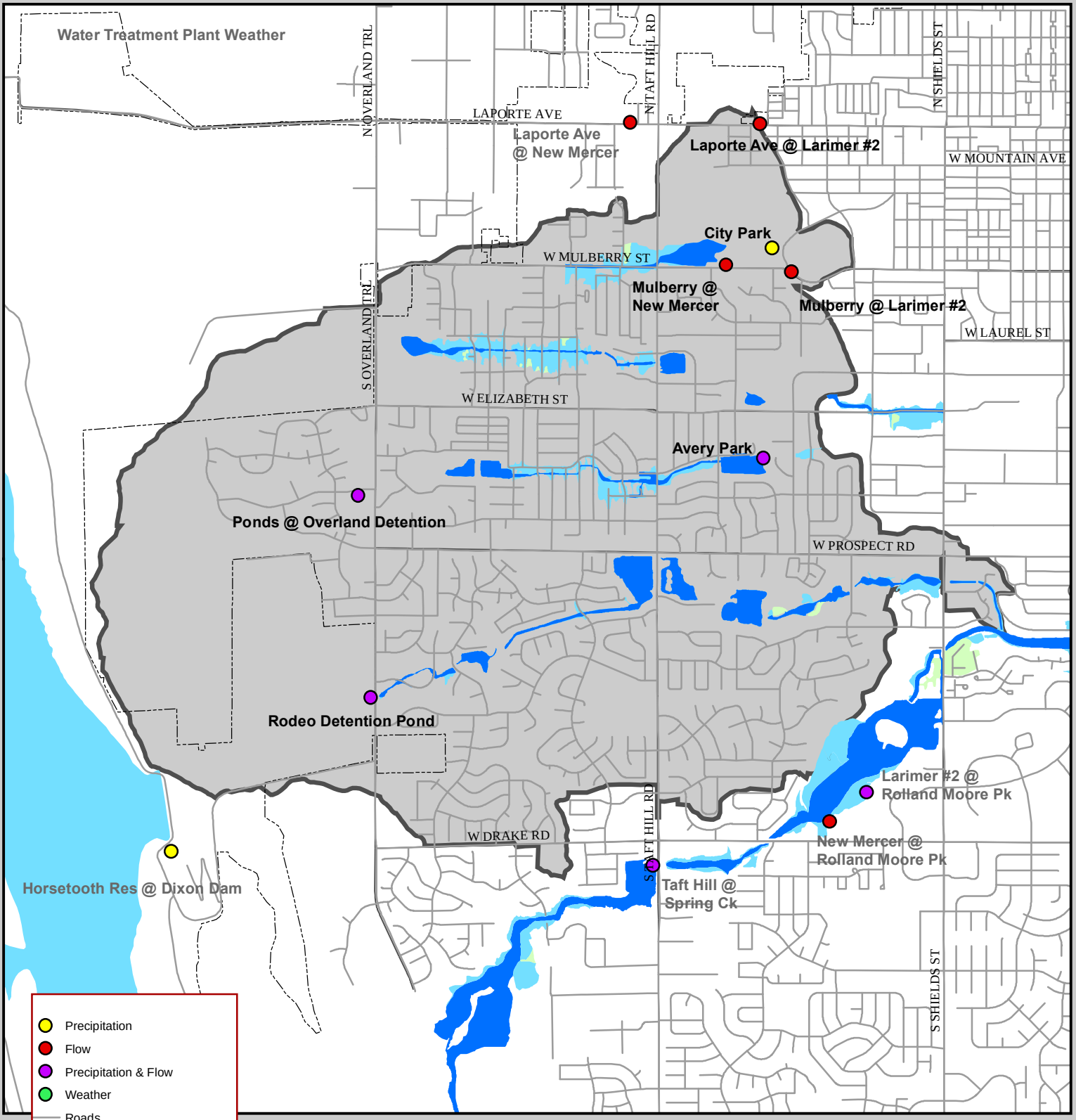
Action #	Mitigation Action	Reason for Pursuing / Not Pursuing	Funding
	Past and future mitigation projects will also be included.		

APPENDIX E: DRAINAGE BASIN MAPS

Boxelder/Cooper Slough Floodplain



Canal Importation Basin



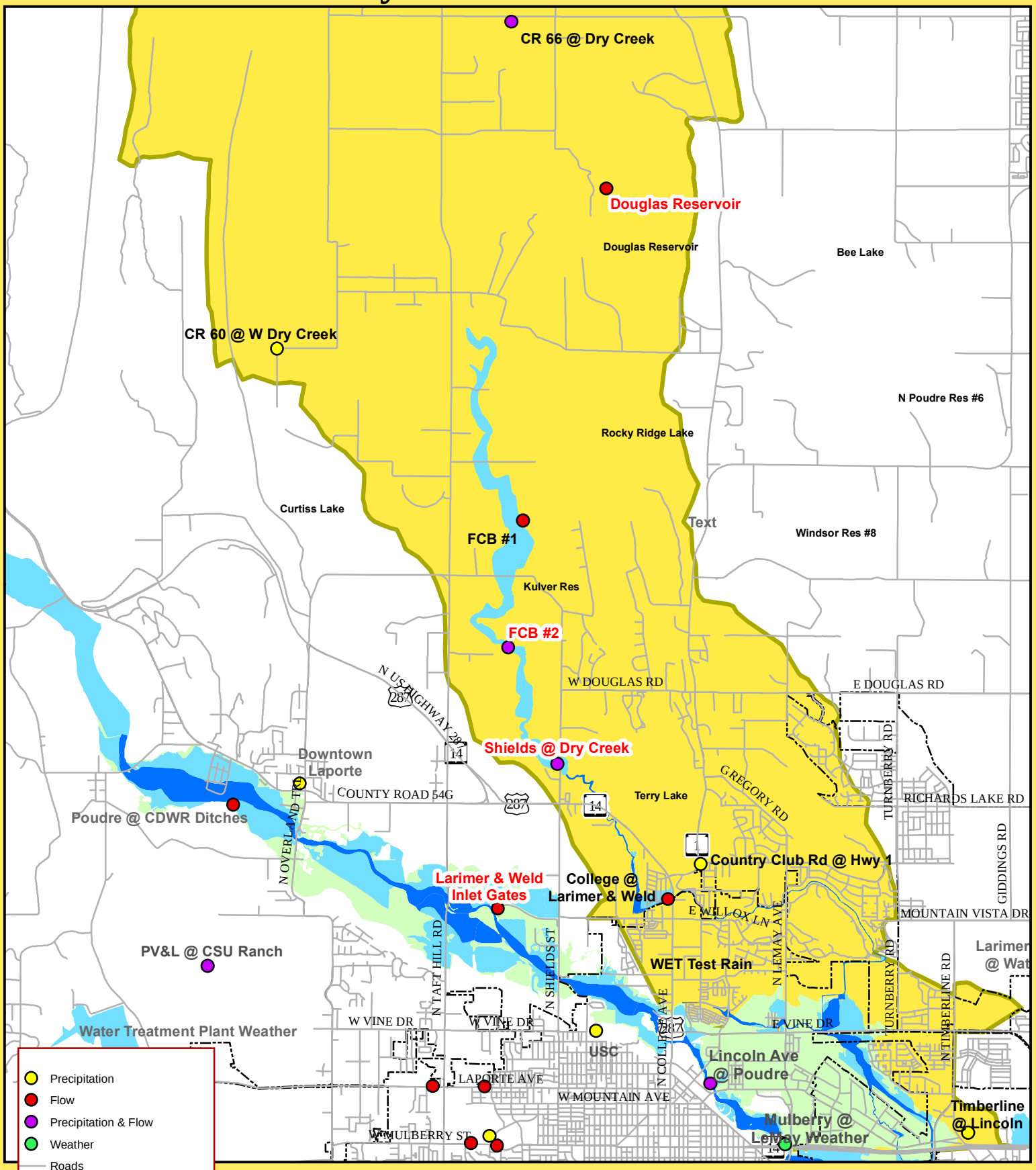
- Precipitation
- Flow
- Precipitation & Flow
- Weather
- Roads
- City Limits
- Roads
- hydro arc
- hydro polygon
- City Floodway
- City High Risk Floodplains
- City Moderate Risk Floodplains
- FEMA Moderate Risk Floodplains
- FEMA High Risk Floodplains
- FEMA Floodway

N

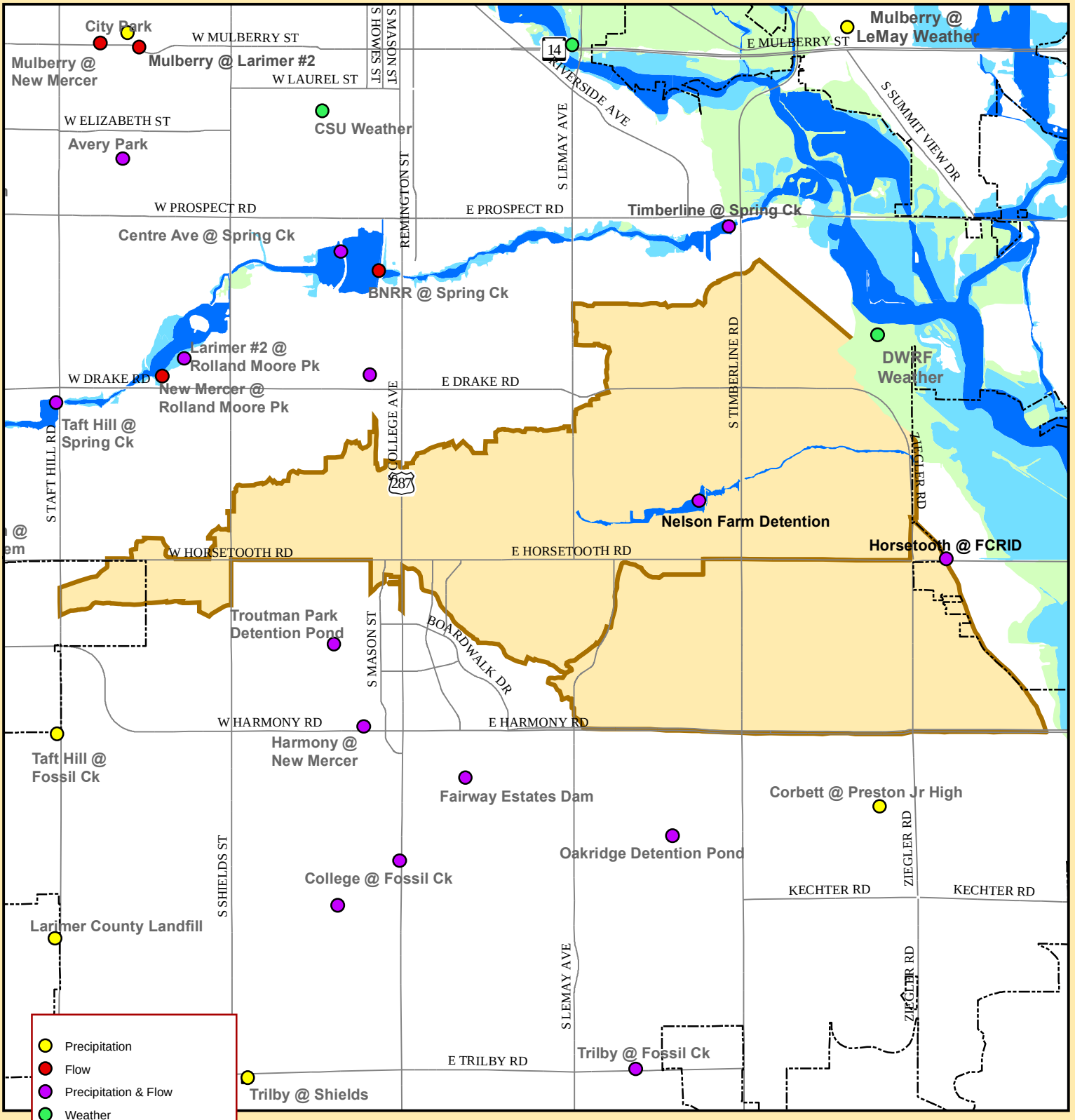
0 0.25 0.5 1 Miles

City of Fort Collins

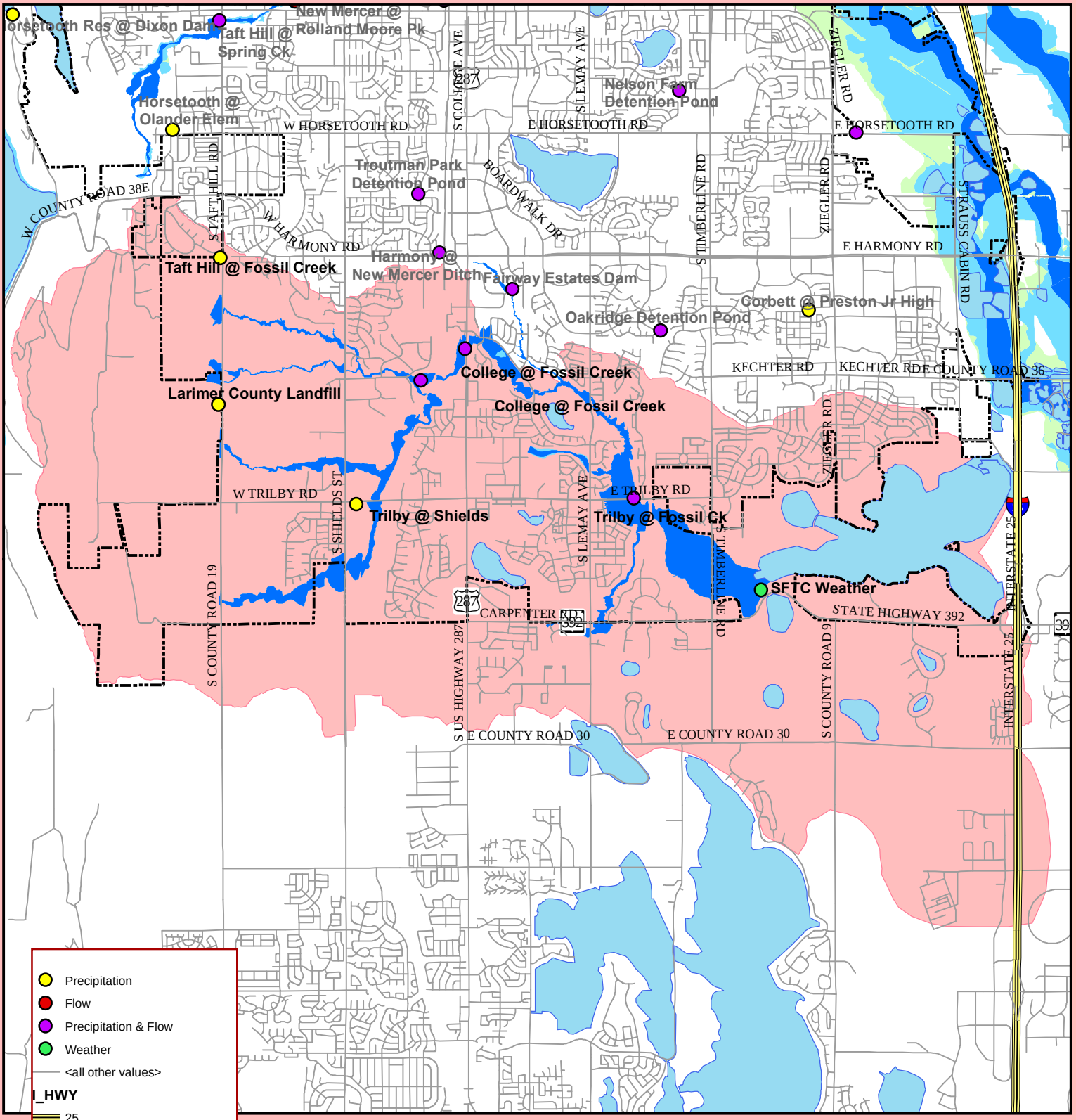
Dry Creek Basin



Foothills/FoxMeadows Basin

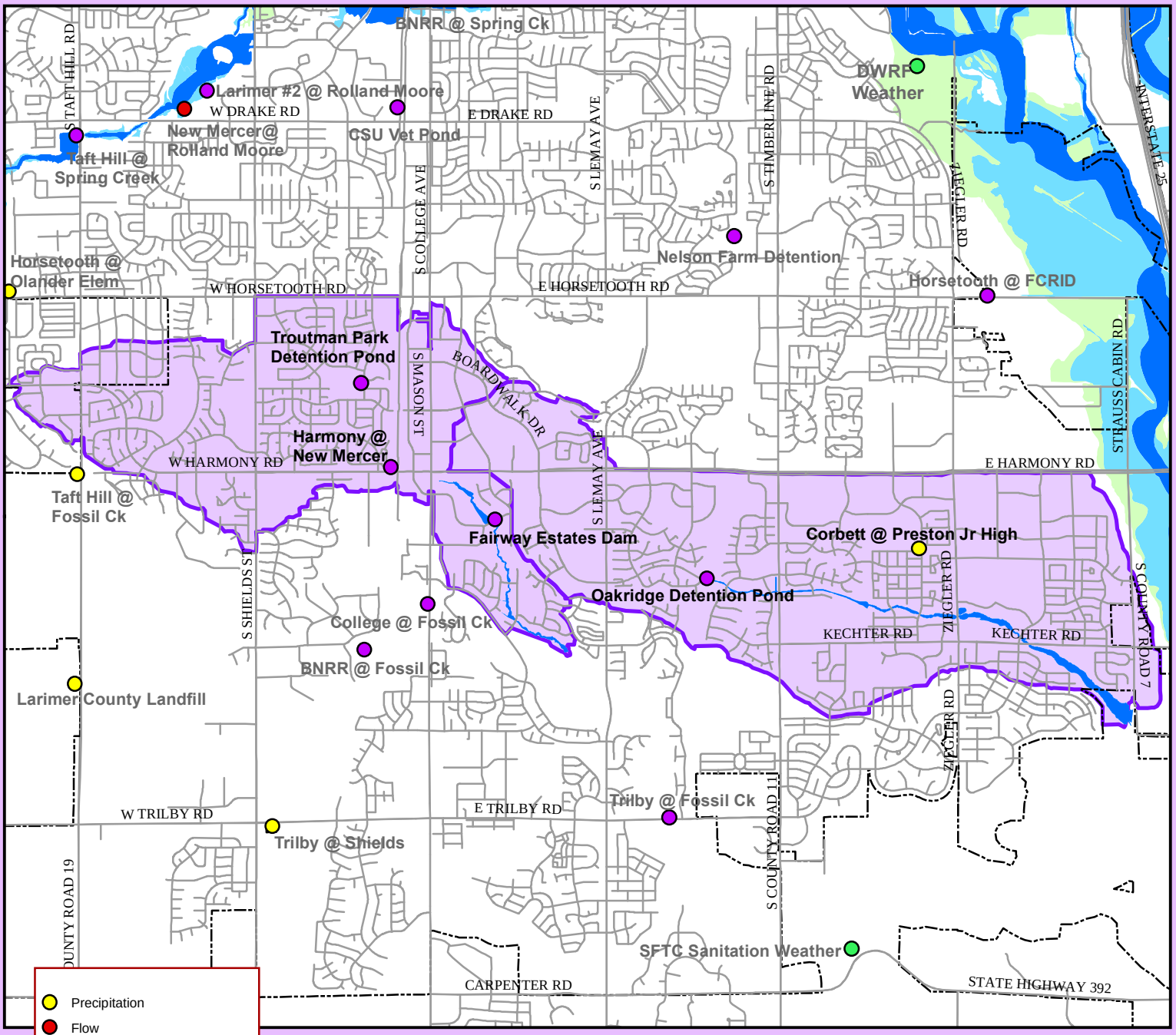


Fossil Creek Basin

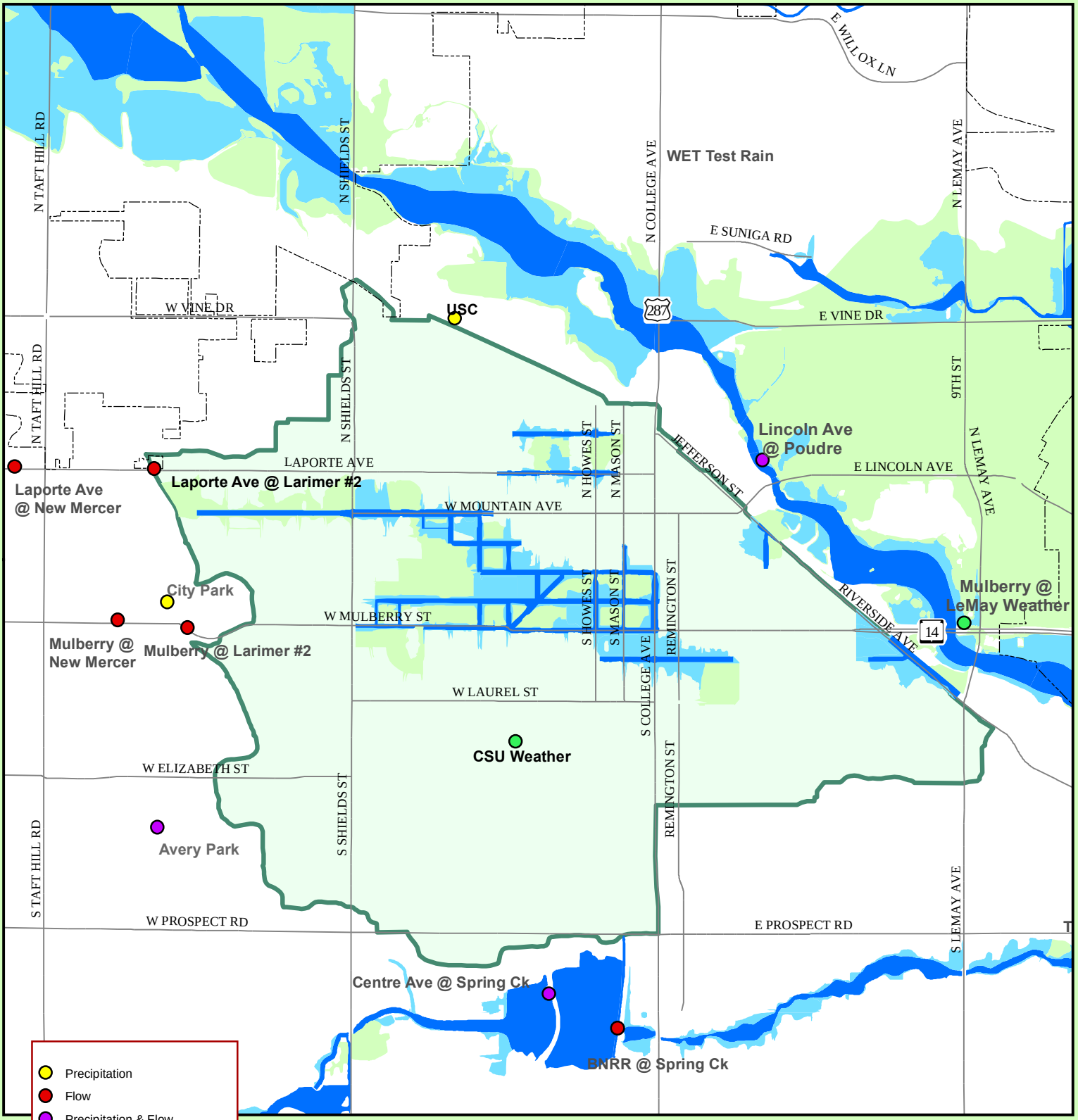


City of Fort Collins

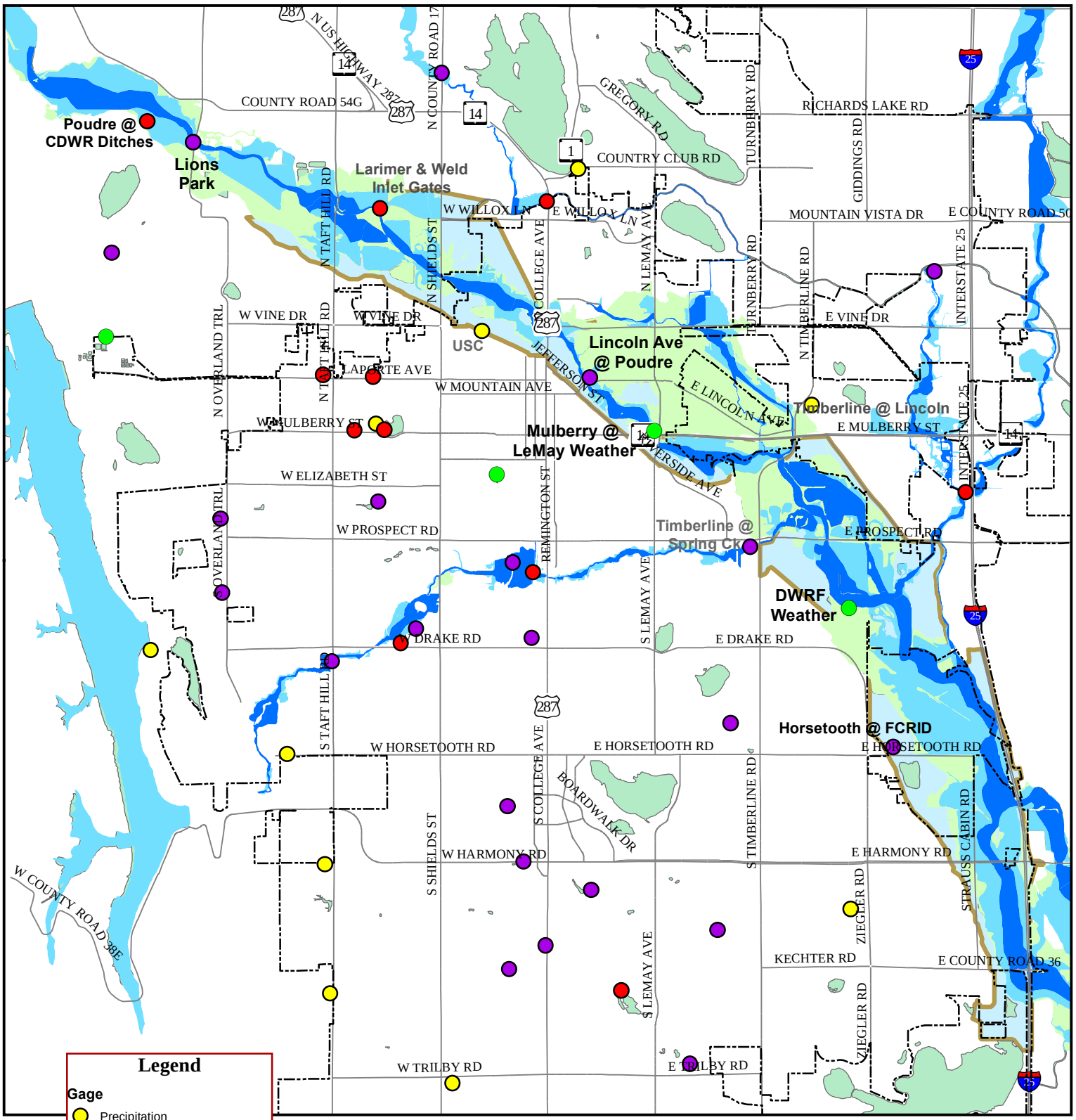
McClelland's/MailCreek Basin



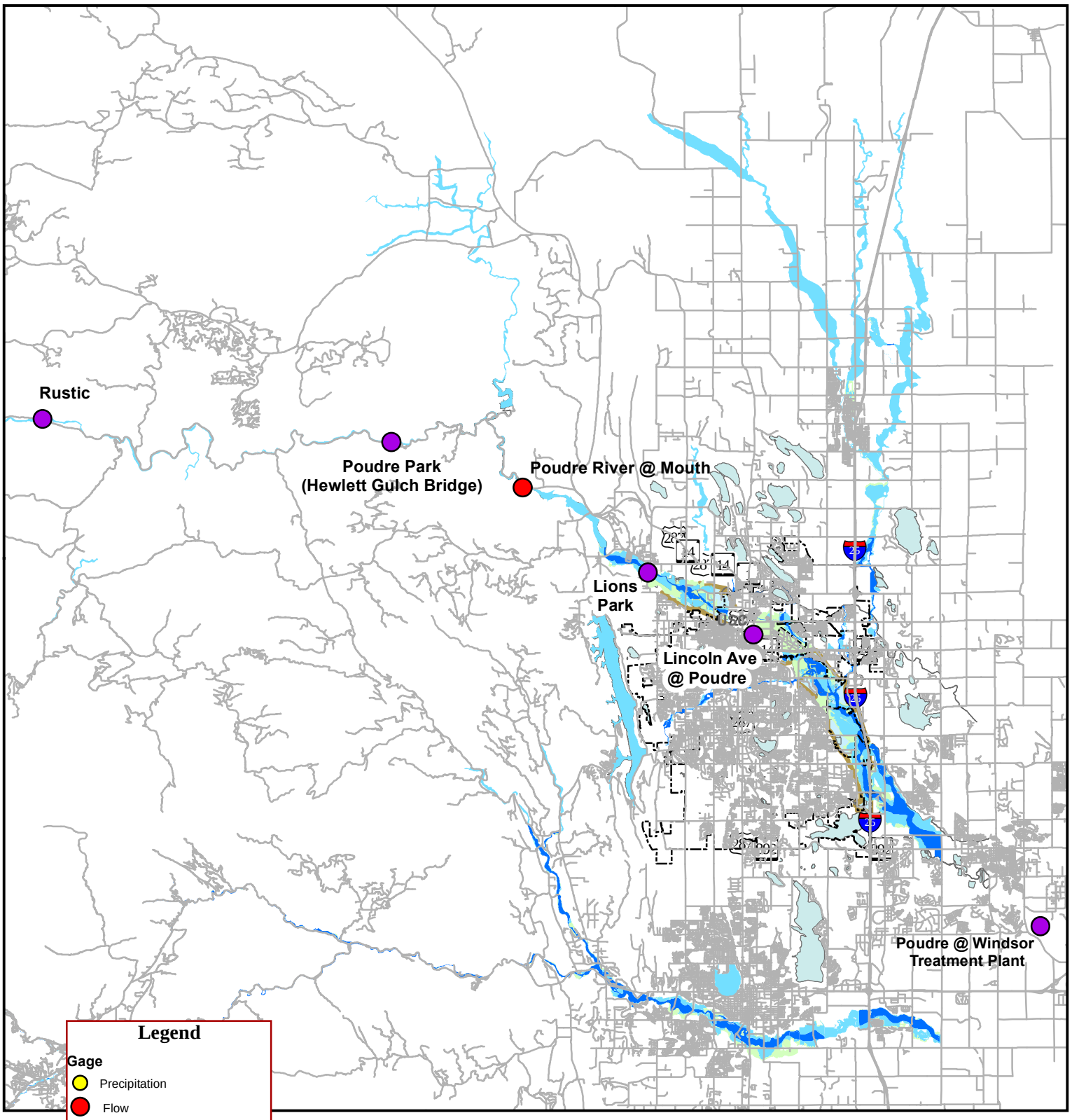
Old Town Basin



Poudre River Basin

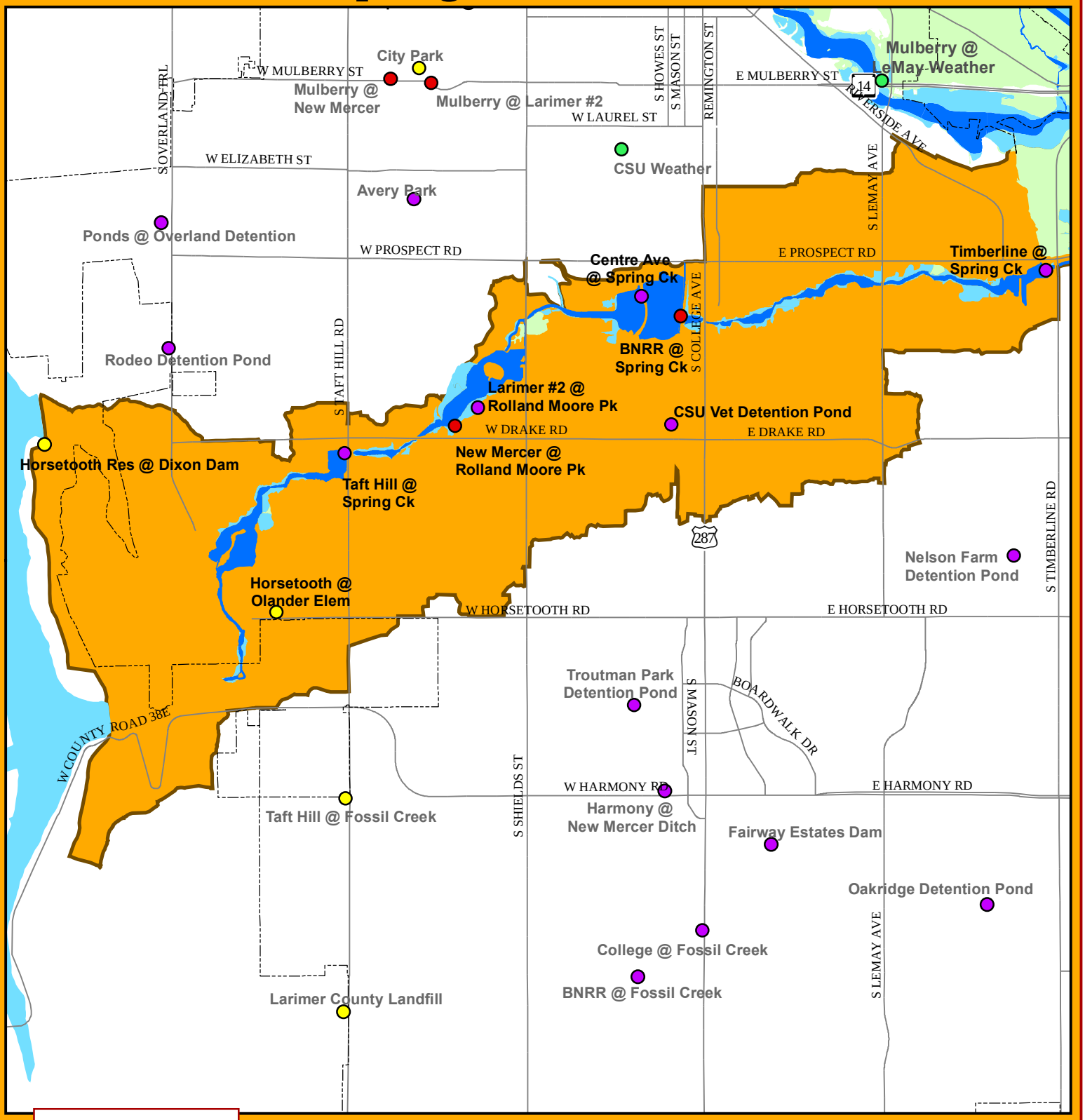


Upper and Lower Poudre River Basin



City of Fort Collins

Spring Creek Basin



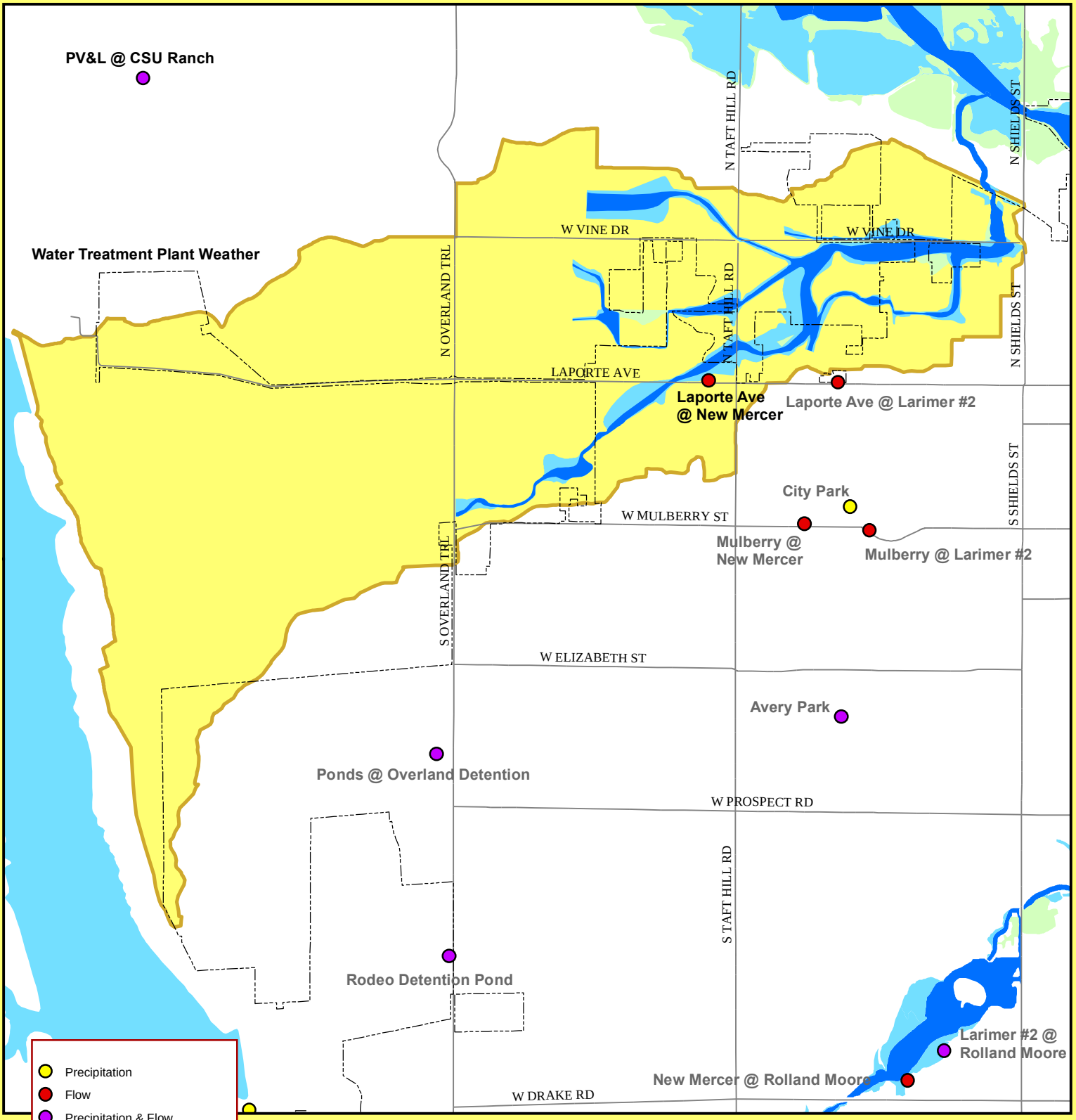
- Precipitation
- Flow
- Precipitation & Flow
- Weather
- City Limits
- Roads
- FEMA Moderate Risk Floodplains
- FEMA High Risk Floodplains
- FEMA Floodway
- WaterBodies

N

0 0.25 0.5 1 Miles

City of Fort Collins

West Vine Basin



APPENDIX F: REFERENCES

Atkins, D. (2006). A HISTORY OF COLORADO AVALANCHE ACCIDENTS, 1859–2006 [Workshop]. International Snow Science Workshop. https://arc.lib.montana.edu/snow-science/objects/issw-2006-287-297.pdf

A Citizen's Guide to Section 106 Review. 2016. Advisory Council on Historic Preservation. Accessed October 2019 from https://www.achp.gov/digital-library-section-106-landing/citizens-guide-section-106-review.

American Community Survey Statistics for Arapahoe County. 2014-2018. U.S. Census Bureau. 2020.

Centers for Disease Control and Prevention (CDC) 1 in 4 US Adults Live with a Disability. August 2018. https://www.cdc.gov/media/releases/2018/p0816-disability.html

Centers for Disease Control and Prevention (CDC) Social Vulnerability Index. 2018. Agency for Toxic Substances and Disease Registry. https://svi.cdc.gov/index.html.

Colorado Division of Fire Prevention and Control's Fire Incident Report System. 2009-2019. 2020.

Colorado Geological Survey (CGS). 2010. Ground Subsidence

Colorado State Demography Office. Department of Local Affairs. https://demography.dola.colorado.gov/.

Colorado Department of Labor and Employment. https://www.colorado.gov/cdle.

Colorado Division of Water Resources. Dam Safety Division. https://www.damsafety.org/colorado

Colorado Division of Homeland Security & Emergency Management. http://www.coemergency.com/.

Colorado Geological Survey. http://coloradogeologicalsurvey.org/.

Colorado State Hazard Mitigation Plan. 2018. Accessed November 2019 from https://www.colorado.gov/pacific/mars/colorado-natural-hazard-mitigation-plan.

Community Rating System (CRS). Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP). https://www.fema.gov/national-flood-insurance-program-community-rating-system.

Delgadillo, Natalie, 2018: With Shootings on the Rise, Schools Turn to Active Shooter Insurance, https://www.governing.com/topics/education/gov-cost-of-active-shooters-insurance.html, 2018.

Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies. Federal Emergency Management Agency. FEMA 386-3. 2003. https://www.fema.gov/media-library/assets/documents/4267

Doerr, E. (2019). PAST: Warming, drought, and pine beetle infestations in Larimer County, Colorado (Climate Tipping Points). Georgetown University. https://www.climatetippingpoints.com/places.html

Drought Impact Reporter. National Drought Mitigation Center. http://droughtreporter.unl.edu/.

EPA. (2016a). What Climate Change Means for Colorado (EPA 430-F-16-008). U.S. Environmental Protection Agency.

EPA. (2016b). What Climate Change Means for Wyoming (No. 430-F-16–052). https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-wy.pdf

Threatened and Endangered List. Colorado Parks and Wildlife. 2020. https://www.fws.gov/endangered/.

APPENDIX F: REFERENCES

Farm Service Agency. U.S. Department of Agriculture. 2020.

Federal Disaster Declarations. FEMA. 2020. https://www.fema.gov/disasters.

FEMA Community Lifelines Information Sheet – National Response Framework (Fourth Edition). U.S. Department of Homeland Security. 2019. Accessed September 2019 from https://www.fema.gov/media-library-data/1544469177002-251a503b3717f0d6d483bae6169f4106/Revised_Community_Lifelines_Information_Sheet.pdf

FEMA National Flood Layer.

FHWA. (2011). Context Sensitive Rock Slope Design Solutions (Publication No. FHWA-CFL/TD-11-002). Central Federal Lands Highway Division. https://www.fhwa.dot.gov/clas/ctip/context_sensitive_rock_slope_design/ch_6_1.aspx

Flood Hazard Mitigation Plan for Colorado. 2018. Colorado Water Conservation Board.

Flood Insurance Study: Larimer County, Colorado and Incorporated Areas. Federal Emergency Management Agency (FEMA). March 9, 2019.

GeoMAC Wildland Fire Support – Geospatial Multi-Agency Coordination Database. U.S. Geological Survey. 2020. https://www.geomac.gov/.

Getting Started: Building Support for Mitigation Planning. Federal Emergency Management Agency. FEMA 386-1. 2002.

Gonzalez, P., G.M. Garfin, D.D. Breshears, K.M. Brooks, H.E. Brown, E.H. Elias, A. Gunasekara, N. Huntly, J.K. Maldonado, N.J. Mantua, H.G. Margolis, S. McAfee, B.R. Middleton, and B.H. Udall, 2018: Southwest. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1101–1184. doi: 10.7930/NCA4.2018.CH25.

Hazard Mitigation Grant Program. 2019. FEMA. December 17, 2019. https://www.fema.gov/hazard-mitigation-grant-program.

Hazus 4.2. Federal Emergency Management Agency (FEMA). https://www.fema.gov/hazus.

Homeland Infrastructure Foundation-Level Data (HIFLD). 2019. https://hifld-geoplatform.opendata.arcgis.com/.

History Colorado. State of Colorado Register Listed Historic Properties. https://www.historycolorado.org/national-state-register-listed-properties

Larimer Community Resiliency Framework. February 2016.

Larimer County. (1999). Engineered Footings & Foundations (Community Development) [Building Codes]. https://www.larimer.org/building/codes/foundations

Larimer County Assessor's Office. 2020. Larimer County Comprehensive Plan. July 2019.

Larimer County Cascarta database. 2020.

MARPLOT for Windows, U.S. Environmental Protection Agency (EPA). https://www.epa.gov/cameo/marplot-software

APPENDIX F: REFERENCES

Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000. Federal Emergency Management Agency.

Multi-Jurisdictional Mitigation Planning. Federal Emergency Management Agency. FEMA 386-8. 2006.

NASA. (2019). NASA Global Landslide Catalog Points (Shapefile) (Global Landslide Catalog Downloadable Products Gallery). NASA Cooperative Open Online Landslide Repository (COOLR). https://maps.nccs.nasa.gov/arcgis/apps/MapAndAppGallery/index.html?appid=574f26408683485799d02e857e5d9521

National Environmental Policy Act and/or the National Historic Preservation Act Review – Grants. National Endowment for the Arts. 2019. https://www.arts.gov/grants-organizations/nepa-nhpa-review.

National Flood Insurance Program (NFIP). Federal Emergency Management Agency (FEMA). http://www.fema.gov/national-flood-insurance-program.

National Flood Insurance Program (NFIP) Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials. Federal Emergency Management Agency. FEMA 480. http://www.fema.gov/floodplain-management/floodplain-management-requirements.

National Institute of Building Sciences. *Natural Hazard Mitigation Saves*. 2017.

National Performance of Dams Program (NPDP). Stanford University. 2019. http://npdp.stanford.edu/.

National Register of Historic Places. National Park Service. https://www.nps.gov/subjects/nationalregister/index.htm.

National Response Center. http://nrc.uscg.mil/.

National Weather Service. Heat Index Program. www.weather.gov/os/heat/index.shtml

National Weather Service, Colorado Lightning Resource Page. https://www.weather.gov/pub/lightning

Robert T. Stafford Disaster Relief and Emergency Act. Public Law 93-288, as amended, 42 U.S.C. 5121-5207. June 2007.

State of Colorado Drought Mitigation and Response Plan. 2018. https://www.colorado.gov/pacific/mars/colorado-natural-hazard-mitigation-plan.

Storm Events Database. National Centers for Environmental Information (NCEI). National Oceanic and Atmospheric Administration (NOAA). 2020. https://www.ncdc.noaa.gov/stormevents/.

USACE National Inventory of Dams. 2019. https://nid-test.sec.usace.army.mil/ords/f?p=105:1:::::.

U.S. Department of Agriculture. Risk Management Agency. Larimer County Crop Losses, 2007-2019

U.S. Department of Agriculture. Secretary of Agriculture Disaster Declarations. 2012-2019.

U.S. Department of Justice. Federal Bureau of Investigation. Active Shooter Incidents in the United States in 2019. 2019. https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2019-042820.pdf/view

U.S. Drought Monitor. University of Nebraska-Lincoln. 2020. https://droughtmonitor.unl.edu/Data.aspx.

U.S. Fish and Wildlife (USFW) Environmental Conservation Online System (ECOS). 2019.

U.S. Geological Survey. 1998-2019. http://www.usgs.gov/.

APPENDIX F: REFERENCES

U.S. Seasonal Drought Outlook. National Weather Service Climate Prediction Center. National Oceanic and Atmospheric Administration. https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php.

Western Regional Climate Center. www.wrcc.dri.edu/.