APPENDIX A. ADOPTION RESOLUTIONS

The Douglas County and municipal adoption resolutions will be included in this appendix upon receipt of the Federal Emergency Management Agency (FEMA) Approval Pending Adoption (APA) status. Please refer to Section 8 (Planning Partnership) for additional information on plan adoption procedures.

This appendix also includes an example resolution to be submitted by Douglas County and participating jurisdictions authorizing adoption of the Douglas County Hazard Mitigation Plan Update.

Ref #2021099711, Date: 8/25/2021 10:40 AM, Pages: 1 of 1 ,
Electronically Recorded Douglas County, CO. Merlin Klotz, Clerk and Recorder

RESOLUTION NO. R-021-092

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF DOUGLAS COUNTY, COLORADO TO UPDATE THE DOUGLAS COUNTY LOCAL HAZARD MITIGATION PLAN

WHEREAS, Douglas County and its incorporated communities are exposed to flooding, wildfire, severe weather, and other natural hazards that increase the vulnerability to life, property, environment and the County's economy; and

WHEREAS, hazard mitigation planning will create an operational framework for reducing losses from these hazards; and

WHEREAS, hazard mitigation planning is a requirement of the Robert T. Stafford Disaster Mitigation Act of 2000 (DMA 2000) and continued eligibility for certain sources of federal mitigation funding programs that support loss reduction activities; and

WHEREAS, Douglas County has updated its Douglas County Local Hazard Mitigation Plan, in accordance with FEMA's DMA 2000 to remain eligible for future federal disaster funding; and

WHEREAS, Douglas County and its flood-prone incorporated communities participate in the National Flood Insurance Program (NFIP); and

WHEREAS, the Colorado Division of Emergency Management and Federal Emergency Management Agency, Region VIII, officials have reviewed the 2021 Douglas County Hazard Mitigation Plan and have approved said plan as meeting the requirements of the Stafford Act and Title 44 Code of Federal Regulations 201.6 for a local hazard mitigation plan.

NOW THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Douglas County, Colorado that Douglas County hereby adopts the Douglas County Hazard Mitigation Plan as the multi-hazard mitigation plan for Douglas County, Colorado.

PASSED AND ADOPTED this 24th day of August 2021, in Castle Rock, Douglas County, Colorado.

THE BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF DOUGLAS, COLORADO

BY: DocuSigned by: Lora L. Thomas A4003FF630E6444...

LORA L. THOMAS, Chair

ATTEST: DocuSigned by: Kristin Randlett 4D0E70F519BB420... DocuSigned by:

KRISTIN RANDLETT, Clerk to the Board

CITY OF CASTLE PINES
RESOLUTION NO. 21-48

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CASTLE PINES, COLORADO ADOPTING VOLUME I AND SECTION 9.4 OF VOLUME II OF THE DOUGLAS COUNTY LOCAL NATURAL HAZARD MITIGATION PLAN 2021 UPDATE

WHEREAS, to meet federal requirements for keeping hazard mitigation plans current, Douglas County staff has prepared the Douglas County Local Natural Hazard Mitigation Plan 2021 Update ("2021 Plan Update"); and

WHEREAS, in preparing the 2021 Plan Update, Douglas County ("County") partnered with the City of Castle Pines, City of Lone Tree, Town of Castle Rock, Town of Larkspur, and Town of Parker, as well as Centennial Water and Sanitation District, Denver Water, and Parker Water and Sanitation District to pool resources and eliminate redundant activities within a planning area that can have uniform risk exposure and shared vulnerability; and

WHEREAS, the 2021 Plan Update serves to reduce the entire County's vulnerability to natural hazards and thus reduce or eliminate long-term risk to people and property; and

WHEREAS, the 2021 Plan Update also serves as a tool to help decision makers direct mitigation activities and resources; and

WHEREAS, the 2021 Plan Update will help maintain Douglas County's and the City's continued eligibility for federal, state, and local disaster assistance and will earn credits for the National Flood Insurance Program's Community Rating System ("CRS") which provides for lower flood insurance premiums in CRS communities; and

WHEREAS, the City Council of the City of Castle Pines has reviewed the 2021 Plan Update, a copy of which is available on Douglas County's website at https://www.dcsheriff.net/sheriffs-office/divisions/emergency-management/local-natural-hazard-mitigation-plan/; and

WHEREAS, in furtherance of the public health, safety and welfare of the community, the City Council wishes to adopt the 2021 Plan Update, and will endeavor, in conjunction with Douglas County, to review and approve an updated Plan every five years hereafter.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CASTLE PINES, COLORADO:

Section 1. The City Council hereby: (a) approves the Douglas County Local Natural Hazard Mitigation Plan 2021 Update, in substantially the form presented to City Council and published on Douglas County's website; and (b) authorizes City staff to work with the County to resolve any minor technical issues and to revise the 2021 Plan Update accordingly.

Section 2. **Effective Date.** This Resolution shall take effect upon its approval by the City Council.

INTRODUCED, READ AND ADOPTED AT A REGULAR MEETING OF THE CITY COUNCIL OF THE CITY OF CASTLE PINES, COLORADO by a vote of 7 in favor, 0 against this 12th day of October, 2021**.**

BY:
DocuSigned by:
6E0C8EB279DC479...
Tera Stave Radloff, Mayor

ATTEST:
DocuSigned by:
AD03A3B02032499...
Tobi Duffey CMC, City Clerk

Approved as to form:
DocuSigned by:
5241DE99B8FF444...
Linda C. Michow, City Attorney

RESOLUTION NO. 2021-083

A RESOLUTION APPROVING THE 2021 DOUGLAS COUNTY NATURAL HAZARD MITIGATION PLAN

WHEREAS, natural hazards along the front range historically have caused significant disasters with losses of life and property and damage to natural resources; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, under the Federal Disaster Mitigation Act of 2000, the adoption of a natural hazard mitigation plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency ("FEMA") pre- and post-disaster mitigation grant programs; and

WHEREAS, a natural hazard mitigation plan been prepared by Douglas County and participating jurisdictions in accordance with FEMA requirements set forth at 44 C.F.R. 201.6; and

WHEREAS, as one of eight participating jurisdictions, the Town of Castle Rock has been actively involved in the FEMA-prescribed hazard mitigation planning process organized by Douglas County.

NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK AS FOLLOWS:

Section 1. The Town of Castle Rock hereby adopts the Douglas County Local Natural Hazard Mitigation Plan – 2021 Update (the "Plan") as an official plan conditioned upon approval by the Colorado Division of Homeland Security and Emergency Management and FEMA.

Section 2. The Town of Castle Rock will submit this Resolution to the Douglas County Office of Emergency Management and the FEMA Region VIII Office to enable the Plan's final approval by FEMA.

Section 3. This Resolution shall be in full force and effect upon obtaining final approval for the Plan from FEMA.

PASSED, APPROVED AND ADOPTED this 21st day of September, 2021, by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of 7 for and 0 against.

ATTEST:

Lisa Anderson, Town Clerk

TOWN OF CASTLE ROCK

Jason Gray, Mayor

Approved as to form:

Michael J. Hyman, Town Attorney

Approved as to content:

Norris W. Croom III, Fire Chief

TOWN OF CASTLE ROCK
SEAL
APRIL 14, 1881
COLORADO

DENVER WATER

Board Resolution

TITLE: RESOLUTION ADOPTING THE DOUGLAS COUNTY MULTI-HAZARD MITIGATION PLAN 2021 AS IT PERTAINS TO DENVER WATER.

ADOPTED AND APPROVED ON SEPTEMBER 22, 2021 BY THE CITY AND COUNTY OF DENVER ACTING BY AND THROUGH ITS BOARD OF WATER COMMISSIONERS

DocuSigned by:
Gary M. Reiff
A40AAFCF9D1D429...
Gary M. Reiff, Board President

DocuSigned by:
DEDE0A34B77B484...
James S. Lochhead, CEO/Manager

WHEREAS, Douglas County requested that the City and County of Denver, acting by and through its Board of Water Commissioners ("Denver Water"), as a property owner in Douglas County, participate in mitigation planning prescribed by the Disaster Mitigation Act of 2000 by assisting in the preparation of Douglas County's Multi-Hazard Mitigation Plan; and

WHEREAS, Denver Water recognizes the threat that natural hazards pose to people and facilities within Douglas County; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, the Colorado Department of Emergency Management and the Federal Emergency Management Agency (FEMA) Region VIII officials have reviewed the Douglas County Multi-Hazard Mitigation Plan and approved it contingent upon official adoption of the participating governing body; and

WHEREAS, Denver Water desires to comply with the requirements of the Disaster Mitigation Act where it specifically references Denver Water within the Douglas County Multi-Hazard Mitigation Plan; and

WHEREAS, Denver Water, in conjunction with Douglas County Government is recognizing the FEMA approval of the Douglas County Multi-Hazard Mitigation Plan, which inventories the threat that natural hazards pose to people and property within that community; and

WHEREAS, an adopted Multi-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

Adopted by the Board on September 22, 2021

WHEREAS, Denver Water has facilities within the Planning Area, and participated in the mitigation planning process to prepare this Multi-Hazard Mitigation Plan; and

NOW, THEREFORE, BE IT RESOLVED: The City and County of Denver, acting by and Through its Board of Water Commissioners, hereby adopts the Douglas County Multi-Hazard Mitigation Plan as it pertains to Denver Water with the changes shown in the Addendum.

Adopted by the Board on September 22, 2021

CENTENNIAL WATER AND SANITATION DISTRICT
BOARD COMMUNICATION

DATE	SUBJECT	AGENDA NUMBER
9/27/21	DOUGLAS COUNTY NATURAL HAZARD MITIGATION PLAN	CWSD 21-140

INITIATED BY JEFF CASE

STAFF RECOMMENDATION

Adopt Resolution No. 21-140 with the following actions:

- Adoption of Douglas County's Local Natural Hazard Mitigation Plan 2021 Update

BACKGROUND INFORMATION

Hazard mitigation planning for Douglas County and participating jurisdictions identifies ways to reduce risk from foreseeable natural and non-natural hazards that may impact the planning area. Douglas County prepared a hazard mitigation plan update in 2015, with five municipalities and one special purpose district in the County, participating as partners in the plan. The 2015 plan update was an update to the Denver Regional Natural Hazards Mitigation Plan, of which both the Town of Castle Rock and Douglas County participated. Since the completion of the 2015 plan update, the County has continued to experience growth in residential, commercial, and infrastructure development.

To address these changes, and to meet federal requirements for keeping hazard mitigation plans current, Douglas County has completed the *2021 Douglas County Local Hazard Mitigation Plan Update* (HMP, Plan or Update). In preparing the 2021 Plan, Douglas County partnered with the City of Castle Pines, Town of Castle Rock, Town of Larkspur, City of Lone Tree, and Town of Parker, as well as Centennial Water and Sanitation District, Denver Water, and Parker Water and Sanitation. Such multi-jurisdictional planning allows these planning partners to pool resources and eliminate redundant activities within a planning area that can have uniform risk exposure and vulnerabilities.

The 2021 Plan reduces risk for those who live, work, and visit within the Douglas County planning area. The resources and background information in the 2021 Plan are applicable across the County, and the Plan's goals and recommendations lay groundwork for local mitigation activities and partnerships.

CWSD participated in this planning effort as part of our involvement in the Douglas County Emergency Management Group which meets to discuss current risks and resources to manage those risks throughout the County. These efforts are a function of the Douglas County Office of Emergency Management. As implied by the Plan's title, this effort addresses risks posed by natural events such as severe weather, flooding, wildfires and earthquakes that may result in significant damage to a local or regional area. Adoption of the Plan by FEMA is also an important step in the event a severe event might lead to requests for resources or funding.

JK

FINANCIAL INFORMATION

The Douglas County Local Natural Hazard Mitigation Plan is a planning document that does not require any financial commitment by CWSD. Risks and identified mitigation measures may be considered in the development of annual budgets.

SS

CENTENNIAL WATER AND SANITATION DISTRICT

RESOLUTION NO. 21-140

WHEREAS, Centennial Water and Sanitation District has gathered information prepared in the Douglas County Local Natural Hazard Mitigation Plan 2021 Update;

WHEREAS, the Douglas County Local Natural Hazard Mitigation Plan 2021 Update has been prepared in accordance with FEMA requirements at 44C.F.R. 201.6;

WHEREAS, the Centennial Water and Sanitation District is a local unit of government, and in cooperation with Douglas County, has afforded the citizens an opportunity to comment and provide input on the Plan and the actions in the Plan; and

WHEREAS, Centennial Water and Sanitation District has reviewed the Plan and affirms that, in cooperation with Douglas County, the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED that Centennial Water and Sanitation District hereby adopts the Douglas County Local Natural Hazard Mitigation Plan 2021 Update, as approved by FEMA, as this jurisdiction's Multi-Hazard Mitigation Plan, and resolves to act in accordance with the Plan.

Adopted this 27th day of September, 2021

Ayes 4 Nays _____ Abstained _____ Absent 1

Certified by _____, Secretary

Town of LARKSPUR
Colorado

TOWN OF LARKSPUR
RESOLUTION NO. 2021-11

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF LARKSPUR ADOPTING A MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Town of Larkspur, Colorado ("Town") is a home rule municipality duly organized and existing under the Constitution of the State of Colorado and the Home Rule Charter of the Town; and

WHEREAS, the Town with the assistance from (Chrissie Angeletti, JD Tetra Tech), has gathered information and prepared the 2021 Douglas County Hazard Mitigation Plan ("Plan"); and,

WHEREAS, the 2021 Douglas County Hazard Mitigation Plan attached hereto as Exhibit A and incorporated herein, has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the Town is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the Town Council of the Town of Larkspur has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF LARKSPUR, COLORADO, AS FOLLOWS:

Section 1. The Town of Larkspur hereby adopts the 2021 Douglas County Hazard Mitigation Plan as approved by FEMA, attached hereto as Exhibit A and incorporated by reference, as the Town of Larkspur's Multi-Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

INTRODUCED, PASSED AND ADOPTED AT A REGULAR MEETING OF THE TOWN COUNCIL OF THE TOWN OF LARKSPUR THIS 19TH DAY OF AUGUST 2021.

TOWN OF LARKSPUR ★ OFFICAL SEAL ★ STATE OF COLORADO

Votes Approved: 6
Votes Opposed: 0
Abstained: 0
Absent: 1

ATTEST:

Sean Hogan
Town Clerk

TOWN COUNCIL OF THE TOWN OF LARKSPUR, COLORADO

Isaac Levy
Mayor

RESOLUTION NO. 21-34

A RESOLUTION ADOPTING THE DOUGLAS COUNTY LOCAL NATURAL HAZARD MITIGATION PLAN 2021 UPDATE

WHEREAS, to meet federal requirements for keeping hazard mitigation plans current, Douglas County staff has prepared the Douglas County Local Natural Hazard Mitigation Plan 2021 Update ("2021 Plan Update"); and

WHEREAS, in preparing the 2021 Plan Update, Douglas County partnered with the City of Lone Tree, City of Castle Pines, Town of Castle Rock, Town of Larkspur, and Town of Parker, as well as Centennial Water and Sanitation District, Denver Water, and Parker Water and Sanitation District to pool resources and eliminate redundant activities within a planning area that can have uniform risk exposure and shared vulnerability; and

WHEREAS, the 2021 Plan Update serves to reduce the entire County's vulnerability to natural hazards and thus reduce or eliminate lone-term risk to people and property; and

WHEREAS, the 2021 Plan Update also serves as a tool to help decision makers direct mitigation activities and resources; and

WHEREAS, the 2021 Plan Update will help maintain Douglas County's and the City's continued eligibility for federal, state, and local disaster assistance and will earn credits for the National Flood Insurance Program's Community Rating System ("CRS") which provides for lower flood insurance premiums in CRS communities; and

WHEREAS, the City Council of the City of Lone Tree has reviewed the 2021 Plan Update, a copy of which is available on the City's website at cityoflonetree.com; and

WHEREAS, in furtherance of the public health, safety and welfare of the community, the City Council wishes to adopt the 2021 Plan Update, and will endeavor, in conjunction with Douglas County, to review and approve an updated Plan every five years hereafter.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LONE TREE, COLORADO:

Section 1. The Douglas County Local Natural Hazard Mitigation Plan 2021 Update, as presented to City Council and as published on the City's website, is hereby adopted.

Section 2. This Resolution is effective upon adoption.

APPROVED AND ADOPTED THIS 20th DAY OF JULY 2021.

CITY OF LONE TREE

Jacqueline A. Millet, Mayor

ATTEST:

City Clerk

RESOLUTION NO. 21-050, Series of 2021

TITLE: A RESOLUTION TO APPROVE THE DOUGLAS COUNTY LOCAL MITIGATION PLAN, COMPREHENSIVE 2021 UPDATE, VOLUMES I AND II

WHEREAS, the Douglas County Office of Emergency Management, with the assistance of the Town of Parker, has gathered information and prepared the *Douglas County Local Hazard Mitigation Plan, Comprehensive Update 2021*;

WHEREAS, the *Douglas County Local Hazard Mitigation Plan, Comprehensive Update 2021* (the "Plan") has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6;

WHEREAS, the Town of Parker, Colorado, in conjunction with Douglas County, has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, Douglas County, Colorado, has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF PARKER, COLORADO, AS FOLLOWS:

Section 1. The Town Council of the Town of Parker hereby approves the *Douglas County Local Hazard Mitigation Plan, Comprehensive Update 2021.* The Plan is available through a link on the Town's website at www.parkeronline.org.

RESOLVED AND PASSED this 6th day of December, 2021.

TOWN OF PARKER, COLORADO

Jeff Toborg, Mayor

ATTEST:

Chris Vanderpool, Town Clerk

RESOLUTION 2021-10

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE PARKER WATER AND SANITATION DISTRICT ADOPTING THE DOUGLAS COUNTY LOCAL NATURAL HAZARD MITIGATION PLAN 2021 UPDATE

WHEREAS, the Parker Water and Sanitation District with the assistance from Tetra Tech Engineering, has gathered information prepared in the Douglas County Local Natural Hazard Mitigation Plan 2021 Update;

WHEREAS, the Douglas County Local Natural Hazard Mitigation Plan 2021 Update has been prepared in accordance with FEMA requirements at 44C.F.R. 201.6;

WHEREAS, the Parker Water and Sanitation District is a local unit of government that has afforded the citizens an opportunity to comment and provide input on the Plan and the actions in the Plan; and

WHEREAS, the Parker Water and Sanitation District has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by Board of Directors of the Parker Water and Sanitation District hereby adopts the Douglas County Local Natural Hazard Mitigation Plan 2021 Update, as approved by FEMA, as this jurisdiction's Multi-Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this 23rd day of September, 2021, at the meeting of the Board of Directors of the Parker Water and Sanitation District.

PARKER WATER AND SANITATION DISTRICT

By: _____
Darcy Beard, President

ATTEST:

By: _____ Secretary

APPENDIX B. PARTICIPATION MATRIX

The matrix in Appendix B is intended to give a broad overview of FEMA, the State of Colorado, county, municipal and stakeholder personnel that participated in the Douglas County HMP update planning process. Meeting attendees and input provided are also included. All participants were encouraged to attend the kick-off meeting and mitigation workshop. During the planning process the consultant contacted each participant to offer support, explain the process, and facilitate the submittal and review of critical documents.

The participating jurisdictions agreed to abide by the Planning Partner Expectations and Planning Committee Guidelines which established a Local Planning Committee. Letters of Intent to Participate indicating jurisdictional planning efforts are included in this appendix. The Local Planning Committee served as the core of the working group. Participation is defined as having input to the hazard analysis (providing critical facility, hazard event, vulnerability data), and as having participated in the mitigation workshop or alternate annex meetings as described in the HMP for the purpose of creating a mitigation strategy to be included in each municipalities annex in Section 9. A list of participating jurisdictions and representatives is found in Table B-1.

A Strengths, Weakness, Obstacles and Opportunities exercise (SWOO) was completed by the planning partnership. Participants were asked to fill out the SWOO for each of the hazards of concern for the 2021 HMP update. The results were compiled and presented to the planning partnership at the risk assessment presentation.

Additionally, the Local Planning Committee completed a capability exercise and were asked to review and rank each statement for the planning area. The primary objective for these exercises was to inform the identification and prioritization of actions that could increase the core capabilities of the planning partnership, and to identify limitations in capability to implement mitigation actions. Both exercises and a summary of the results can be found as attachments to Appendix B.

Table B-1. Participation Matrix

Attendee	Title/Position	Planning Partnership Kick-off Meeting July 8, 2020	Local Planning Committee Meeting #1 July 22, 2020	Local Planning Committee Meeting #2 August 19, 2020	Local Planning Committee Meeting #3 September 16, 2020	Local Planning Committee Meeting #4 October 28, 2020	Risk Assessment - Public Workshop November 18, 2020	Planning Participants Mitigation Strategy Workshop January 6, 2021	Local Planning Committee Meeting #5 January 27, 2021	Solicit Public Comment on Draft Plan – Public Workshop February 10, 2021	Steering Committee Member	Designated Project Point of Contact
DOUGLAS COUNTY												
Tim Johnson	Director Office of Emergency Management	X	X	X	X	X	X	X	X	X	X	X
Lisa Goudy	Safety and Security Coordinator	X	X	X	X	X	X	X	X	X	X	X
Tim Hallmark	Director of Facilities, Fleet, and Emergency Support Services			X	X	X		X	X		X	
Joel Hanson	GIS Services and Land Solutions		X		X						X	
Zachary Humbles	Special Projects Engineer	X	X		X			X	X		X	
Steve Koster	Assistant Director of Planning Services	X	X		X	X		X			X	
Carrie Groce	Senior Communications Specialist		X				X	X	X		X	
Sean Owens	Special Projects Manager, Public Works				X			X	X		X	
Wendy Holmes	Director, Communications and Public Affairs				X				X		X	
Steve Brueske	Vice Chairman, Douglas County Public Safety Advisory Committee	X	X	X	X							
Christine Duffy	Appointed Public Trustee	X	X	X		X						
Tom Cribley	Volunteer, Douglas County Search and Rescue		X	X								
CENTENNIAL WATER & SANITATION DISTRICT – HIGHLANDS RANCH												
Jeff Case	Director of Public Works	X	X	X	X	X		X	X	X	X	X
Emmalyn White		X	X	X	X	X		X			X	

Attendee	Title/Position	Planning Partnership Kick-off Meeting July 8, 2020	Local Planning Committee Meeting #1 July 22, 2020	Local Planning Committee Meeting #2 August 19, 2020	Local Planning Committee Meeting #3 September 16, 2020	Local Planning Committee Meeting #4 October 28, 2020	Risk Assessment - Public Workshop November 18, 2020	Planning Participants Mitigation Strategy Workshop January 6, 2021	Local Planning Committee Meeting #5 January 27, 2021	Solicit Public Comment on Draft Plan – Public Workshop February 10, 2021	Steering Committee Member	Designated Project Point of Contact
CITY OF CASTLE PINES												
Larry Nimmo	Director of Public Works					X		X				X
Sam Bishop	Director of Community Development	X	X	X	X			X			X	X
CITY OF LONE TREE												
Bill Medina	Administrative Services Director	X	X	X	X	X		X			X	X
Ron Pinson	Commander							X	X	X	X	X
DENVER WATER												
Rebecca Franco	Emergency Management Manager	X	X	X	X	X		X			X	X
MILE HIGH FLOOD CONTROL DISTRICT – *ELECTED NOT TO PARTICIPATE*												
Holly Piza	Engineering Services Manager			X								
Kevin Stewart	Engineering Services Manager	X	X									
PARKER WATER & SANITATION DISTRICT												
Angelo Carrieri	Maintenance Superintendent	X	X	X		X		X	X		X	X
TOWN OF CASTLE ROCK												
Norris Croom	Fire Chief							X				
Craig Rollins	Assistant Fire Chief	X	X	X		X		X	X		X	X
David Vandellen	Castle Rock, Stormwater Manager	X	X	X	X			X	X		X	
TOWN OF LARKSPUR												

Attendee	Title/Position	Planning Partnership Kick-off Meeting July 8, 2020	Local Planning Committee Meeting #1 July 22, 2020	Local Planning Committee Meeting #2 August 19, 2020	Local Planning Committee Meeting #3 September 16, 2020	Local Planning Committee Meeting #4 October 28, 2020	Risk Assessment - Public Workshop November 18, 2020	Planning Participants Mitigation Strategy Workshop January 6, 2021	Local Planning Committee Meeting #5 January 27, 2021	Solicit Public Comment on Draft Plan – Public Workshop February 10, 2021	Steering Committee Member	Designated Project Point of Contact
Randal Johnson	Fire Marshal	X	X	X	X	X		X			X	X
Marvin Cardenas	Mayor							X				
Sean Hogan	Town Clerk							X	X		X	X
TOWN OF PARKER												
Gregg Epp	Sergeant, Parker Police Department			X	X			X			X	X
Andrew Coleman	Commander, Parker Police Department		X			X		X			X	

Douglas County HMP Capability Exercise

1. Are you answering this survey on behalf of the County or one of the following participating municipalities?

- ◯ Douglas County
- ◯ City of Castle Pines
- ◯ City of Lone Tree
- ◯ Town of Castle Rock
- ◯ Town of Larkspur
- ◯ Town of Parker

2. Please rank the following statements:

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Emergency management is provided by a unified authority or program.	○	○	○	○	○
Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.	○	○	○	○	○
There is a good understanding of the risk posed by hazards the planning area is susceptible to.	○	○	○	○	○
Emergency response functions for the County/ municipality are clearly defined and are effective.	○	○	○	○	○
Members of the public know where to find information about hazards and risk.	○	○	○	○	○
Areas that provide natural resource protection are identified and protected.	○	○	○	○	○
Existing flood control systems are effective and well maintained.	○	○	○	○	○
Roles and responsibilities for emergency management within the County/ municipality clearly defined.	○	○	○	○	○

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
County/ municipality staff are knowledgeable about hazards and their impacts and are willing to share that knowledge with the public.	○	○	○	○	○
The capability to assess and mitigate risk from natural hazards is high.	○	○	○	○	○
County/ municipality staff members with emergency management functions are adequately trained.	○	○	○	○	○
Citizens have a good understanding of natural hazard exposure and risk.	○	○	○	○	○
The funding to support risk reduction within the planning area is adequate.	○	○	○	○	○
Strong collaboration and coordination exist between the County/ municipality, neighboring jurisdictions, the County and state and federal agency partners.	○	○	○	○	○
Appropriate and timely warning systems are in place.	○	○	○	○	○
The County/ municipality currently has a variety of regulatory and non-regulatory strategies to reduce risk.	○	○	○	○	○

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
The County/ municipality currently has adopted policies that encourage development to be located outside of high-risk areas.	○	○	○	○	○
Risk from natural hazards within the planning area is adequately mapped and regulated.	○	○	○	○	○
There is strong public support for risk reduction within the planning area.	○	○	○	○	○
The planning area is prepared for the probable impacts on natural hazards due to the impacts from a changing climate.	○	○	○	○	○

3. Please rank the following statements:

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
Coordinated public outreach regarding risk from all hazards convey clear, consistent messaging to the public.	○	○	○	○	○
The planning area risk management programs are fair and equitable.	○	○	○	○	○
Information on flood insurance is readily available within the planning area.	○	○	○	○	○
There is political support for risk management within the planning area.	○	○	○	○	○
All relevant stakeholders are engaged in the County's/ municipality's risk management efforts.	○	○	○	○	○
The County/ municipality development regulations for new development within identified hazards zones are adequate to address that risk.	○	○	○	○	○
There is a coordinated program to maintain drainage systems free of debris.	○	○	○	○	○

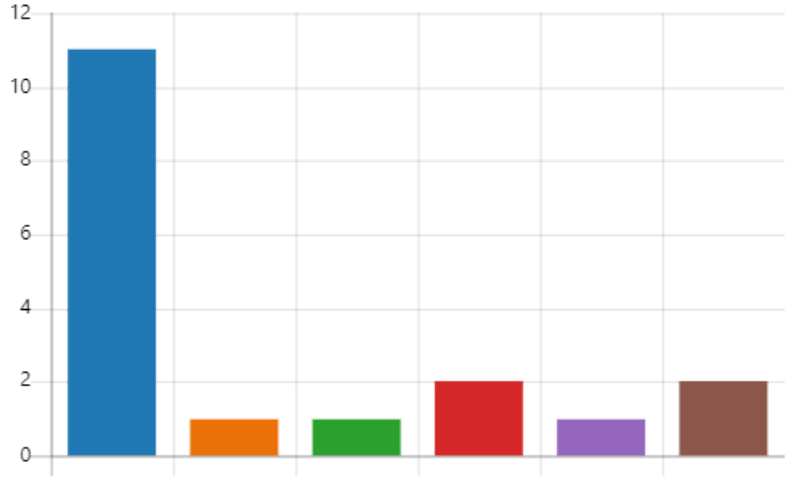
	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
The enforcement of Codes and Standards within the planning area is strong.	◯	◯	◯	◯	◯
As a citizen of the County/ municipality, I feel confident that I am prepared for the impacts from any natural hazard that my impact my property.	◯	◯	◯	◯	◯
Real Estate professionals adequately disclose risk exposure from natural hazards at the time of sale of real property.	◯	◯	◯	◯	◯

Douglas County HMP Capability Exercise

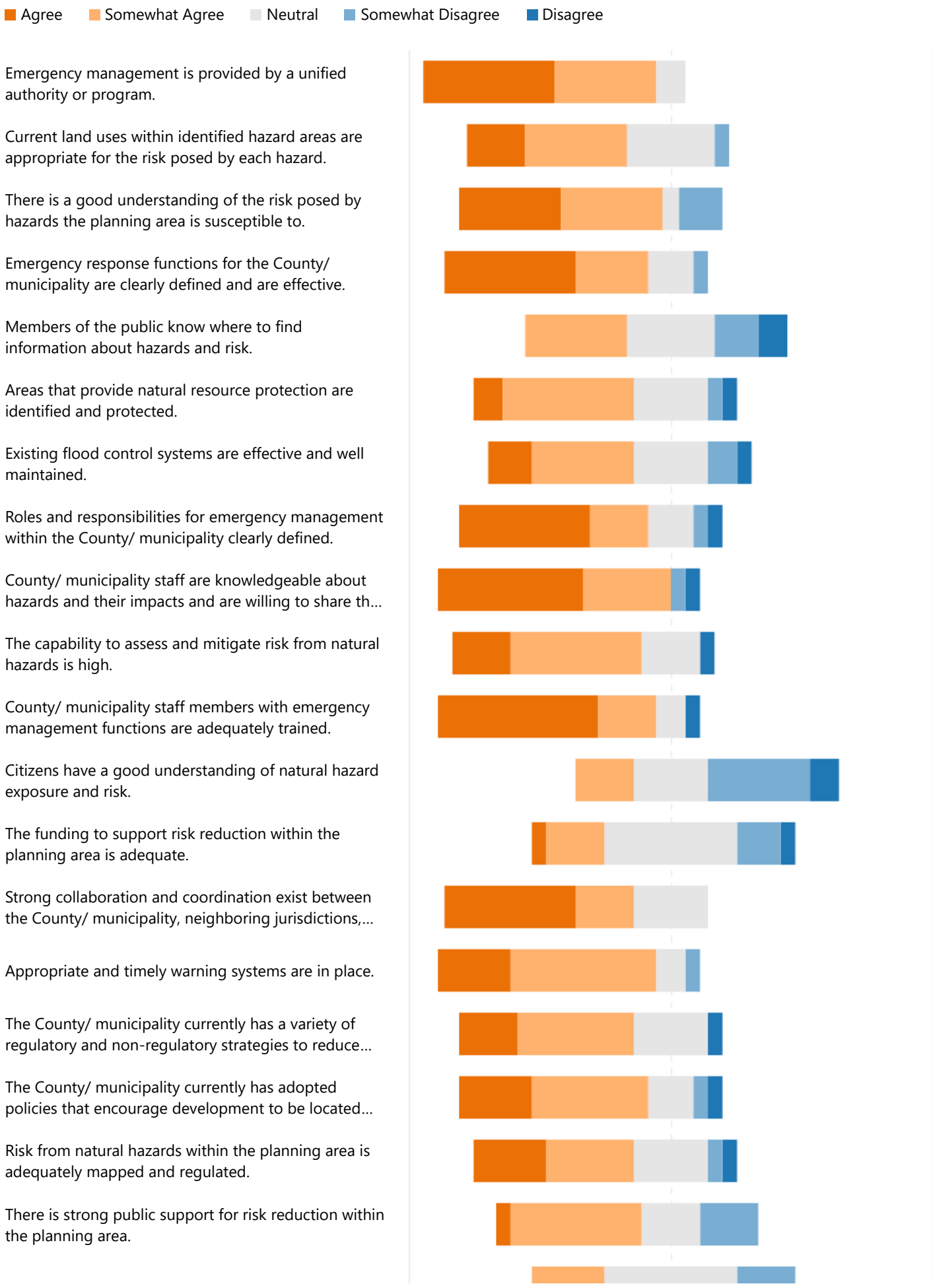
18	05:43	Active
Responses	Average time to complete	Status

1. Are you answering this survey on behalf of the County or one of the following participating municipalities?

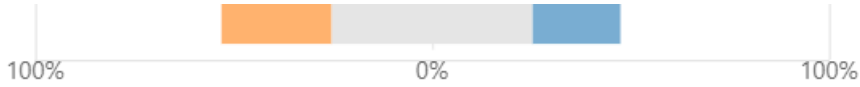
Douglas County	11
City of Castle Pines	1
City of Lone Tree	1
Town of Castle Rock	2
Town of Larkspur	1
Town of Parker	2



2. Please rank the following statements:



The planning area is prepared for the probable



3. Please rank the following statements:

Hazards of Concern

Rank hazards depending on your perception of risk the hazard poses to the County.

1. Animal Disease Outbreak

2. Avalanche

3. Dam Failure

4. Drought

5. Earthquake

6. Epidemic / Pandemic

7. Erosion & Deposition

8. Expansive Soils & Heaving Bedrock

9. Extreme Heat

10. Flooding

11. Hail

12. Hazardous Materials Release

13. Landslide / Mud / Debris Flows / Rockfall / Rockslide

14. Severe Wind

15. Sinkholes / Subsidence / Abandoned Mine

16. Thunderstorm / Lightening

17. Tornado

18. Wildfire

19. Others

Hazards of Concern

26	08:47	Active
Responses	Average time to complete	Status

1. Animal Disease Outbreak

25
Responses

★★☆☆☆
2.20 Average Rating

2. Avalanche

25
Responses

★★☆☆☆
1.56 Average Rating

3. Dam Failure

25
Responses

★★☆☆☆
2.44 Average Rating

4. Drought

25
Responses

★★★★☆
4.28 Average Rating

5. Earthquake

25
Responses


1.84 Average Rating

6. Epidemic / Pandemic

25
Responses


4.52 Average Rating

7. Erosion & Deposition

25
Responses


2.56 Average Rating

8. Expansive Soils & Heaving Bedrock

25
Responses


2.28 Average Rating

9. Extreme Heat

25
Responses


3.20 Average Rating

10. Flooding

25
Responses


3.64 Average Rating

11. Hail

25
Responses


4.28 Average Rating

12. Hazardous Materials Release

25
Responses


3.60 Average Rating

13. Landslide / Mud / Debris Flows / Rockfall / Rockslide

25
Responses


2.52 Average Rating

14. Severe Wind

25
Responses


3.36 Average Rating

15. Sinkholes / Subsidence / Abandoned Mine

25
Responses


1.96 Average Rating

16. Thunderstorm / Lightening

25
Responses


3.96 Average Rating

17. Tornado

25
Responses

★★★☆☆
3.36 Average Rating

18. Wildfire

25
Responses

★★★★★
4.68 Average Rating

19. Others

8
Responses

Latest Responses
"*Blizzard*"

Douglas County Strengths, Weaknesses, Obstacles, and Opportunities (SWOO)

The purpose of the Strengths, Weaknesses, Obstacles, and Opportunities (SWOO) is to identify mitigation strategies and capabilities that will meet the goals and objectives of the plan update. It is also used to develop potential mitigation actions for the participating jurisdictions.

-Strengths – what we do well; what we can capitalize on
-Weaknesses – what could we do better; what do we need to strengthen
-Obstacles – things that stand in the way, and either prevents you from doing something or something that needs to be overcome (e.g. regulatory, geographical, environmental, financial)
-Opportunities – used to develop mitigation strategies.

For the current plan, a total of 10 natural hazards and 1 non-natural hazard of concern are identified as significant hazards affecting the entire planning area:

1. Wildfire
2. Drought
3. Severe Weather: Winter Weather / Extreme Heat
4. Severe Storm: Thunderstorm / Lightening / Hail
5. Flooding
6. Tornado / High Wind
7. Dam Failure
8. Soils: Expansive Soils / Erosion & Deposition / Landslide / Subsidence & Sinkholes
9. Epidemic / Pandemic
10. Animal Disease & Pest Outbreak
11. Hazardous Materials Release - Transportation

Please use this survey to identify Strengths, Weaknesses, Obstacles, and Opportunities for each hazard.

Wildfire

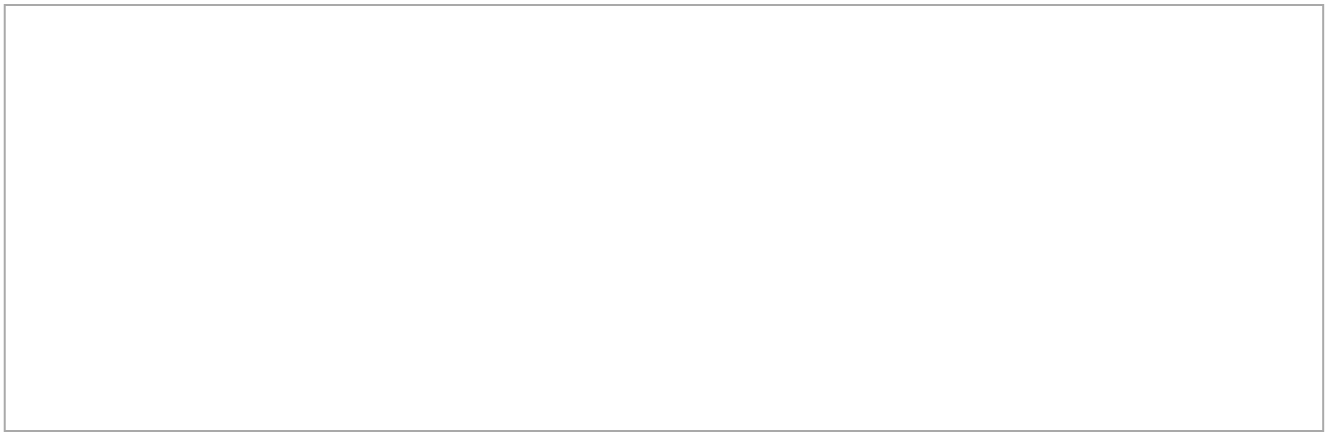
Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

1. Strengths

2. Weaknesses

3. Obstacles

4. Opportunities



Drought

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

5. Strengths

6. Weaknesses

7. Obstacles

8. Opportunities

Severe Weather: Winter Weather / Extreme Heat

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

9. Strengths

10. Weaknesses

11. Obstacles

12. Opportunities

Severe Storm : Thunderstorm / Lightening / Hail

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

13. Strengths

14. Weaknesses

15. Obstacles

16. Opportunities

Flooding

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

17. Strengths

18. Weaknesses

19. Obstacles

20. Opportunities

Tornado / High Wind

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

21. Strengths

22. Weaknesses

23. Obstacles

24. Opportunities

Dam Failure

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

25. Strengths

26. Weaknesses

27. Obstacles

28. Opportunities

Soils: Expansive Soils / Erosion & Deposition / Landslide / Subsidence & Sinkholes

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

29. Strengths

30. Weaknesses

31. Obstacles

32. Opportunities

Epidemic / Pandemic

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

33. Strengths

34. Weaknesses

35. Obstacles

36. Opportunities

Animal Disease & Pest Outbreak

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

37. Strengths

38. Weaknesses

39. Obstacles

40. Opportunities

Hazardous Material Release - Transportation

Please identify any Strengths, Weaknesses, Obstacles, or Opportunities regarding County and/or plan participant capabilities to mitigating hazard impacts.

41. Strengths

42. Weaknesses

43. Obstacles

44. Opportunities

DOUGLAS COUNTY HMP SWOO RESULTS				
Wildfire				
ID	Strengths1	Weaknesses1	Obstacles1	Opportunities1
1	DC4, DC8, DC1	DC3, DC2	DC1,DC3	DC5, DC6, DC7
2	warning, outreach and education, planning dc7, dc8	dc2 dc4 dc7	dc6 dc7	dc6 dc8 dc7
3	DC1, DC3, DC5, DC7, DC8	DC4, DC7	DC7	DC7, DC8, DC1
4	Outreach and Education Warning Planning	Entity Coordination- USFS, State	DC7	DC7 DC8 DC1
5	Entity coordination in the area is strong.	Community awareness of wildfire danger in many areas of the front range is not very widespread.	Wildfire fighting resources are in high demand locally, regionally and nationally during fire season.	Educate homeowners on simple things they can do to reduce risk on their property.
6	Planning DC 5, Warning DC 1,	Outreach and education DC 3	Data collection DC 2, Mitigate structures and protect lives DC 4	Codes and standards DC 6
7		Warning. More education in regard to current systems in place for notifications		
8	communication with SMFR on fire mitigation techniques.	proximity to dense vegetation, topography, altitude, wind, etc.	lack of staff, educational resources, getting the word out	be proactive
9	- strong initial incident response and management - county-based mitigation crew	- multiple communication and dispatch centers without integrated cad-to-cad systems - multiple neighborhoods that are at risk for wildland fire incident	- mitigation on private property - proprietary dispatch software systems (cad-to-cad) - agency reluctance to grant access to cad-to-cad - no adopted wildland-urban interface standard	- adoption of the International wildland urban interface (iWUI) standard - development of a regional cad-to-cad link

10	A known and well understood issue. Resources and plans are currently implemented to address wildfire issues.		Public resistance to and cost of wildfire mitigation. Forest/brush thinning and/or controlled burns to reduce fuel loads are expensive and potentially dangerous and change/modify the existing ecosystem/landscape.	
11	Coordination of fire agencies and county for the response to incidents. Initial subdivision design control by Planning and Building department. Good support for mitigation information for homeowners.	Ability to incentivize homeowners to continue mitigation/prevention aspects on their property. There is no maintenance codes or ordinances that I am aware of that encourage/enforce continued compliance with standards.	There is a reluctance and perhaps constitutional issues to mandate on-going mitigation by a property owner. Property owners may be unable physically or financially to continue mitigation even if they want to.	A shared funding mechanism or a team to mitigate, if necessary, for a homeowner.
12	The Town of Larkspur (TOl) is currently working on a CWPP for the Town. There are currently 5 CWPPs in place in neighborhoods adjoining or near to the TOL. There are 3 active forest management/fire mitigation programs in progress within or adjoining the TOL. The Larkspur Fire Protection District (which the TOL is within) has a active fire mitigation education program available to all citizens of the LFPD.	All of the TOL is within a wildfire hazard area.	Overcoming some citizens concerns to modify an environment they perceive as natural and perfect as is - & why they chose to live there. For actual fire mitigation work in the field - many fixed income families that can't afford to contract the work out and/or do not have the physical abilities or time to do the work themselves.	Every time we have "smoke in the air" from fires in other places or when a fire occurs close to the community that draws attention.

14	2. Drought. Castle Rock has a strong water conservation program. 5. Flooding. We coordinate flood warning systems between jurisdictions. We coordinate on flood hazard mapping efforts. 8. Soils. We coordinate criteria for erosion control and drainage. 11. Hazardous Materials Release. We coordinate on spills through the MS4 permit.	2. Drought. Residents over irrigate due to type of landscaping in this arid climate. Current reliance on non-renewable water sources. 5. Flooding. The Counties funding source for flood control projects is very limited. 8. Soils. The Counties funding source for stream channel reclamation is very limited. 11. Hazardous Materials Release. Releases generally cross multiple jurisdictional lines and can create confusion with regard to enforcement and cleanup orders.	2. Drought. Often water conservation efforts by municipalities are in conflict with HOA covenants. 5. Flooding. Environmental regulations often make it challenging to construct a project in the floodplain. 8. Soils. Environmental regulations often make it challenging to construct a project in the floodplain. 11. Hazardous Materials Release. Unknown.	2. Drought. Conversions away from high water use landscaping to reduce overall water demand. Regional partnerships to bring more renewable water projects to the county. 5. Flooding. Seek additional funding at the county level to address flood control. 8. Soils. Seek additional funding at the county level to address stream channel stabilization. 11. Hazardous Materials Release. Unknown.

Drought				
ID	Strengths2	Weaknesses2	Obstacles2	Opportunities2
1	DC2, DC5	DC1, DC3, DC4	DC8, DC7, DC6	DC8, DC7, DC6
2		dc1 dc3 dc5	dc8	dc1 dc2
3		DC3	DC5	DC7
4		DC3	DC5	DC7
5	Our community seems to have social responsibility when it comes to conserving natural resources.	Our lifestyles tend to ignore that fact that we will in a rather dry environment.	There is a perception that there will also be enough water.	Develop water conservation strategies and habits before we are forced to do so in a crisis.
6	DC 7 Entity Coordination, Data Collection DC 2	Warning, DC 1, Planning DC 5, Codes and Standards DC 6, Continuity of Operations DC 8	Mitigate structures and protect lives, Planning	Outreach and Education
7		Entity Coordination. Better communication and coordination between the County Municipalities and NGO's or Metro Districts for a longer term or more severe event.		
9			green lawns	
10	Water issues...or lack of water issues are reoccurring and well understood. Water is already closely measured, monitored and regulated throughout Colorado.	Increased drought risk with changing climate. Definite increased demand for finite water supply from rapid population and residential growth along the front range.	Negative public attitude toward water restrictions and increased regulation of available water.	Increased efficiency of water use is possible though public education, changes in landscape/lawns...residential lifestyles, enhanced recycling, agricultural changes.

11	Deep wells for water delay drinking water depletion for a while if the drought is not too extensive. Low dependence on surface water. Development of Reuter-Hess reservoir for storage during non-drought times.	Too many lawns developed in the county with an increasing population. Demand for water for lawns	Ordinances and covenants mandate grass areas on the lot.	Work with cities and developers to require less grass and promote less water demanding landscapes.
12	None at the local level.	Any restriction of public water uses during a drought.	Very little can be done to thwart or intervene with any effective measures for drought conditions.	Very little can be done to thwart or intervene with any effective measures for drought conditions.

Severe Weather: Winter Weather / Extreme Heat				
ID	Strengths3	Weaknesses3	Obstacles3	Opportunities3
1	DC1, DC2, DC3, DC7		DC5	DC6
2	dc5 dc7 dc8	dc1 dc3	dc4	dc1
3	DC5, DC7	DC3	DC1	
4	DC5 DC7	DC3	DC1	
5	Most residents are accustomed to severe winter weather and know how to prepare for it.	We are beginning to experience types of severe weather that have not normally been seen in the area and are less prepared for those events.	This experience at times results in residents downplaying forecasts of severe weather.	Learn from other communities that have experience with severe heat, tornadoes, etc.
6	Warning,	Planning,	Entity Coordination, Continuity of Operations	Outreach and Education
7	Overall good warning systems in place for local residents, in particular advanced warnings for winter events. Good coordination with local media and National weather service.	Planning efforts are improving, could be better coordination and support, in particular for winter events.	Buy in from administration and other stakeholders.	
9	- coordinated response and planning - shelter planning (typical response)	- communication with CDOT in advance of road closures (winter weather) - shelter planning during pandemic (unknown)	- availability of shelter locations - willingness of CDOT to actively participate/communicate in planning and during response - climate change, increasing frequency of severe weather and temperature changes	self-awareness education, preparedness home/vehicle-awareness education and preparation
10	Well understood issues and appropriate responses. Occur often enough that appropriate machinery (snow plows, etc.) are available and community is knowledgeable and aware of how to respond.	Uncontrollable and recurring phenomena. What is controllable is the human response to the event.		Effective communication with the public can have immediate, appropriate and effective response from the public.

11	County OEM, county agencies and local governments working together to respond to the incident.	Being able to get individuals from going out in the weather and becoming stranded.	Having individuals listen to warnings. Traffic through the county on I-25 is hard to control when highway is shut down.	Greater capability to warn individuals of danger.
12	Past education, encouraging citizen preparedness and having effective warning systems - little can be done prior to events.	Past education, encouraging citizen preparedness and having effective warning systems - little can be done prior to events.	The inability to defend against such events.	Move to a different location with different weather patterns.

Severe Storm: Thunderstorm / Lightening / Hail				
ID	Strengths4	Weaknesses4	Obstacles4	Opportunities4
1	DC1, DC2, DC3	DC4		DC7, DC8
2	dc5 dc7	dc2		
3	DC5, DC7	DC1	DC3	
4	Dc5	Dc1		
5	These is community awareness about these events occurring during certain times of year	Warning areas that are in danger can be difficult.	Warning methods compete for the public's attention with other media.	Establish more accurate detection methods that will allow for more precisely targeted warnings.
6	Warning, Outreach and Education	Data Collection, Codes and standards	Entity Coordination, Continuity of Operations, Mitigate Structures and protect lives	
7	Good warning systems in place from NWS and Storm Ready Communities.			
9	the community has a lot of experience with severe storms and hail	rapidly developing strong storms highly localized storms	sudden development limiting the effectiveness of warning systems (local media, social media) community complacency	adopt code for hail-resistant roofing PSA at the beginning of "storm season" on severe storm/hail safety
10	Fairly well understood and expected to routinely occur by majority of the population.	Uncontrollable.	Uncontrollable.	Effective communication with public is best mitigation activity.
11	Good EMS system if still alive. Good fire response for homes struck by lightning.	No warning system to detect the potential for lightning in the area unless individuals monitor apps on phone. Few homes have lightning protection systems.	Cost of lightning protection systems. System for alerting population of lightning in the area.	System detecting lightning and area that could be tied to cellphones in that area like an amber alert?
12	Provide public education, encourage citizen preparedness and provide adequate warnings.	Provide public education, encourage citizen preparedness and provide adequate warnings.	Defensive and preparation mechanisms/options are almost non-existent.	Defensive and preparation mechanisms/options are almost non-existent.

Flooding				
ID	Strengths5	Weaknesses5	Obstacles5	Opportunities5
1	DC1, DC2	DC3	DC4	DC5, DC6, DC7, DC8
2	dc1 dc5 dc7	dc4	dc6	dc7 dc6
3	DC4, DC5, DC1	DC3	DC6	DC1, DC3, DC7
4	DC4 Dc5 Dc1	Dc3	DC6	DC1 DC7 Dc3
5	Our municipal code as it refers to flood plain management is strong.	There is little public awareness about flooding in the community.	Lack of routine non-emergency flood events lowers the public view of possible significant flood events.	Participate in the CRS and establish strong flood mitigation and response procedures in the event that flooding becomes a greater risk in the changing environment.
6	Planning, Codes and Standards	Continuity of Operations, Mitigate Strictures and Protect Lives	Warning	
7	Codes and standards as well as control structures in place	Lack of coordination and planning in particular for a large scale event, 500 yr or equivalent.		Table top exercise
9	county, municipality planning efforts	none known	the community may considered this a low or non-risk	public education on flood risks, and potential
10	Relatively infrequent and small scale. Multiply mitigation actions have already been taken to address many flood issues.			
11	Good dams and inspections?	Localized flash flooding due to storms that do not move.	Alerting systems for early warning of streams and rivers.	Having sensors on streams to alert folks along that watershed.

12	Zoning limiting flood plain development.	Existing structures within flood plains.	Cost and public opposition to emanate domain takings to remove the values at risk from the hazard areas.	Purchase properties as they become available if there is funding to do so. Improvements to drainage ways, bridges and other infrastructure elements within a floodplain to reduce flooding impacts.
13	run off holding areas, improved building codes in urban areas.	rural areas lacking in flood control measures	government over reach	public education

Tornado / High Wind				
ID	Strengths6	Weaknesses6	Obstacles6	Opportunities6
1	DC1, DC2, DC3	DC4	DC6	DC7, DC8
2	dc1 dc3	dc4		
3	DC1, DC3	DC8		DC1, DC3, DC4
4	Dc1 Dc3	DC8		Dc4
6	Entity coordination, Continuity of Operation		Outreach and Education, Data Collection, Warning	
7		Warning-	No frequency of events so no belief they will occur.	Review of notification system and alerts or updates to notification system, public or community wide.
9		communication and cooperation with CDOT when closing road for high winds	community complacency (always windy in Colorado) willingness of CDOT to contact and communicate in advance of road closures localized micro weather patterns causing dramatic variation in wind speeds	
10	Usually weak tornadoes...so limited damage and damage area.	Short notice warnings/notifications.	Uncontrollable. Can't eliminate the phenomena.	Increased communication and education can help mitigate impacts.
11	Usually good early warning. Good building construction codes.			
12	Public education and warning systems.	Little that can be done at a practical level.	Funding.	Little that can be done at a practical level.

Dam Failure				
ID	Strengths7	Weaknesses7	Obstacles7	Opportunities7
1	DC1, DC2	DC3	DC4	DC6, DC7, DC8
2	dc1 dc2 dc5 dc6	dc3 dc8	dc6	dc3 dc1
3	DC1, DC2, DC5, DC6	DC3, DC8	DC6	DC1, DC3
4	DC1, DC2, DC5, DC7	DC3, DC9	DC7	DC1, DC4
6	Planning, codes and standards	Mitigate structures and protect lives	Data Collection	outreach and education
7		Entity Coordination, Warning system.		Table top exercise, planning
8				
9	mandatory planning	a lot of residents living on the downstream side of a dam	community complacency	local awareness training, emergency/evacuation notification
10	Known and identifiable hazard.			
11	Good inspections.	Unknown.		
12	Assumed state and/or federal inspection of dams and early warnings of any potential failures. The ability to provide rapid reverse notification for those downstream.	Undetected evidence of potential dam failure and/or catastrophic rainfall event or extreme winter snow pack with a rapid melt that would impact the dam structure.	Willingness of downstream residents to prepare for such a rare event.	Utilize other unfortunate dam failures as a education opportunities.

Soils: Expansive Soils / Erosion & Deposition / Landslide / Subsidence & Sinkholes				
ID	Strengths8	Weaknesses8	Obstacles8	Opportunities8
1	DC5, DC6, DC2, DC4	DC1, DC3		DC8
2	dc7 dc1	dc3	dc6	dc4
3	DC7, DC1	DC3	DC6	DC4
4	Dc7 Dc1	dc3	Dc6	Dc4
6	Codes and Standards, planning		Continuity of operations	Outreach and education, data collection
9	unknown	under education about the risk in the area	lack of understanding	mapping of at-risk areas
10	Known phenomena.	Landslide threats change after wildfires. So adjustments to threat must be communicated to threatened population and areas.		
11	Have little of these other than minor erosion in contruction sites as far as I am aware. Do have expansive soils. Good enforcement of erosion control expansive soils mitigated during contruction process.	Potential for erosion after a wildfire event.	Getting vegetation replanted .	Civic groups to volunteer to replant providing labor and perhaps funding to buy trees and seed.
12	Existing zoning and building codes.	Possible unidentified areas for such events. Existing structures on known hazard areas constructed prior to code and zoning requirements.	None	Further exploration in areas that might be suspected of harboring such hazards.

Epidemic/Pandemic				
ID	Strengths9	Weaknesses9	Obstacles9	Opportunities9
1	DC1, DC2, DC3	DC4	DC6, DC7, DC8	
2	dc1 dc3 dc5 dc6 dc7 dc8	dc2	dc7	dc7
3	DC1, DC3, DC5, DC6, DC7, DC8	DC2	DC7	DC7
4	DC1, DC3, DC5, DC6, DC7, DC8	Dc2	Dc7	Dc7
6	Outreach and education	continuity of operations	data collection	entity coordination, codes and standards
7		Entity Coordination-		
9	relevance to current events county/municipality planning and response	supply chain management staffing (people over-tasked with additional responsibilities)	availability of needed materials community "compliance exhaustion"	education, education, education medical countermeasure (MCM) planning
10	Routinely occurring, so response community has had practice dealing with/responding to threat.	Fluid situations that require flexible response.	Money, resources, knowledge and information.	
11	Great communications.	Testing with quick turnaround.	Having resources to do testing in communities.	Using Mobile healthcare units visiting neighborhoods where people can walk to be tested.

12	Proactive DC elected officials Increased hospitals & patient capacities over the last few years. Ability of governments to rapidly and widely communicate with residents.	Political decisions at other levels of government and from quasi governmental agencies.	Low stockpiles of needed PPE and medical counter measures.	Learn and plan ahead based on the realities of the current pandemic.
13	Supportive community, well educated, excellent health care.	government over reach, Community elements lack of faith in vaccines.	Misinformation, social media.	Improved public information and education

Animal Disease & Pest Outbreak				
ID	Strengths10	Weaknesses10	Obstacles10	Opportunities10
1	DC1, DC2, DC3	DC5		DC6, DC7, DC8
2	dc7	dc8		dc1 dc2
3	DC3, DC7	DC8		DC1, DC2
4	Dc7	Dc8		Dc2
5				
6	entity coordination, codes and standards		outreach and education,	planning, data collection
10		Sometimes slow identification and response.	Limited resources.	
11	Unsure	Unsure	??	??
12	I do not have the background to comment on this.	I do not have the background to comment on this.	I do not have the background to comment on this.	I do not have the background to comment on this.

Hazardous Materials Release - Transportation				
ID	Strengths11	Weaknesses11	Obstacles11	Opportunities11
1	DC1, DC6, DC5	DC3, DC4		DC7, DC8
2	dc1 dc3 dc7	dc2 dc6	dc6	dc6 dc2
3	DC1, DC3, DC7	DC2, DC6	DC6	DC6, DC2
4	Dc1 Dc3 Dc7	Dc2 Dc6	dc6	dc6 Dc2
5				
6	entity coordination,		Mitigate structures and protect lives, codes and standards	Outreach and education, planning,
7		Planning		Continuity of operations- training
9	regional response cooperation regional residential HAZMAT disposal days	limited number of "technician" resources clunky state-wide reporting system (tier II facilities)	funding for training, multi-jurisdictional training	grant funding for training "facilitated" multi-jurisdictional training
10	Hazmet teams with appropriate training are in place and equipped. Many first responders at least partially trained on how to handle the events.	Limited resources to respond to a large event.	Resources...money.	
11	Good haz mat response capability through county cooperation of county and fire departments.	Being able to warn people down wind or at lower elevations of potential exposure.	Community understanding good shelter in place strategies and quick effective warning in direction of concern.	Education opportunities for training. Short video to explain why and how to shelter in place.

12	Rapid response by qualified first responders. Ability to rapidly expand command and control. Ability to rapidly evacuate affected areas if needed.	Many transportation corridors through densely populated areas could cause massive escalation of an event. Some population centers around point source incidents - see above. Massive traffic issues possible to the detriment of first responder arrival and population evac. Scale of the incident may preclude early resolution.	Time of day - rush hour traffic complications - night time sleeping populations Event scale vs. agency capabilities. Time frame of control through cleanup	Review of zoning regs and allowances for where point source hazardous materials can be stored and used. Multi agency hazardous material release drills to hone response efficiency. Education of the public for awareness and evac.

Appendix C. MEETING DOCUMENTATION

Appendix C includes meeting agendas, sign-in sheets and minutes (where applicable and available) for meetings convened during the development of the Douglas County Hazard Mitigation Plan Update.

DOUGLAS COUNTY COLORADO

Local Natural Hazard Mitigation Plan

Local Planning Committee UPDATE

AUG 2020

CORE PLANNING TEAM

CHAIRPERSON
Tim Johnson
TMJohnso@dcsheriff.net

VICE-CHAIRPERSON
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NEXT STEERING COMMITTEE MEETING

AUG. 19, 2020
1:30 - 3:30 p.m.
Virtual Meeting
https://bit.ly/2XTLM8T

Welcome and Thank You....

Douglas County greatly appreciates the varied perspectives, leadership and guidance the citizens of Douglas County who are serving as members of the Local Planning Committee (LPC) bring to the planning process.

The County is vulnerable to many natural hazards that may cause a disaster and is committed to reducing future impacts from hazard events and maintaining eligibility for mitigation-related federal funding. This plan update demonstrates our community's commitment to reducing risks and along with the county Emergency Operations Plan is a part of the Douglas County Comprehensive Emergency Management Plan.

Provision of public safety is a County core priority and this update aims to enhance public safety, protect lives, property and the environment, and restore affected communities quickly and efficiently following a disaster...*Continued on Page 2*

July 22 Steering Committee Meeting Re-cap

On July 22, 2020, the Core Planning Team hosted the 1st Local Planning Committee Meeting (LPC) for the Douglas County All Hazards Mitigation Plan with 26 persons in attendance. The Committee established the following:

- Ground rules for future meetings and overall planning process.
- Overview and milestones of the planning process were discussed.
- The following meeting schedule was established:
  LPC #2 - Aug. 19, 2020
  LPC #3 - Sept. 16, 2020
  LPC #4 - Oct. 21, 2020
  LPC #5 – Jan. 20, 2021
- Definition of critical facilities presented, amended and approved.
- Public involvement strategy presented.
- Public survey was amended and approved for distribution.
- Identified hazards of concern and conducted hazard ranking exercise (see table to the right).

Hazard	Ranking
Wildfire	4.68
Epidemic / Pandemic	4.52
Drought	4.28
Hail	4.28
Thunderstorm / Lightening	3.96
Flooding	3.64
Hazardous Materials Release	3.6
Severe Wind	3.36
Tornado	3.36
Extreme Heat	3.2
Erosion & Deposition	2.56
Landslide / Mud / Debris Flows / Rockfall / Rockslide	2.52
Dam Failure	2.44
Expansive Soils & Heaving Bedrock	2.28
Animal Disease Outbreak	2.2
Sinkholes / Subsidence / Abandoned Mine	1.96
Earthquake	1.84
Avalanche	1.56

Action Item 1	Review the 2018 State of Colorado Hazard Mitigation Plan and become familiar with the current hazards, goals and objectives at www.colorado.gov/pacific/mars/colorado-natural-hazard-mitigation-plan
Action Item 2	Review the 2015 Douglas County HMP at www.douglas.co.us/natural-hazard-mitigation-plan/
Action Item 3	Distribute Public Survey – Media packet will be provided to all LPC members to be distributed through their various media outlets including social media.
Action Item 4	Planning Partners - please submit a “Letter of Intent to Participate” to Tim Johnson at TMJohnso@dcsheriff.net
Action Item 5	Planning Partners: Phase 1 Annex Template to be completed by August 31, 2020. Please email completed templates to Chrissie Angeletti at Chrissie.angeletti@tetratech.com

Continued from Page 1

As part of our commitment to the safety of our citizens, Douglas County, five local jurisdictions and four special districts, are participating in a Local Hazard Mitigation Plan (LHMP) update to the 2016 Douglas County Local Hazard Mitigation Plan.

Information from the plan will guide and direct hazard mitigation planning, activities and resources to best protect the people and property of the County from the effects of hazardous events. Proactive mitigation planning helps reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions.

Tim Johnson, Director Emergency Management

MEETING SUMMARY

Date/Time of Meeting:	Wednesday July 22, 2020 1:30PM-3:30PM
Location:	Virtual Meeting
Subject:	1st Local Planning Committee Meeting
Project Name:	Douglas County Local Natural Hazard Mitigation Plan Update
In Attendance	***Attendees: 26 Persons*** **Core Planning Team:** Tim Johnson, Lisa Goudy, Zak Humbles, Chrissie Angeletti
Summary Prepared by:	Chrissie Angeletti
Quorum – Yes or No	Yes

Welcome and Introductions

- Tim Johnson, Chairman of the LPC, welcomed the Committee members to the meeting and facilitated group introductions.
- Chrissie Angeletti, the Tetra Tech project manager, confirmed that a quorum was present and reviewed the meeting agenda. No modifications were made to the agenda.
- Distributed handouts: Power point presentation; LPC Expectations; Hazards of Concern Exercise; Draft Public Survey

Hazard Mitigation Planning and Update Overview

- Overview of the Hazard Mitigation Planning and Update discussed.
- Any taxing entity can develop an HMP including a municipality, special district, or county.
- The County's HMP will be a multi- jurisdiction plan.
- The project will include the gathering of hazard data, the development of a hazard risk assessment, a review of the previous plan, establishment of priorities based on the hazard data, and establishment of action items.
- The HMP is a working document that seeks to prevent and minimize damages from disasters.
- The HMP is a prerequisite for funding for hazard mitigation projects and the HMP will provide the County and Planning Partners with a better understanding of community hazards. The HMP will list and prioritize projects for implementation when funding is available. When funding is available, an application may be completed and often includes a benefit cost analysis.
- Once approved, the plan is good for 5 years.
- Hazard Mitigation planning can also earn the County and Planning Partners Community Rating System (CRS) credits. The CRS is a voluntary program that encourages floodplain management that meet and exceed the National Flood Insurance Program (NFIP). CRS membership by the

County and Planning Partners also provides discounts to County and Planning Partner residents on flood insurance.

The Steering Committee Role/Ground rules

- The purpose and expectations of the Steering Committee was discussed.
- The Chairperson and Vice Chairperson were named as well as the roles of these positions. Tim Johnson, serves as the Chairman of the LPC. Tim Hallmark, will serve as the Vice Chairman.
- Quorum was established as 13 members plus at least 1 of the co-chairs.
- Alternates can be designated in the event a committee member is unable to attend.
- Decision-making – process will seek consensus. If consensus cannot be reached, a decision will be confirmed by a majority vote. A dissenting opinion can be recorded upon request.
- Recommendations from meetings will be recorded in meeting summaries.
- Attendance – if the committee member is unable to attend, they can send their alternate if one has been designated. Repeated no-shows, member or alternate, will be contacted by the Chair to see if they are still able to support the process
- To meet CRS requirements, the County and Planning Partner staff must consist of no more than 20 percent of the LPC.
- Notes will be taken at each meeting and posted to the County's website. A bulletin will also be developed to highlight planning activities and posted to the website.
- Public Involvement – all meetings are open to the public and will be advertised as such. LPC members are encouraged to share the bulletins with their constituents as well as help with public participation, public workshops, and use various media to disburse planning information.

Schedule

- Overview and Milestones of the planning process were discussed
- The following Meeting Schedule was established: (PP = Planning Partners/ LPC = Local Planning Committee)
    - PP Phase I – 7/8/20
    - LPC Kick-off - 7/22/2020
    - LPC #2 - 8/19/2020
    - PP Phase I Due – 8/31/2020
    - LPC #3 - 9/16/2020
    - PP Phase II - 9/16/2020
    - LPC #4 - 10/21/2020
    - Risk Assessment Public Workshop - 11/18/20
    - PP Phase II Due - 11/18/2020
    - PP Phase III Workshop 12/16/20
    - PP Phase III Due 1/13/2021
    - LPC #5 – 1/20/2020
    - Public Comment Period 2/8/21-2/22/21
    - Draft Plan to State Mid-March
- The next LPC meeting will be August 19th, 2020; LPC will confirm Hazards, Establish Mission Statement, Goals
- LPC #3 September 16th, 2020; LPC will confirm Objectives, SWOO (Hazard Specific) Exercise
- LPC #4 October 21st, 2020; LPC will Review Risk Assessment Results, Confirm Risk Ranking, Review Critical Facilities Analysis Draft

- LPC #5 January 20th, 2021; LPC will Review Draft Plan, Provide Draft Comments

Defined Planning Area for the update

- Multi-Jurisdictional Plan - Planning Partners include:
- Local Government:
    - Douglas County
    - City of Castle Pines
    - City of Lone Tree
    - Town of Castle Rock
    - Town of Larkspur
    - Town of Parker
- Special Districts:
    - Centennial Water & Sanitation/Highlands Ranch Metro District
    - Denver Water
    - Mile High Flood Control
    - Parker Water and Sanitation

Critical Facilities/Infrastructure Definition

- Attendees reviewed the previous definition, and approved the following updated definition:

Any facility and asset, including without limitation, a structure, infrastructure, property, and equipment, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities; (2) High Potential Loss Facilities; and (3) At-Risk Populations Facilities The list of critical facilities will include:

Essential Service Facilities

- *Public safety*
- *Emergency response*
- *Emergency medical*
- *Designated emergency shelters*
- *Designated staging areas*
- *Communications*
- *Public utility facilities*
- *Essential government operations*
- *Transportation systems*
- *Private sector facilities that provide essential services*

High Potential loss Facilities

- *Dams*
- *Hazardous materials facilities*
- *Major pipelines*

At Risk Population Facilities

- *Schools*
- *Daycare centers with 12 or more children*
- *Group homes, and assisted living residential or congregate care facilities with 12 or more residents*

Hazards of Concern

- Hazards from the previous plan were discussed.
- Additional Hazards to comply with the State Plan were reviewed and approved.
- Ms. Angeletti noted that for state purposes the FEMA will only review natural hazards in the HMP, but the County and Planning Partners are free to list and develop actions to address non-natural hazards in the HMP.

- The LPC conducted an exercise to rank a list of hazards for the planning area followed by a discussion regarding the results.

Hazard	Ranking
Wildfire	4.68
Epidemic / Pandemic	4.52
Drought	4.28
Hail	4.28
Thunderstorm / Lightening	3.96
Flooding	3.64
Hazardous Materials Release	3.6
Severe Wind	3.36
Tornado	3.36
Extreme Heat	3.2
Erosion & Deposition	2.56
Landslide / Mud / Debris Flows / Rockfall / Rockslide	2.52
Dam Failure	2.44
Expansive Soils & Heaving Bedrock	2.28
Animal Disease Outbreak	2.2
Sinkholes / Subsidence / Abandoned Mine	1.96
Earthquake	1.84
Avalanche	1.56

Public Involvement Strategy/Tracking

- The County has established a website for the HMP Update - https://www.douglas.co.us/natural-hazard-mitigation-plan/
- The website has information on hazard mitigation planning, public notices, project bulletins, meeting notes, and will provide a link to the public survey. It will also include links to the 2015 plan. LPC members are encouraged to link to the site and share information regarding the project on their own websites and through social media.
- Tracking Public Outreach Efforts
    - Email – Chrissie.angeletti@tetratech.com & cc Tim Johnson and Lisa Goudy.
- Media Request – Lisa Goudy (mgoudy@douglas.co.us)
- A sample public survey was developed by Tetra Tech for the LPC's review. The purpose of the survey will be to help gauge the public's perception of risk. Using the survey will help pinpoint the public's concerns regarding community hazards. The LPC provided input on the survey questions and it was approved with changes. The LPC will also set a target goal for completed surveys.

Homework (before the next LPC meeting)

- Review the October 2018 CO State Hazard Mitigation Plan (https://www.colorado.gov/pacific/mars/colorado-natural-hazard-mitigation-plan)
- Review the 2015 Douglas County HMP (https://www.douglas.co.us/natural-hazard-mitigation-plan/)
- Distribute Public Survey

- Public Survey Link: https://bit.ly/2PAz0HK
- A media packet for the survey will be distributed to the LPC and Planning Partners to be distributed through their media outlets including social media sources.

Planning Participants

- Planning partners complete Letter of Intent to participate in the Plan Update.
- Phase 1 of the Jurisdictional Annex Process due by August 31, 2020

Adjourn

- Meeting was adjourned at 3:30 pm

TETRA TECH

Douglas County
Natural Hazard Mitigation Plan Update

Local Planning Committee Kick-Off Meeting

Wednesday July 22, 2020

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Speaker

Chrissie Angeletti JD - Tetra Tech, Inc.

- Subject matter expert in Disaster Management and Environmental Compliance.
- Expertise include FEMA Public Assistance, including 406 Hazard Mitigation, and 428 under the Sandy Recovery Improvement Act and Hazard Mitigation Assistance grant programs for over 30 major disasters.
- Lead FEMA's Hazard Mitigation Technical Assistance (HMTAP) contract for Hurricane Harvey.
- Managing contracts with local communities for multi-programmatic financial recovery including hazard mitigation planning, grant development, and BCA support; and CDBG-Mitigation.

Today's Discussion

- Introductions – Project Management Team
- Why are you here?
- Disaster Mitigation Act
- Douglas County 2015 Plan
- The Local Planning Committee
- Douglas County 2021 Plan Update
- Local Planning Committee Ground Rules and Expectations
- Hazards of Concern Exercise
- Public Participation Strategy - Public Survey
- Confirm Critical Facilities Definition
- Next Steps?

The Project Management Team

- The Project Management Team (PMT) is made up of discipline leads from the Tetra Tech team as well as key staff from Douglas County.

- The PMT is primarily responsible for overall project management, facilitating meetings/workshops, and developing the updated Hazard Mitigation Plan (HMP)

  - ✓ ***Tim Johnson,*** *Douglas County Project Manager/LPC Chairman*
  - ✓ ***Lisa Goudy,*** *Douglas County Safety and Security Coordinator*
  - ✓ ***Tim Hallmark,*** *Douglas County Director Emergency Services*
  - ✓ ***Joel Hanson,*** *Douglas County GIS Services*
  - ✓ ***Zak Humbles, P.E.,*** *Douglas County flood Plain Administrator*
  - ✓ ***Chrissie Angeletti,*** *Tetra Tech - Project Manager*
  - ✓ ***Brian Kemp,*** *Tetra Tech - Lead Project Planner*
  - ✓ ***Magda UsarekWitek,*** *Tetra Tech - GIS/HAZUS lead*

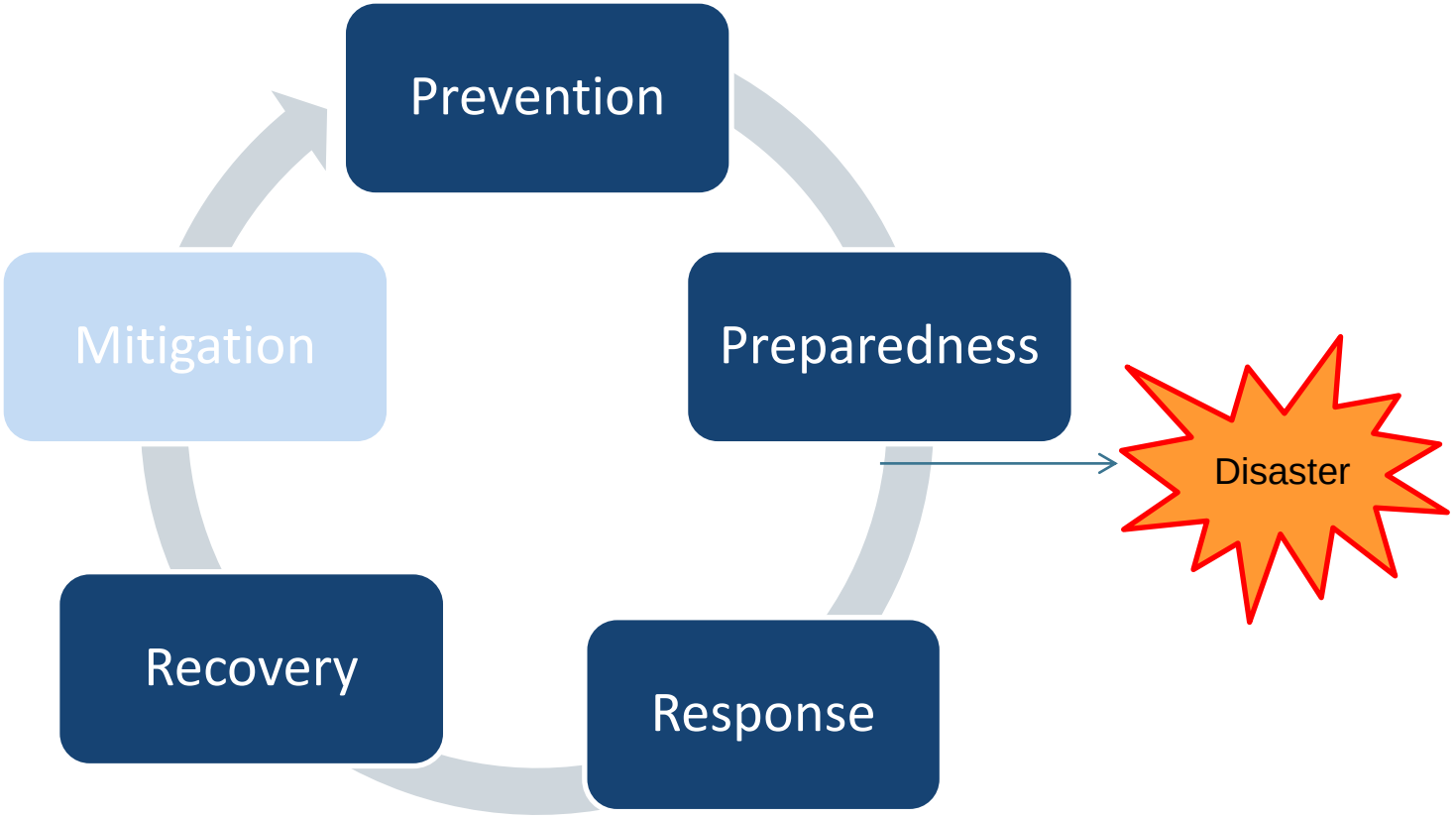
Why are you here?

- You have been identified as a stakeholder within Douglas County.
- CRS Activity 510, step 2 planning requirements

- ✓ Police / Fire Departments / Dispatch
- ✓ Public Works / Utilities
- ✓ Communications
- ✓ Engineering
- ✓ Health Authority
- ✓ Emergency Management
- ✓ Schools/ Higher Education
- ✓ Medical Facilities
- ✓ Environmental Entities
- ✓ Economic Development
- ✓ Regulatory Agencies

What is Mitigation?

"Mitigation is sustained action taken to reduce or eliminate long-term risk to life and property."



5 Phases of Emergency Management

Examples of Mitigation Strategies

- Enhance warning systems
- Studies and Plans that inform risk and risk reduction
- Public Outreach and Education
- Structural protective measures - retrofit, elevation, flood-proofing, acquisition
- Continuity of Operations - generators, telecommunications
- Policies– building codes and zoning
- Incentives – grants or financial assistance for risk reduction at business and household level

What is the Disaster Mitigation Act (DMA)?

Federal legislation that establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

=

Federal $$$ for pre-disaster and post-disaster hazard mitigation projects in Douglas County.

Provisions of the Disaster Mitigation Act (DMA)

- Encourages and rewards local and state pre-disaster planning ($$$ for projects)
- Integrates state and local planning
- Specifies required plan components:
  - risk assessment
  - public outreach and participation
  - process for update
  - formal review State and FEMA review
  - documentation of acceptance by the community

Other Benefits to Hazard Mitigation Planning

- Hazard Mitigation Plans contribute to a community's Community Rating System (CRS) score
- What is Community Rating System?
  - A FEMA/National Flood Insurance voluntary incentive program that encourages floodplain management activities
  - Reduces potential flood damages and can decrease flood insurance rates $$

Participating in CRS

- Douglas County- Class 5 (Effective May 2020)
- Town of Parker- Class 5 (Effective 2017)

Not Participating in CRS

- Town of Castle Rock
- Town of Larkspur
- City of Lone Tree
- City of Castle Pines

The 2015 Plan

- ✓ 7 Planning Partners
- ✓ Identified and prioritized over 46 actions
- ✓ Expires in 2020
- ✓ Letter of Extraordinary Circumstances

DOUGLAS COUNTY COLORADO

amec

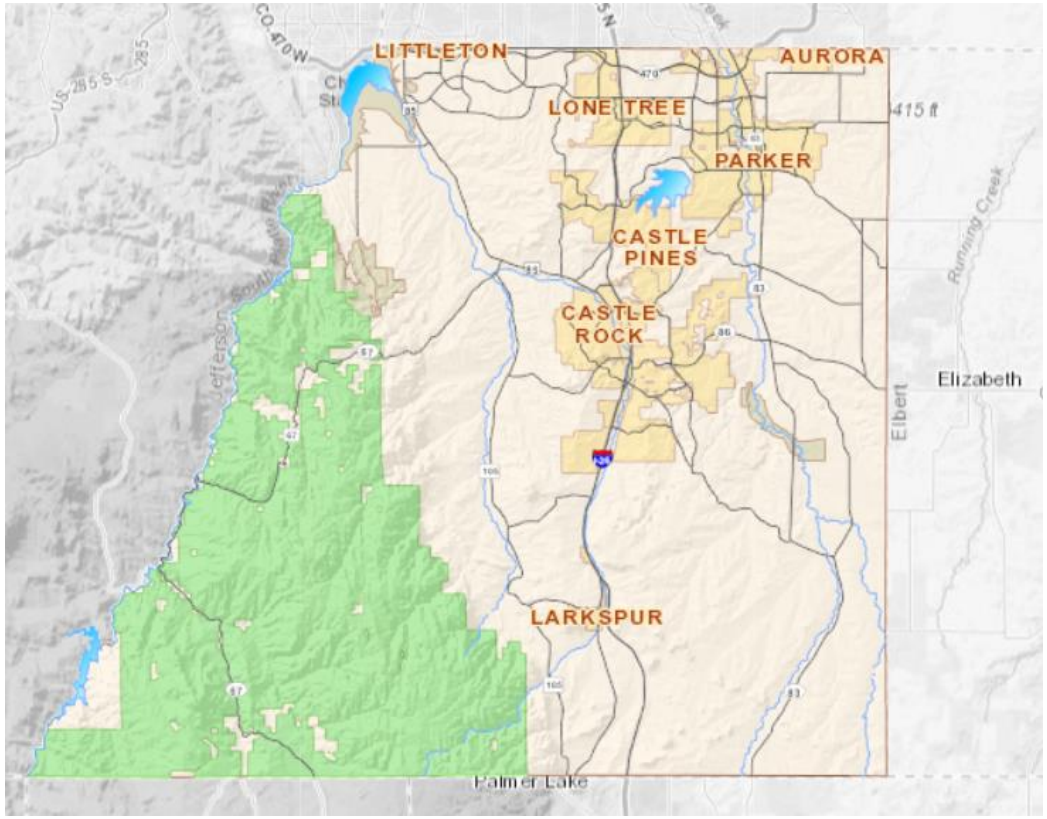
2021 Planning Partners

Municipalities:

- ✓ Douglas County
- ✓ City of Castle Pines
- ✓ City of Lone Tree
- ✓ Town of Castle Rock
- ✓ Town of Larkspur
- ✓ Town of Parker

Special Districts:

- ✓ Centennial Water & Sanitation/Highlands Ranch Metro District
- ✓ Denver Water
- ✓ Mile High Flood Control
- ✓ Parker Water and Sanitation

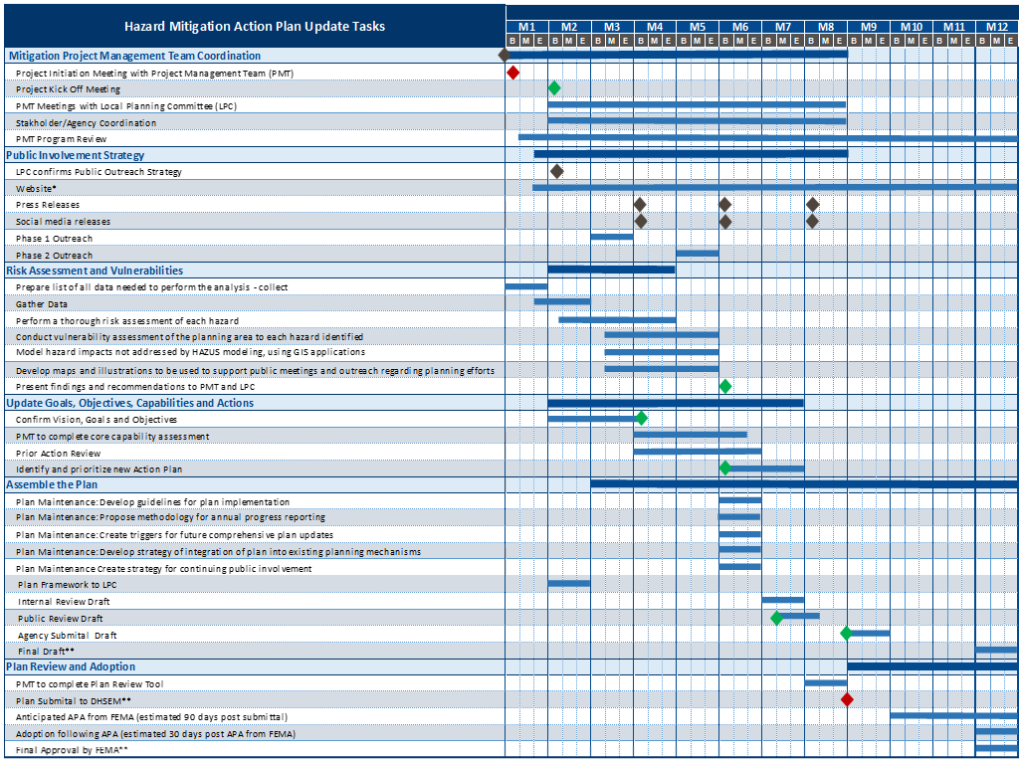


The Work Plan

- 7 phase scope of work
- Follow the 10-Step Planning script from FEMA's Community Rating System (CRS Program).
- Centers on a comprehensive risk assessment and active public engagement strategy

Time Line

HAZARD MITIGATION ACTION PLAN TIMELINE



PP Phase I – 7/8/20

LPC Kick-off - 7/22/2020

LPC #2 - 8/19/2020

PP Phase I Due – 8/31/2020

LPC #3 - 9/16/2020

PP Phase II - 9/16/2020

LPC #4 - 10/21/2020

Risk Assessment Public Workshop - 11/18/20

PP Phase II Due - 11/18/2020

PP Phase III Workshop 12/16/20

PP Phase III Due 1/13/2021

LPC #5 – 1/20/2020

Public Comment Period 2/8/21-2/22/21

Draft Plan to State Mid-March

- ***Expedited Schedule Draft to State March 2021***
- ***This schedule all depends on you!***

The Local Planning Committee

The Local Planning Committee	Will operate under a set of ground rules
	Will participate in the Public Involvement Strategy
	Will act as spokespersons for the process
	Minimum of 2 hours per meeting
	Will oversee plan development

Local Planning Committee Ground Rules

- Attendance
- Alternates
- Quorum
- Decision Making
- Courtesy
- Public Participation
- Meeting Dates/Times
- Confirmation of LPC Members and Alternates (Due Friday 7/24/2020)

Public Participation Strategy

- Public Engagement Meetings
- Planning Coordination (Meeting Notes/Bulletins)
- Additional Outreach Capabilities (suggestions welcomed)
  - Website – https://www.douglas.co.us/natural-hazard-mitigation-plan/
  - Questionnaire/Public Survey
  - Press/media
  - Social Media
- Tracking Public Outreach Efforts
  - Email (Chrissie.angeletti@tetratech.com) & cc Tim J. and Lisa G.
- Media Request – Lisa Goudy (mgoudy@douglas.co.us)

Local Planning Committee Meetings

Kick-Off Meeting July 22nd 2020

- Confirm Ground Rules, Confirm Public Survey, Confirm Definition Critical Facilities, Hazards of Concern Exercise

LPC #2 August 19th 2020

- Confirm Hazards, Establish Mission Statement, Goals

LPC #3 September 16th 2020

- Confirm Objectives, SWOO (Hazard Specific) Exercise

LPC #4 October 21st 2020

- Review Risk Assessment Results, Confirm Risk Ranking, Review Critical Facilities Analysis Draft

LPC #5 January 20th 2021

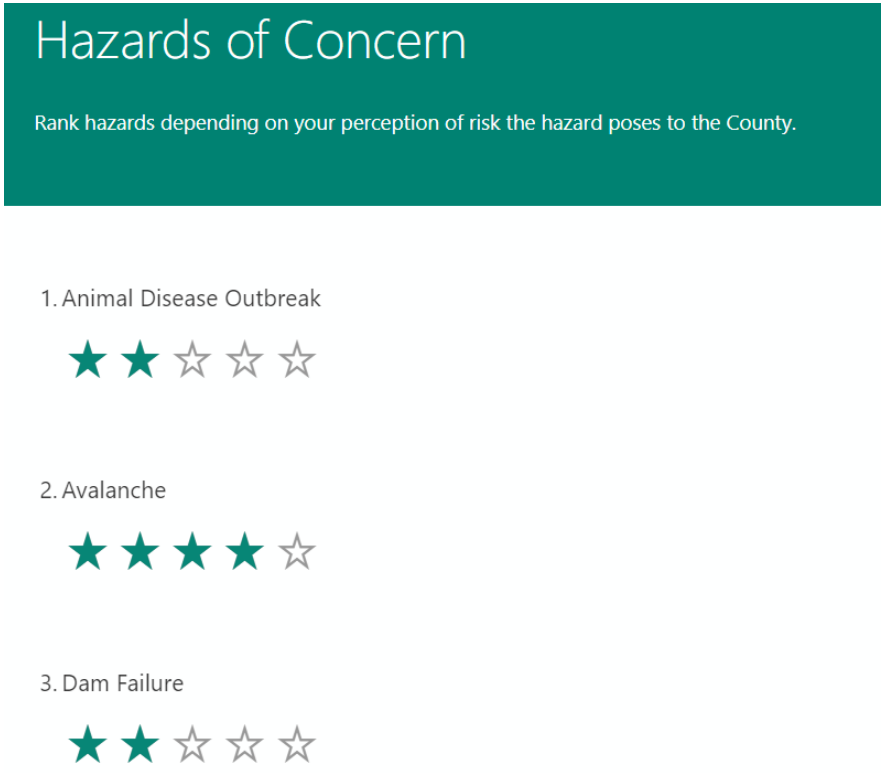
- Review Draft Plan, Provide Draft Comments

Hazards of Concern Exercise

10 Minutes to Complete

Rank 18 hazards 1-5

Link: https://bit.ly/30GDO3c



Critical Facilities Definition

Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities; (2) High Potential Loss Facilities; and (3) At-Risk Populations Facilities:

Essential Service Facilities

- ✓ Public Safety
- ✓ Emergency Response
- ✓ Emergency Medical
- ✓ Designated Emergency Shelters.
- ✓ Communications
- ✓ Public Utility Plant Facilities
- ✓ Essential Government Operations
- ✓ Transportation Lifeline Systems

High Potential loss Facilities

- ✓ Dams
- ✓ Hazardous Materials Facilities

At Risk Population Facilities

- ✓ Schools
- ✓ Daycare centers with 12 or more children
- ✓ Group homes, and assisted living residential or congregate care facilities with 12 or more residents

Public Survey Confirmation

Purpose:

- Assessing our residents' level of awareness regarding hazards;
- Determining areas vulnerable to various types of hazards;
- Coordinating activities to reduce the risk of injury or property damage in the future; and
- Public Participation Requirements

5-10 Min to Review

Link: https://bit.ly/2BkQTXm

Complete answers after each section with feedback to add/delete/edit questions or responses.

Completion by this Friday 7/24/20

Once finalized – Distribute throughout your networks

GOAL: 500 Responses!!!

Next Steps

Local Planning Committee

- Review the October 2018 CO State Hazard Mitigation Plan (https://www.colorado.gov/pacific/mars/colorado-natural-hazard-mitigation-plan)
- 2015 Douglas County HMP (https://www.douglas.co.us/natural-hazard-mitigation-plan/)
- Select Questions from Sample Survey

Planning Participants

- Those planning partners that have not already submitted an LOI should submit by July 31, 2020.
- Phase 1 of the Jurisdictional Annex Process due by August 31, 2020

Questions ?

DOUGLAS COUNTY COLORADO

Local Natural Hazard Mitigation Plan

Local Planning Committee UPDATE

SEPT 2020

CORE PLANNING TEAM

CHAIRPERSON
Tim Johnson
TMJohnso@dcsheriff.net

VICE-CHAIRPERSON
Tim Hallmark
THallmar@douglas.co.us

PROJECT MANAGER
Chrissie Angeletti
Chrissie.angeletti@tetratech.com

OUTREACH COORDINATOR
Lisa Goudy
Mgoudy@douglas.co.us

MEDIA RELATIONS
Wendy Holmes
Wholmes@douglas.co.us

NEXT STEERING COMMITTEE MEETING

Sept. 16, 2020
1:30 - 3:30 p.m.
Virtual Meeting
https://bit.ly/2QPET4o

Aug. 19, 2020 Steering Committee Meeting Re-cap

On Aug. 19, 2020, the Core Planning Team hosted the 2nd Local Planning Committee Meeting for the Douglas County All Hazards Mitigation Plan.

The Committee finalized mission statement for 2020 HMP: "The purpose of this plan update is to guide hazard mitigation planning, implement projects, and prioritize resources to better protect the people and property of the County from the effects of hazards. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources....". As well as reviewed previous goals and approved updated goals for 2020 HMP Update. Final 2020 HMP Goals including:

- **Goal 1**: Reduce impacts, costs, and damages from hazard events to people, property, local government and private assets, economy, and natural and cultural resources.
- **Goal 2**: Increase public awareness of hazards and their mitigation.
- **Goal 3**: Strengthen communication and coordination among public entities, non-governmental organizations (NGOs), businesses and private citizens.
- **Goal 4**: Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning to consider resiliency.
- **Goal 5**: Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.
- **Goal 6**: Enhance the quality of assessments, analysis and planning through the development and collection of data.
- **Goal 7**: Review, update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.
- **Goal 8**: Support continuity of operations pre-, during, and post- hazard events including the support of community lifelines.

The committee also reviewed the Definition of Objectives that were presented and ranked current capabilities relating to the County or muncipality. Refer to the Capability Exercise table on the next page.

Capability Description	Ranking
Emergency management is provided by a unified authority or program.	1.61
County/ municipality staff members with emergency management functions are adequately trained.	1.67
County/ municipality staff are knowledgeable about hazards and their impacts and are willing to share that knowledge with the public.	1.72
Emergency response functions for the County/ municipality are clearly defined and are effective.	1.78
Strong collaboration and coordination exist between the County/ municipality, neighboring jurisdictions, the County and state and federal agency	1.78
Roles and responsibilities for emergency management within the County/ municipality clearly defined.	1.94
Appropriate and timely warning systems are in place.	1.94
There is a good understanding of the risk posed by hazards the planning area is susceptible to.	2.00
The capability to assess and mitigate risk from natural hazards is high.	2.17
The County/ municipality currently has adopted policies that encourage development to be located outside of high-risk areas.	2.17
Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.	2.22
The County/ municipality currently has a variety of regulatory and non-regulatory strategies to reduce risk.	2.22
All relevant stakeholders are engaged in the County's/ municipality's risk management efforts.	2.22
Risk from natural hazards within the planning area is adequately mapped and regulated.	2.28
There is political support for risk management within the planning area.	2.28
As a citizen of the County/ municipality, I feel confident that I am prepared for the impacts from any natural hazard that my impact my property.	2.33
Coordinated public outreach regarding risk from all hazards convey clear, consistent messaging to the public.	2.39
Information on flood insurance is readily available within the planning area.	2.39
Areas that provide natural resource protection are identified and protected.	2.44
The planning area risk management programs are fair and equitable.	2.44
Existing flood control systems are effective and well maintained.	2.50
The County/ municipality development regulations for new development within identified hazards zones are adequate to address that risk.	2.56
There is a coordinated program to maintain drainage systems free of debris.	2.56
The enforcement of Codes and Standards within the planning area is strong.	2.56
There is strong public support for risk reduction within the planning area.	2.61
The funding to support risk reduction within the planning area is adequate.	2.94
The planning area is prepared for the probable impacts on natural hazards due to the impacts from a changing climate.	2.94
Members of the public know where to find information about hazards and risk.	3.00
Citizens have a good understanding of natural hazard exposure and risk.	3.39
Real Estate professionals adequately disclose risk exposure from natural hazards at the time of sale of real property.	3.39

Local Planning Committee

Action Item 1	Complete Objectives Exercise on Survey Monkey by September 4, 2020 at https://www.surveymonkey.com/r/8F7KJWD

Planning Partners

Action Item 1	Phase 1 Annex Template to be completed by August 31, 2020. Please email completed templates to Chrissie Angeletti.
Action Item 2	Phase 2 Annex to be released September 16, 2020.
	Please contact a member of the Core Planning Team for assistance with any issue, so we may work on finishing the required deliverables.

Date/Time of Meeting:	Wednesday August 19, 2020 1:30PM-3:30PM
Location:	Virtual Meeting
Subject:	2nd Local Planning Committee Meeting
Project Name:	Douglas County Local Natural Hazard Mitigation Plan Update
In Attendance	***Attendees: 21 Persons*** **Core Planning Team:** Tim Johnson, Lisa Goudy, Zak Humbles, Chrissie Angeletti Carrie Groce, Tim Hallmark
Summary Prepared by:	Chrissie Angeletti
Quorum – Yes or No	Yes

Welcome and Review Meeting Minutes

- Tim Johnson, Chairman of the LPC, welcomed the Committee members to the meeting and facilitated group introductions.
- Chrissie Angeletti, the Tetra Tech project manager, confirmed that a quorum was present and reviewed the meeting agenda. Mrs. Angeletti then asked the Steering Committee for a vote to approve the meeting minutes from the Steering Committee meeting conducted on July 22, 2020.
    - Hazards of Concern Exercise results presented. A note was made to replace Avalanche with Severe Winter Weather, Blizzard or Bomb Cyclone.
    - The minutes were approved.
- Distributed handouts included: Power Point presentation, Goal Setting Exercise, Objectives Definition and Examples, Capabilities Exercise

Mission Statement

- Attendees reviewed the 2015 Douglas County HMP Mission Statement, along with the 2018 Colorado Hazard Mitigation Plan.
- After reviewing the mission statements for both the 2015 Douglas County and 2018 State Plan, the LPC participated in a 15-minute activity to update the 2015 Douglas County HMP Mission Statement. This activity included considering any changes or enhancements to the 2015 Douglas County HMP Mission Statement for the 2020 Douglas County HMP Update.
- Attendees reviewed the previous definition, and approved the following updated definition:

The purpose of this plan update is to guide hazard mitigation planning, implement projects, and prioritize resources to better protect the people and property of the County from the effects of hazards. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed to ensure Douglas County and participating jurisdictions' continued eligibility for federal, state, and local disaster assistance including but not limited to the FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA); and HUD Community Development Block Group-Mitigation (CDBG-MIT). Completion also earns credits for the National Flood Insurance Program's Community Rating System (CRS) which provides for lower flood insurance premiums in CRS communities.

Capability Exercise

- 10-minute activity to rank current capabilities relating to the County or municipal capabilities in general.
    - Link to exercise: https://bit.ly/2YbLEl4
- The activity relied on a Likert Scale, which gauged the LPC's opinions on current capabilities. The scale allowed the LPC to choose from the following options: agree, somewhat agree, neutral, somewhat disagree, disagree.
- This exercise was helpful to inform goal and objective setting for the 2020 Douglas County HMP Update.
- This exercise was also helpful to inform the Mitigation Strategy and project development.
- Results from the capability exercise:

Capability Description	Ranking
Emergency management is provided by a unified authority or program.	1.61
County/ municipality staff members with emergency management functions are adequately trained.	1.67
County/ municipality staff are knowledgeable about hazards and their impacts and are willing to share that knowledge with the public.	1.72
Emergency response functions for the County/ municipality are clearly defined and are effective.	1.78
Strong collaboration and coordination exist between the County/ municipality, neighboring jurisdictions, the County and state and federal agency	1.78
Roles and responsibilities for emergency management within the County/ municipality clearly defined.	1.94
Appropriate and timely warning systems are in place.	1.94
There is a good understanding of the risk posed by hazards the planning area is susceptible to.	2.00
The capability to assess and mitigate risk from natural hazards is high.	2.17
The County/ municipality currently has adopted policies that encourage development to be located outside of high-risk areas.	2.17
Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.	2.22
The County/ municipality currently has a variety of regulatory and non-regulatory strategies to reduce risk.	2.22
All relevant stakeholders are engaged in the County's/ municipality's risk management efforts.	2.22
Risk from natural hazards within the planning area is adequately mapped and regulated.	2.28
There is political support for risk management within the planning area.	2.28
As a citizen of the County/ municipality, I feel confident that I am prepared for the impacts from any natural hazard that my impact my property.	2.33
Coordinated public outreach regarding risk from all hazards convey clear, consistent messaging to the public.	2.39
Information on flood insurance is readily available within the planning area.	2.39
Areas that provide natural resource protection are identified and protected.	2.44
The planning area risk management programs are fair and equitable.	2.44
Existing flood control systems are effective and well maintained.	2.50
The County/ municipality development regulations for new development within identified hazards zones are adequate to address that risk.	2.56
There is a coordinated program to maintain drainage systems free of debris.	2.56
The enforcement of Codes and Standards within the planning area is strong.	2.56
There is strong public support for risk reduction within the planning area.	2.61
The funding to support risk reduction within the planning area is adequate.	2.94
The planning area is prepared for the probable impacts on natural hazards due to the impacts from a changing climate.	2.94
Members of the public know where to find information about hazards and risk.	3.00
Citizens have a good understanding of natural hazard exposure and risk.	3.39
Real Estate professionals adequately disclose risk exposure from natural hazards at the time of sale of real property.	3.39

Goal Setting

- Attendees participated in a 30-minute goal setting activity.
- The LPC reviewed the goals from the 2015 HMP and the 2018 Colorado State Plan, while seeing a side-by-side comparison of the two plans' goals.
- Reviewed the guidelines for setting goals and defined the idea of goals more clearly. The LPC reviewed goals as:
    - General guidelines that explain what you want to achieve
    - Broad, long-term, policy-type statements and represent long term global vision
    - Define the benefits that the plan is trying to achieve

  - The success of the plan, once implemented, should be measured by the degree to which its goals have been met
  - Should be compatible with the needs and goals expressed in other available community planning documents and the 2018 Colorado State HMP.
- Looked at other examples of goals from other HMPs that align with mitigation activity types and supporting community lifelines.
- Attendees drafted and approved the following updated goals for the 2020 Update:

1) *Reduce impacts, costs, and damages from hazard events to people, property, local government and private assets, economy, and natural and cultural resources.*
2) *Increase public awareness of hazards and their mitigation.*
3) *Strengthen communication and coordination among public entities, non-governmental organizations (NGOs), businesses and private citizens.*
4) *Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning to consider resiliency.*
5) *Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.*
6) *Enhance the quality of assessments, analysis and planning through the development and collection of data.*
7) *Review, update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.*
8) *Support continuity of operations pre-, during, and post- hazard events including the support of community lifelines.*

Objectives Exercise

- The definition of an objective was discussed. Objectives were clearly defined as:
  - Short-term aims which, when combined, form a strategy or course of action to meet a goal.
  - Defining implementation steps to attain the identified goals.
  - Unlike goals, objectives are specific measurable.
- The LPC reviewed the objectives from the 2015 HMP and 2018 State Plan with a side-by-side comparison of the two plans' objectives.
- Link to the Objectives Exercise to be completed as homework prior to the next LPC meeting

Homework (before the next LPC meeting)

- Complete Objectives Exercise on Survey Monkey by 9/4/2020
  - https://www.surveymonkey.com/r/8F7KJWD

Planning Participants

- Phase 1 of the Jurisdictional Annex Process is due by August 31, 2020

Adjourn

- Meeting was adjourned at 3:30

TETRA TECH

Douglas County
Natural Hazard Mitigation Plan Update

Local Planning Committee Meeting

Wednesday August 19, 2020

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Meeting Agenda

Review Meeting Minutes

- July 22, LPC – Meeting Notes/Bulletin
- Hazards of Concern Exercise

Mission Statement

- Review 2015 Mission Statement
- Changes or Enhancements?

Capability exercise

- Ranking of current capabilities

Goal Setting

- Review the goals from the 2015 HMP & State Plan
- Changes or enhancements?
- Approve goals for 2020 Update (if quorum is present)

Objective's exercise

- What is an objective
- Review the objectives from the 2015 HMP and State Plan
- Objectives exercise

Hazards of Concern Exercise Results

Hazard	Ranking
Wildfire	4.68
Epidemic / Pandemic	4.52
Drought	4.28
Hail	4.28
Thunderstorm / Lightening	3.96
Flooding	3.64
Hazardous Materials Release	3.6
Severe Wind	3.36
Tornado	3.36
Extreme Heat	3.2
Erosion & Deposition	2.56
Landslide / Mud / Debris Flows / Rockfall / Rockslide	2.52
Dam Failure	2.44
Expansive Soils & Heaving Bedrock	2.28
Animal Disease Outbreak	2.2
Sinkholes / Subsidence / Abandoned Mine	1.96
Earthquake	1.84
Avalanche	1.56

Update Mission Statement – 15 Min

The purpose of this plan update is to guide hazard mitigation planning to better protect the people and property of the County from the effects of hazard events. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed, among other things, to ensure Douglas County and participating jurisdictions' continued eligibility for certain federal disaster assistance: specifically, the FEMA Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA). Completion also earns credits for the National Flood Insurance Program's Community Rating System (CRS) which provides for lower flood insurance premiums in CRS communities. - ***Section 1.1, 2015 Douglas County HMP Update***

The State Plan is the demonstration of Colorado's commitment to reduce risks from hazards and serves as a guide for state decision makers as they commit resources to reducing the effects of hazards. ***- 2018 Colorado Hazard Mitigation Plan***

Capability Ranking Exercise – 10 Minutes

Rank statements relating to County or municipal capabilities in general.

- Agree/Somewhat Agree/Neutral/Somewhat Disagree/Disagree
- Inform goal & objective setting
- Inform Mitigation Strategy and project development
- https://bit.ly/2YbLEl4

Goal Setting – 30 Min

CFR 201.6(c)(3)(i): "The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards."

- ✓ **Goals are general guidelines that explain what you want to achieve.**
- ✓ **They are broad, long-term, policy-type statements and represent long term global visions.**
- ✓ **Goals define the benefits that the plan is trying to achieve.**
- ✓ **The success of the plan, once implemented, should be measured by the degree to which its goals have been met.**
- ✓ **Goals should be compatible with the needs and goals expressed in other available community planning documents and the 2018 Colorado State HMP.**

2018 Colorado State Plan Goals vs. 2015 Douglas County Goals

2018 Colorado State Plan HMP Goals

a) Minimize the loss of life and personal injuries from all-hazard events.

b) Reduce losses and damages to state, tribal, and local governments, as well as special districts and private assets, and support similar local effort.

c) Reduce federal, state, tribal, local, and private costs of disaster response and recovery.

d) Support mitigation initiatives and policies that promote disaster resiliency, nature-based solutions, cultural resources and historic preservation, and climate adaptation strategies.

e) Minimize interruption of essential services and activities

f) Incorporate equity considerations into all mitigation strategies.

g) Support improved coordination of risk mitigation between and among the public, private, and non-profit sectors .

h) Create awareness and demand for mitigation as a standard of practice.

2015 Douglas County HMP Goals

1) Reduce impacts and damages from hazard events to people, property, local government assets, economy and natural resources.

2) Increase public awareness of hazards and their mitigation.

3) Strengthen communication and coordination among public agencies, non-governmental organizations (NGOs), businesses and private citizens.

4) Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning.

5) Reduce costs of disaster response and recovery.

Other examples of Goals: City of Sugar Land, TX HMP Goals

Goal 1: **Warning** — Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.

Goal 2: **Data Collection, Studies & Planning** — Enhance the quality of assessments, analysis and planning through the development and collection of data.

Goal 3: **Public Outreach** — Develop and enhance communications and education capabilities to the public regarding hazards, including the steps that can be taken to mitigate their impact.

Goal 4: **Mitigate Structures & Protect Lives** — Implement protective measures to reduce the effect of natural, technological and human caused hazards including measures that enhance public safety and reduce the risk of damage to public and private property.

Goal 5: **Protect Natural & Cultural Resources** — Reduce adverse environmental, natural resource, cultural resource, and economic impacts from natural, technological, and human-caused hazard events.

Goal 6: **Codes and Standards**— Review update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.

Goal 7: **Coordination** — Enhance coordination between private sector, local, state, tribal, and federal agencies to improve mitigation capabilities and reduce the risk of natural, technological and human caused hazard events.

Goal 8: **Continuity of Operations** — Support continuity of operations pre-, during, and post- hazard events including the support of community lifelines.

Objective Setting - 30 Min

- ✓ **Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal.**
- ✓ **Objectives define implementation steps to attain the identified goals.**
- ✓ **Unlike goals, objectives are specific and measurable.**

Example: "Objective 1: Manage development in geologically hazardous areas and floodplains to protect life and property."

Goals Met: Codes and standards, protect structures and lives, protect natural resources, and promote coordination between government, public & private sector.

2018 Colorado State Plan Goals vs. 2015 Douglas County Objectives

2018 Colorado State Plan HMP Objectives

- Promote activities that are climate neutral and supportive of appropriate renewable and alternative energy.
- Strengthen hazard risk communication tools and procedures.
- Strengthen continuity of operations to ensure the delivery of essential services.
- Strengthen cross-sector connections.
- Identify specific areas at risk to natural hazards and zones of vulnerability .
- Expand public awareness, education, and information programs relating to hazards and mitigation methods and techniques.
- 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.
- Reduce downtime and revenue losses, resulting from hazard events, for local governments and private nonprofit organizations.
- Through training, grants, and technical assistance, increase local government use of land use strategies that reduce risks to hazards.

2015 Douglas County HMP Objectives

- 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
- Increase awareness about natural hazards.

2020 Douglas County HMP Objectives Exercise

https://www.surveymonkey.com/r/8F7KJWD

Next Steps

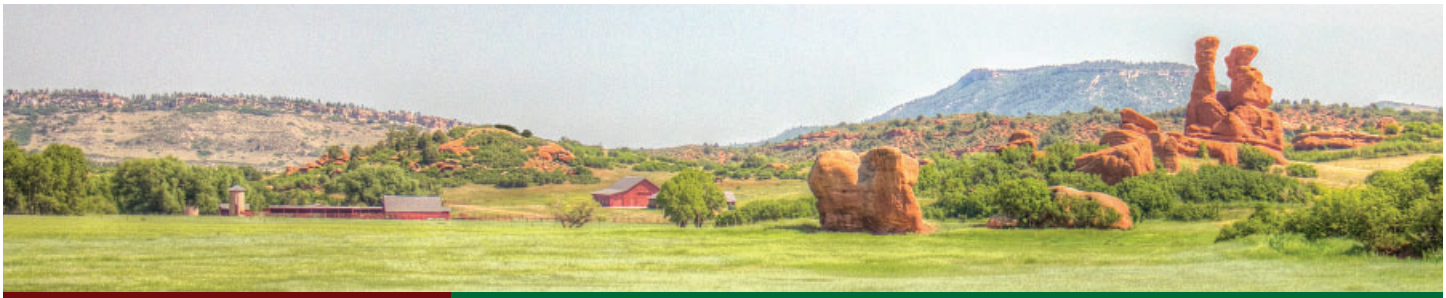
Local Planning Committee

- Complete Objectives Exercise - https://www.surveymonkey.com/r/8F7KJWD

Planning Participants

- Phase 1 of the Jurisdictional Annex Process due by August 31, 2020

Questions ?



DOUGLAS COUNTY COLORADO

Local Natural Hazard Mitigation Plan

Local Planning Committee UPDATE

Oct. 2020

CORE PLANNING TEAM

CHAIRPERSON
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NEXT STEERING COMMITTEE MEETING

Oct. 28, 2020
1:30 - 3:30 p.m.
Virtual Meeting
https://bit.ly/33namlm

Are you and your family natural disaster-resilient?

Douglas County seeks your input on the countywide Local Natural Hazard Mitigation Plan.

Your opinion is needed on the County's plan to create a safer, more disaster-resilient community.

During the next four months we will be reaching out, asking for your input on the County's update to the **FEMA-required Local Natural Hazard Mitigation Plan**, starting now with a recently-posted, **quick public opinion poll**, and ending with your input on the draft plan in January 2021.

Why is the plan important? "As just one example, the threat we saw from wildfires this year was mitigated by excellent planning and execution of that plan, ensuring that natural hazards didn't become natural disasters," said Abe Laydon Douglas County Commissioner. "The county's role in averting loss of life and property damage is successful because of the ongoing engagement of our exceptional citizens and community partners in proactive hazard mitigation planning."

That's why Douglas County and multiple local and regional government partners and stakeholders are engaged in the development of a ***Local Natural Hazard Mitigation Plan update***. This plan will help us reduce the County's vulnerability to these natural hazards – and thus reduce or eliminate long-term risk to people and property from hazards.

First steps first…. in fewer than 10 minutes your input will make a huge difference in community resiliency during a disaster. Please help us become better informed by participating **in a quick questionnaire** regarding your concerns and your level of preparedness.

According to the US Department of Homeland Security, hazard mitigation planning and the implementation of risk reduction activities can significantly reduce the physical, financial, and emotional losses caused by disasters.

For more information visit **douglas.co.us** and search Local Natural Hazard Mitigation Plan.




Sept. 16, 2020 Steering Committee Meeting Re-cap

On September 16, 2020, the Core Planning Team hosted the 3rd Local Planning Committee Meeting for the Douglas County All Hazards Mitigation Plan with 23 persons in attendance. The Committee established the following:

- Participated in Integrated Communications and Citizen Engagement Strategy Presentation.
  Reviewed outcome of the Capability Exercise.
- Reviewed proposed Plan Objectives an associated confirmed Goals. Objectives to be finalized by 9/23/2020.
- Presented with instructions and description of the SWOO Exercise. SWOO to be completed by 9/25/2020. Link to SWOO is available by visiting https://bit.ly/3c1Kleg

Local Planning Committee

Action Item 1	Confirm objectives. Comple SWOO at https://bit.ly/3c1Kleg

Planning Partners

Action Item 1	Update Development Trends and Critical Facilities data by 10/9/2020 Development Trends Survey - Base Map Reference at https://arcg.is/11jOPD and Survey Link at https://arcg.is/0Ozo1LW0 Critical Facilities Survey - Survey Link with Base Map at https://arcg.is/bPqq9 and Larger Reference Base Map at https://arcg.is/08PHLj
Action Item 2	Phase II of the Jurisdictional Annex Process due by November 18, 2020
	Please contact a member of the Core Planning Team for assistance with any issue, so we may work on finishing the required deliverables.

Date/Time of Meeting:	Wednesday September 16, 2020 1:30PM-3:30PM
Location:	Virtual Meeting
Subject:	3rd Local Planning Committee Meeting
Project Name:	Douglas County Local Natural Hazard Mitigation Plan Update
In Attendance	***Attendees: 23 Persons*** **Core Planning Team:** Tim Johnson, Lisa Goudy, Tim Hallmark, Zak Humbles, Joel Hanson, Chrissie Angeletti
Summary Prepared by:	Chrissie Angeletti
Quorum – Yes or No	Yes

Welcome and Review Meeting Minutes

- Tim Johnson, Chairman of the LPC, welcomed the Committee members to the meeting and facilitated group introductions.
- Chrissie Angeletti, the Tetra Tech project manager, confirmed that a quorum was present and reviewed the meeting agenda. Mrs. Angeletti then asked the Steering Committee for a vote to approve the meeting minutes from the Steering Committee meeting conducted on August 19, 2020.
    - The minutes were approved.
- Reviewed Capability Ranking Results
- Distributed handouts included: Power Point presentation, Proposed Objectives, Integrated Communications and Citizen Engagement Strategy, and SWOO Exercise.

Integrated Communications and Citizen Engagement Strategy

- Introduction by Wendy Manitta Holmes, APR, Director, Communications Public Affairs at Douglas County, Colorado
- Participants attended a 20-minute presentation by Ms. Manitta Holmes, which discussed:
    - Multi-jurisdictional Communications Task Force
    - Social Media
    - Print Advertising
    - Digital Advertising
    - Visual Content Production (video and still photography)
    - Live Town Hall Production
    - Media Relations
    - Graphic Design & Logo Standards
    - Web page Content Management and Online Newsroom

Objective Setting

- Prior to discussing objective setting, the group was presented with the Confirmed Goals for the 2020 HMP Update. The Confirmed Goals are listed as follows:

  - *DC1 Warning - Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.*
  - *DC2 Data Collection - Enhance the quality of assessments, analysis and planning through the development and collection of data.*
  - *DC3 Outreach and Education - Increase public awareness of hazards and their mitigation.*
  - *DC4 Mitigate Structures and Protect Lives - Reduce impacts, costs, and damages from hazard events to people, property, local government and private assets, economy, and natural and cultural resources.*
  - *DC5 Planning - Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning to consider resiliency.*
  - *DC6 Codes & Standards - Review, update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.*
  - *DC7 Entity Coordination - Strengthen communication and coordination among public entities, non-governmental organizations (NGOs), businesses and private citizens.*
  - *DC8 Continuity of Operations - Support continuity of operations pre-, during, and post-hazard events including the support of community lifelines.*
- Attendees reviewed the definition of objectives, along with an example of an objective and how it related to a goal.
- Review ranked objectives selected from Objectives Survey.
- After reviewing ranked objectives, attendees discussed any changes or enhancements to the objectives.
- Proposed objectives for 2020 Update are as follows:
  - *Obj 1: Improve systems that provide warning and emergency communications. (DC-1)*
  - *Obj 2: Increase public awareness of risk. (DC-1, 2, 3, 7)*
  - *Obj 3: Research, develop, and promote adoption of cost-effective building and development laws, regulations, and ordinances. (DC-2, 4, 6)*
  - *Obj 4: Improve hazard information databases and maps and increase accessibility to those resources. (DC – 1, 2, 3, 7, 8)*
  - *Obj 5: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC – 1, 2, 3, 4, 5, 8)*
  - *Obj 6: Manage development in geologically hazardous areas and floodplains to protect life and property. (DC – 6, 7)*
  - *Obj 7: Incorporate risk reduction considerations in new and updated infrastructure and development plans to reduce the impacts of natural hazards. (DC – 2, 4, 5, 6, 7)*
  - *Obj 8: Establish and maintain partnerships among all levels of government, private sector, community groups, and institutions of higher learning that improve and implement methods to protect life and property. (DC – 1, 2, 3, 4, 5, 7, 8)*
  - *Obj 9: Improve understanding of the locations, potential impacts, and linkages among threats, hazards, vulnerability, and measures needed to protect life safety and health. (SL -2, 3, 4, 5, 7)*
  - *Obj 10: Consider risk reduction in long-term planning. (DC – 2, 4, 6, 7)*
  - *Obj 11: Minimize impacts of hazard events to key employers. (DC – 1, 2, 3, 4, 7, 8)*
  - *Obj 12: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC - 1, 2, 3, 4, 5, 7, 8)*

- *Obj 13: Identify projects that simultaneously reduce risk while increasing operational area resilience and sustainability. (DC – 1, 2, 3, 4, 5, 6, 7, 8)*
- *Obj 14: Establish a partnership among all levels of government and the business community to improve and implement methods to protect property. (DC – 2, 3, 4, 5, 7, 8)*
- *Obj 15: Reduce risks that may impact critical business operations. (DC– 1, 2, 3, 4, 5, 7, 8)*
- *Obj 16: Promote and enhance outreach and education efforts by state, regional and local agencies with hazard mitigation plans and programs to actively encourage engagement of stakeholder groups such as homeowners, private sector businesses, and nonprofit community organizations. (DC – 2, 3, 4, 5, 7, 8)*
- *Obj 17: Inform the public on the risk exposure to natural hazards and ways to increase the public's capability to prepare, respond, recover and mitigate the impacts of these events. (DC– 1, 2, 3, 4, 5, 6, 7)*
- *Obj 18: Modify structures, as necessary, to meet life safety standards. (DC – 3, 4, 6, 7, 8)*
- *Obj 19: Encourage the incorporation of mitigation measures into repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial hazard risk. (DC – 2, 3, 4, 5 6, 7)*
- *Obj 20: Retrofit, purchase, or relocate structures in high hazard areas, especially those known to be repetitively damaged. (DC– 2, 3, 4, 5, 6, 7)*
- *Obj 21: Encourage hazard mitigation measures that promote and enhance natural processes and minimize adverse impacts on the ecosystem. (DC– 2, 3, 4, 5, 6, 7)*
- *Obj 22: Promote enforcement of relevant state regulations and local ordinances that significantly reduce life loss and injuries. (DC– 2, 3, 4, 5, 6, 7)*
- *Obj 23: Strengthen local building code enforcement. (DC– 2, 3, 4, 6, 7)*
- *Obj 24: Ensure continuity of operations of essential county government services. (DC – 2, 3, 4, 5, 7, 8)*
- *Obj 25: Protect rare, endangered, unusual, or educationally important natural resources. (DC – 2, 3, 5, 6, 7)*
- *Obj 26: Provide incentives for development and land use techniques that reduce risks. (DC- 2, 3, 4, 5, 6, 7)*

SWOO Exercise

- Attendees were presented with the SWOO Exercise and a description of how to complete it as their homework before the next LPC meeting. For each Hazard of Concern (10 Natural and 1 Non-Natural) Identify:
  - Strengths- What does the County of Plan Participant do well to mitigate the hazard? What can we capitalize on?
  - Weaknesses- What could we do better? What do we need to strengthen?
  - Objectives- Things that are preventative or need to be overcome (e.g. regulatory, geographical, environmental, financial)
  - Opportunities- Identify specific projects/ programs to mitigate the hazard
- Survey link: https://bit.ly/3c1Kleg

Homework (before the next LPC meeting)

- Confirm Objectives
- Complete SWOO - https://bit.ly/3c1Kleg

Planning Participants

- Update Development Trends and Critical Facilities data by 10/9/2020
- Phase II of the Jurisdictional Annex Process due by November 18, 2020

Adjourn

- Meeting was adjourned at 3:30 pm.

TETRA TECH

Douglas County
Natural Hazard Mitigation Plan Update

Local Planning Committee Meeting

Wednesday September 16, 2020

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Meeting Agenda

Review Meeting Minutes

- August 19, LPC – Meeting Notes/Bulletin
- Capability Ranking Results

Integrated Communications & Citizen Engagement Strategy

- Introduction
- Presentation

Objective Setting

- Review ranked objectives selected from survey
- Changes or enhancements?
- Approve objectives for 2020 Update (if quorum is present)

SWOO exercise

- For each Hazard of Concern Identify'
  - Strengths, Weaknesses, Objectives, and Opportunities

Hazards of Concern Exercise Results

Capability Description	Ranking
Emergency management is provided by a unified authority or program.	1.61
County/ municipality staff members with emergency management functions are adequately trained.	1.67
County/ municipality staff are knowledgeable about hazards and their impacts and are willing to share that knowledge with the public.	1.72
Emergency response functions for the County/ municipality are clearly defined and are effective.	1.78
Strong collaboration and coordination exist between the County/ municipality, neighboring jurisdictions, the County and state and federal agency	1.78
Roles and responsibilities for emergency management within the County/ municipality clearly defined.	1.94
Appropriate and timely warning systems are in place.	1.94
There is a good understanding of the risk posed by hazards the planning area is susceptible to.	2.00
The capability to assess and mitigate risk from natural hazards is high.	2.17
The County/ municipality currently has adopted policies that encourage development to be located outside of high-risk areas.	2.17
Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.	2.22
The County/ municipality currently has a variety of regulatory and non-regulatory strategies to reduce risk.	2.22
All relevant stakeholders are engaged in the County's/ municipality's risk management efforts.	2.22
Risk from natural hazards within the planning area is adequately mapped and regulated.	2.28
There is political support for risk management within the planning area.	2.28

Hazards of Concern Exercise Results

As a citizen of the County/ municipality, I feel confident that I am prepared for the impacts from any natural hazard that my impact my property.	2.33
Coordinated public outreach regarding risk from all hazards convey clear, consistent messaging to the public.	2.39
Information on flood insurance is readily available within the planning area.	2.39
Areas that provide natural resource protection are identified and protected.	2.44
The planning area risk management programs are fair and equitable.	2.44
Existing flood control systems are effective and well maintained.	2.50
The County/ municipality development regulations for new development within identified hazards zones are adequate to address that risk.	2.56
There is a coordinated program to maintain drainage systems free of debris.	2.56
The enforcement of Codes and Standards within the planning area is strong.	2.56
There is strong public support for risk reduction within the planning area.	2.61
The funding to support risk reduction within the planning area is adequate.	2.94
The planning area is prepared for the probable impacts on natural hazards due to the impacts from a changing climate.	2.94
Members of the public know where to find information about hazards and risk.	3.00
Citizens have a good understanding of natural hazard exposure and risk.	3.39
Real Estate professionals adequately disclose risk exposure from natural hazards at the time of sale of real property.	3.39

Integrated Communications & Citizen Engagement Strategy

Introduction –

Wendy Manitta Holmes, APR
Director, Communications Public Affairs at Douglas County, Colorado

Presentation – 20 Min

- Multi-Jurisdictional Communications Task Force
- Social Media
- Print Advertising
- Digital Advertising
- Visual Content Production (video and still photography)
- Live Town Hall Production
- Media Relations
- Graphic Design & Logo Standards
- Web page Content Management and Online Newsroom

Confirmed Goals

DC1 Warning - Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.

DC2 Data Collection - Enhance the quality of assessments, analysis and planning through the development and collection of data.

DC3 Outreach and Education - Increase public awareness of hazards and their mitigation.

DC4 Mitigate Structures and Protect Lives - Reduce impacts, costs, and damages from hazard events to people, property, local government and private assets, economy, and natural and cultural resources.

DC5 Planning - Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning to consider resiliency.

DC6 Codes & Standards - Review, update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.

DC7 Entity Coordination - Strengthen communication and coordination among public entities, non-governmental organizations (NGOs), businesses and private citizens.

DC8 Continuity of Operations - Support continuity of operations pre-, during, and post- hazard events including the support of community lifelines.

Objective Setting

- ✓ **Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal.**
- ✓ **Objectives define implementation steps to attain the identified goals.**
- ✓ **Unlike goals, objectives are specific and measurable.**

Example: "Objective 1: Manage development in geologically hazardous areas and floodplains to protect life and property."

Goals Met: Codes and standards, protect structures and lives, protect natural resources, and promote coordination between government, public & private sector.

Objective Results

Obj 1: Improve systems that provide warning and emergency communications. (DC-1)

Obj 2: Increase public awareness of risk. (DC-1, 2, 3, 7)

Obj 3: Research, develop, and promote adoption of cost-effective building and development laws, regulations, and ordinances. (DC-2, 4, 6)

Obj 4: Improve hazard information databases and maps and increase accessibility to those resources. (DC – 1, 2, 3, 7, 8)

Obj 5: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC – 1, 2, 3, 4, 5, 8)

Obj 6: Manage development in geologically hazardous areas and floodplains to protect life and property. (DC – 6, 7)

Obj 7: Incorporate risk reduction considerations in new and updated infrastructure and development plans to reduce the impacts of natural hazards. (DC – 2, 4, 5, 6, 7)

Obj 8: Establish and maintain partnerships among all levels of government, private sector, community groups, and institutions of higher learning that improve and implement methods to protect life and property. (DC – 1, 2, 3, 4, 5, 7, 8)

Obj 9: Improve understanding of the locations, potential impacts, and linkages among threats, hazards, vulnerability, and measures needed to protect life safety and health. (SL -2, 3, 4, 5, 7)

Obj 10: Consider risk reduction in long-term planning. (DC – 2, 4, 6, 7)

Obj 11: Minimize impacts of hazard events to key employers. (DC – 1, 2, 3, 4, 7, 8)

Obj 12: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC - 1, 2, 3, 4, 5, 7, 8)

Objective Results

Obj 13: Identify projects that simultaneously reduce risk while increasing operational area resilience and sustainability. (DC – 1, 2, 3, 4, 5, 6, 7, 8)

Obj 14: Establish a partnership among all levels of government and the business community to improve and implement methods to protect property. (DC – 2, 3, 4, 5, 7, 8)

Obj 15: Reduce risks that may impact critical business operations. (DC– 1, 2, 3, 4, 5, 7, 8)

Obj 16: Promote and enhance outreach and education efforts by state, regional and local agencies with hazard mitigation plans and programs to actively encourage engagement of stakeholder groups such as homeowners, private sector businesses, and nonprofit community organizations. (DC – 2, 3, 4, 5, 7, 8)

Obj 17: Inform the public on the risk exposure to natural hazards and ways to increase the public's capability to prepare, respond, recover and mitigate the impacts of these events. (DC– 1, 2, 3, 4, 5, 6, 7)

Obj 18: Modify structures, as necessary, to meet life safety standards. (DC – 3, 4, 6, 7, 8)

Obj 19: Encourage the incorporation of mitigation measures into repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial hazard risk. (DC – 2, 3, 4, 5 6, 7)

Obj 20: Retrofit, purchase, or relocate structures in high hazard areas, especially those known to be repetitively damaged. (DC– 2, 3, 4, 5, 6, 7)

Obj 21: Encourage hazard mitigation measures that promote and enhance natural processes and minimize adverse impacts on the ecosystem. (DC– 2, 3, 4, 5, 6, 7)

Obj 22: Promote enforcement of relevant state regulations and local ordinances that significantly reduce life loss and injuries. (DC– 2, 3, 4, 5, 6, 7)

Obj 23: Strengthen local building code enforcement. (DC– 2, 3, 4, 6, 7)

Obj 24: Ensure continuity of operations of essential county government services. (DC – 2, 3, 4, 5, 7, 8)

Obj 25: Protect rare, endangered, unusual, or educationally important natural resources. (DC – 2, 3, 5, 6, 7)

Obj 26: Provide incentives for development and land use techniques that reduce risks. (DC- 2, 3, 4, 5, 6, 7)

SWOO – 30 Minutes

For each Hazard of Concern (10 Natural & 1 Non-Natural) Identify:

Strength – What does the County of Plan Participant do well to mitigate the hazard

Weakness – What could we do better; what do we need to

Obstacle – Things that is preventative or needs to be overcome (e.g. regulatory, geographical, environmental, financial)

Opportunities – Identify specific projects/programs to mitigate the hazard

SURVEY LINK - https://bit.ly/3c1Kleg

Next Steps

Local Planning Committee

- Complete SWOO
  - https://bit.ly/3c1Kleg

Planning Participants

- Phase II of the Jurisdictional Annex Process due by November 18, 2020

Questions ?

DOUGLAS COUNTY COLORADO

Local Natural Hazard Mitigation Plan

Local Planning Committee UPDATE

Nov. 2020

CORE PLANNING TEAM

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OUTREACH COORDINATOR
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MEDIA RELATIONS
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NEXT STEERING COMMITTEE MEETING

January 27, 2021
3 to 4 p.m.
Virtual Meeting
https://bit.ly/2QPET4o

You can help reduce your community's vulnerability to natural hazards

Join a virtual 2021 Local Natural Hazard Mitigation Plan Risk Assessment Presentation, Wednesday, Nov. 18 at 5:30 p.m.

Do you wish to know how to better prepare your family for and understand the risks posed by natural hazards to our community?

Douglas County is currently working to update the FEMA-required Local Natural Hazard Mitigation Plan and welcomes your input at a virtual public presentation sharing the 2020 Risk Assessment on Wednesday, Nov. 18 at 5:30 p.m.

Join in to learn more about local hazards and the potential for human and economic losses identified by the Risk Assessment while sharing your input. You will also get a sneak peek of key findings from the recent Local Natural Hazard Mitigation Opinion Poll.

This presentation is just one opportunity for you to participate in the Local Natural Hazard Mitigation Plan update over the next few months. Your input along the way will make a huge difference in community resiliency during a disaster.

If you haven't already responded to the opinion poll, please help us become better informed by completing the quick questionnaire regarding your concerns and your level of preparedness.

Whether new to Douglas County or a long-time resident, you know that severe weather, wildfires or floods can have a significant impact on our families and our communities. Please join in as we create this plan that will help reduce the County's vulnerability to natural hazards – and thus reduce or eliminate long-term risk to people and property.

For more information visit **douglas.co.us** and search Local Natural Hazard Mitigation Plan.




Oct. 28, 2020 Steering Committee Meeting Re-cap

On October 28, 2020, the Core Planning Team hosted the 4th Local Planning Committee Meeting for the Douglas County All Hazards Mitigation Plan with 22 persons in attendance. The Committee established the following:

- Approved the Local Natural Hazard Mitigation Plan objectives for the 2021 Update.
- Reviewed the results of the online SWOO (Strengths, Weaknesses, Obstacles, and Opportunities) exercise.
- Reviewed the Risk Assessment methodology and results for each hazard effecting the Planning Area.
- Reviewed the Risk Ranking Methodology and current risk rankings for each hazard; and discussed the adjustment of Hazard Risk Ranking to reflect the potential impacts of certain hazards more accurately.
- Public Outreach includes Next Door Polling and Public Poll (closed Jan. 1, 2021) located at douglas.co.us/natural-hazard-mitigation-plan/local-natural-hazard-mitigation-plan-poll/
- Risk Assessment Public Presentation, November 18, 2020 at 5:30 p.m.

Planning Partners

Action Item 1	Complete Phase II of the Jurisdictional Annex, Due November 18, 2020.
	We understand this is a busy time of year and the first time many of you have been involved in a hazard mitigation planning process. We hope you are making progress on completing these deliverables and know that some of you may have questions. Please contact a member of the Core Planning Team for assistance with any issue, we can work with you to finish the required deliverables!

Date/Time of Meeting:	Wednesday October 28, 2020 2:30PM-4PM
Location:	Virtual Meeting
Subject:	4th Local Planning Committee Meeting
Project Name:	Douglas County Local Natural Hazard Mitigation Plan Update
In Attendance	***Attendees: 22 Persons*** **Core Planning Team:** Tim Johnson, Lisa Goudy, Tim Hallmark, Zak Humbles, Joel Hanson, Chrissie Angeletti
Summary Prepared by:	Chrissie Angeletti
Quorum – Yes or No	Yes

Welcome and Review Meeting Minutes

- Tim Johnson, Chairman of the LPC, welcomed the Committee members to the meeting and facilitated group introductions.
- Chrissie Angeletti, the Tetra Tech project manager, confirmed that a quorum was present and reviewed the meeting agenda. Mrs. Angeletti then asked the Steering Committee for a vote to approve the meeting minutes from the Steering Committee meeting conducted on September 16, 2020.
    - The minutes were approved.
- Distributed handouts included: Power Point presentation, Agenda, September 16, 2020 Meeting notes.

Objective Confirmation

The Objectives were reviewed and confirmed as the following:

- *Obj 1: Improve systems that provide warning and emergency communications. (DC-1)*
- *Obj 2: Increase public awareness of risk. (DC-1, 2, 3, 7)*
- *Obj 3: Research, develop, and promote adoption of cost-effective building and development laws, regulations, and ordinances. (DC-2, 4, 6)*
- *Obj 4: Improve hazard information databases and maps and increase accessibility to those resources. (DC – 1, 2, 3, 7, 8)*
- *Obj 5: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC – 1, 2, 3, 4, 5,7, 8)*
- *Obj 6: Manage development in geologically hazardous areas and floodplains to protect life and property. (DC – 6, 7)*
- *Obj 7: Incorporate risk reduction considerations in new and updated infrastructure and development plans to reduce the impacts of natural hazards. (DC – 2, 4, 5, 6, 7)*
- *Obj 8: Establish and maintain partnerships among all levels of government, private sector, community groups, and institutions of higher learning that improve and implement methods to protect life and property. (DC – 1, 2, 3, 4, 5, 7, 8)*

- *Obj 9: Improve understanding of the locations, potential impacts, and linkages among threats, hazards, vulnerability, and measures needed to protect life safety and health. (SL -2, 3, 4, 5, 7)*
- *Obj 10: Consider risk reduction in long-term planning. (DC – 2, 4, 6, 7)*
- *Obj 11: Minimize impacts of hazard events to key employers. (DC – 1, 2, 3, 4, 7, 8)*
- *Obj 12: Identify projects that simultaneously reduce risk while increasing operational area resilience and sustainability. (DC – 1, 2, 3, 4, 5, 6, 7, 8)*
- *Obj 13: Establish a partnership among all levels of government and the business community to improve and implement methods to protect property. (DC – 2, 3, 4, 5, 7, 8)*
- *Obj 14: Reduce risks that may impact critical business operations. (DC– 1, 2, 3, 4, 5, 7, 8)*
- *Obj 15: Promote and enhance outreach and education efforts by state, regional and local agencies with hazard mitigation plans and programs to actively encourage engagement of stakeholder groups such as homeowners, private sector businesses, and nonprofit community organizations. (DC – 2, 3, 4, 5, 7, 8)*
- *Obj 16: Inform the public on the risk exposure to natural hazards and ways to increase the public's capability to prepare, respond, recover and mitigate the impacts of these events. (DC– 1, 2, 3, 4, 5, 6, 7)*
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- *Obj 25: Provide incentives for development and land use techniques that reduce risks. (DC- 2, 3, 4, 5, 6, 7)*

SWOO Review

- Review results of online survey and summary to date of the Strengths, Weaknesses, Objectives, and Opportunities (SWOO) exercise.
    - Major area for improvement across all hazards was education/outreach regarding risk and what individuals can do regarding mitigation.

Risk Assessment Update

- Presented Risk Assessment Methodology. Identified how each hazard was evaluated based on the type of information available.
    - HAZUS
    - Qualitative Analysis
- Review Preliminary Risk Assessment Results
    - Discussed correlation between occurrence of fire and subsequent occurrence of landslide

Risk Ranking Exercise

- Review Hazards of Concern Exercise Results from first LPC meeting and how they compared to the risk Assessment results
- Present Risk Ranking Methodology
- Present Current Risk Rankings
- Adjust Hazard Risk Ranking
    - E.g. Earthquake may not appropriately ranked due to implication that all structures would be impacted.

Public Outreach

- Present current outreach efforts and results to date
    - Next Door Polls
- Deadline for online public survey through HMP website - January 1, 2021
- Public Risk Assessment Presentation November 18th 2020.
    - https://bit.ly/3mNoNpQ

Next Steps

- Promote Public Risk Assessment Presentation November 18th 2020, at 5:30pm.
- Planning Participants Phase III
- Next/Final LPC Meeting January 27th 2021 – Review Draft Plan.

Adjourn

- Meeting was adjourned at 4pm.

DOUGLAS COUNTY COLORADO

Local Natural Hazard Mitigation Plan

Local Planning Committee UPDATE

Jan. 2021

CORE PLANNING TEAM

CHAIRPERSON
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Comment on 2021 Draft Plan Update

Public Meeting
February 10, 2021
5 p.m.
Virtual Meeting

Your feedback is needed on a countywide plan to create a natural disaster-resilient community

Join a virtual 2021 Local Natural Hazard Mitigation Draft Plan presentation, Wednesday, Feb. 10 at 5:30 p.m.

Are you and your family prepared for the natural hazard risks that can occur in Douglas County?

Whether new to Douglas County or a long-time resident, you know that severe weather, wildfires, or floods can have a significant impact on our families and our communities.

Throughout the past year, Douglas County officials have been working with a local planning committee to update the FEMA-required Local Natural Hazard Mitigation Plan.

Please join your neighbors and friends on Wednesday, Feb. 10 at 5:30 p.m. and hear more about the plan to help reduce the County's vulnerability to natural hazards – and thus reduce or eliminate long-term risk to people and property.

The 2021 plan update includes input received from previous virtual meetings held during 2020, as well as results from a public opinion poll.

Click here to join the meeting or dial (audio only) 213-357-2812 and enter Conference ID: 836 568 866#.

Be among the first to receive news as it happens. Sign up here and select your specific news focus and delivery preferences.

For more information visit **douglas.co.us** and search Local Natural Hazard Mitigation Plan.




Jan 27, 2021 Steering Committee Meeting Re-cap

On Jan. 27, 2021, the Core Planning Team hosted the 5th and final Local Planning Committee Meeting for the Douglas County Local Natural Hazards Mitigation Plan with 25 persons in attendance. The Committee established the following

- Planning Participants attended a Phase III Jurisdictional Annex workshop and have submitted Draft Phase III. All Planning Participants will continue to develop the Phase III Jurisdictional annex with Core Planning Team support.
- Review of the 2021 Draft Plan Update - Updates and Additions to the 2021 Plan include updated critical facilities and addition of lifelines; additional/enhanced hazards of concern'; Pandemic – COVID-19; Animal/Disease Infestation; Conducted and exposure analysis for all soil hazards; Wildfire Hazard updated with the 2017 Wildfire Layer; Drought Hazard updated with 2020 Drought Monitor data; Flood Hazard updated with 2020 FIRMS; and Updated Census estimates to account for growth/development.
- Review structure of Draft Plan Vol I, II, and Appendices.
- Inquired if National Flood Insurance Program – Community Rating System participating communities (Douglas County and Town of Parker) will meet multiple times a year to evaluate the plan to earn additional CRA credit?
- Discussed methodology to provide feedback on the 2021 Draft Plan through pdf, email, and an online survey.
- The period to receive public comments on the Draft Plan will open February 10, 2021 and close on February 26, 2021.
- A virtual public meeting to review the draft plan and provide public comment will be hosted on February 10 at 5:30 p.m.

Planning Partners

Action Item 1	Complete Phase III of the Jurisdictional Annex, Due January 29, 2021
	We understand this is a busy time of year and the first time many of you have been involved in a hazard mitigation planning process. We hope you are making progress on completing these deliverables and know that some of you may have questions. Please contact a member of the Core Planning Team for assistance with any issue, we can work with you to finish the required deliverables!

Date/Time of Meeting:	Wednesday, January 27, 2021 3PM-4PM
Location:	Virtual Meeting
Subject:	5th Local Planning Committee Meeting
Project Name:	Douglas County Local Natural Hazard Mitigation Plan Update
In Attendance	***Attendees: 25 Persons*** **Core Planning Team:** Tim Johnson, Lisa Goudy, Tim Hallmark, Zak Humbles, Joel Hanson, Chrissie Angeletti
Summary Prepared by:	Chrissie Angeletti
Quorum – Yes or No	Yes

Welcome and Review Meeting Minutes

- Tim Johnson, Chairman of the LPC, welcomed the Committee members to the meeting and facilitated group introductions.
- Chrissie Angeletti, the Tetra Tech project manager, confirmed that a quorum was present and reviewed the meeting agenda.
- Distributed handouts included: Power Point presentation, and Agenda

Project Status

- PMT is currently finalizing Draft Plan
- Planning Participants attended the Phase III Workshop
    - All planning participants have submitted a draft Phase III Annex
    - PMT continued coordination to assist with completion of the Annex.

Review Draft Plan

- Updates and Additions
    - Updated critical facilities and addition of lifelines
        - Survey123 online mapping
    - Additional/enhanced hazards of concern
        - Pandemic
        - Animal/Disease Infestation
        - Exposure analysis for all soil hazards
        - Wildfire – 2017 Wildfire Layer
        - Updated Drought data – Drought Monitor
        - Updated all HAZUS models
        - 2020 FIRMS
        - Updated Census estimates to account for growth/development
    - Enhanced public and stakeholder outreach
        - Online polling
        - Nextdoor Poll
    - Risk assessment graphics and supplement appendix
- Review of Draft Plan Sections (Vol 1)
    - Section 1 – Introduction

  - Section 2 – Plan Adoption
  - Section 3– Planning Process
    - Stakeholder Outreach & Involvement
    - Public Outreach
  - Section 4 – County Profile
  - Section 5 – Risk Assessment
    - Methodology and Tools
    - Hazard Identification
    - Hazard Sections
    - Hazard Ranking
  - Section 6 – Mitigation Strategy
    - Mission Statement
    - Goals and Objectives
    - Past Mitigation Action Status
    - Past Mitigation Accomplishments
    - Strengths and Weaknesses Exercise
    - 2021 Strategy
      - Warning
      - Data Collection/Studies/Planning
      - Public Outreach
      - Structural
      - Natural Resource Protection
      - Code Development, Update, Enforcement
      - Coordination
      - Continuity of Operations
  - Section 7 - Plan Adoption, Implementation, Maintenance
    - Monitoring
    - Evaluating
    - Integrating
- Review of Draft Plan Sections (Vol II)
  - Section 8 – Planning Partnership
  - Section 9 – Jurisdiction Specific Annex
    - Location/Climate
    - History
    - Population/Development Trends
    - Status of previous actions
    - Capability Assessment
    - Integration into Planning
    - Jurisdiction specific hazard history/ranking
    - New Actions
- Review of Draft Plan Sections (Appendices)
  - Appendix A – Adoption Resolution
  - Appendix B – Meeting Documentation
  - Appendix C – Public and Stakeholder Outreach Documentation
  - Appendix E – Risk Assessment Supplement
  - Appendix E – Mitigation Strategy Supplement
  - Appendix F – Plan Review Tools

Plan Maintenance

- Determine if CRS communities would like to meet more than once a year to gain additional credit?

Consider Public and Stakeholder Comments

- How and When comments will be collected, reviewed, and incorporated

Public Outreach

- Publicize February 10th 2021 Public Presentation, 5:30 p.m.
  - https://bit.ly/39EAXwa
  - LPC does not need to attend
- Public Comment Period Ends February 26, 2021

Next Steps

- March Submit Draft Plan to State for review/comment
  - Address State comments
- Submit to FEMA for review/comment
- FEMA provides Approval Pending Adoption (APA)
  - Participating jurisdictions formally adopt Plan
  - Signed adoption documentation sent to FEMA
- FEMA issues Final Approval

Adjourn

- Meeting was adjourned at 4pm.

TETRA TECH

Douglas County Natural Hazard Mitigation Plan Update

Local Planning Committee Meeting

Wednesday January 27, 2021

complex world | CLEAR SOLUTIONS™

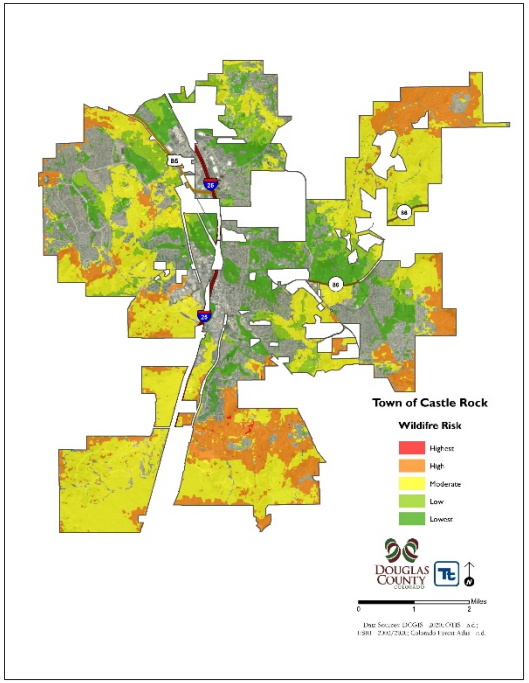
Today's Discussion

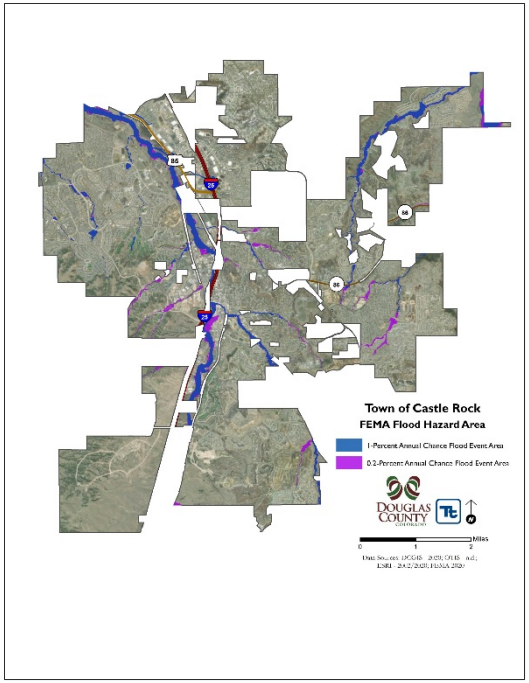
- Welcome and Opening Remarks
- Project Status
- Review Draft Plan
- Plan Maintenance
- Consider Public and Stakeholder Comments
- Next Steps
- General Discussion/Q&A
- Wrap-up

What is new in the 2021 HMP update?

- Updated critical facilities and addition of lifelines
  - Survey123 online mapping
- Additional/enhanced hazards of concern
  - Pandemic
  - Animal/Disease Infestation
  - Exposure analysis for all soil hazards
  - Wildfire – 2017 Wildfire Layer
  - Updated Drought data – Drought Monitor
  - Updated all HAZUS models
    - 2020 FIRMS
  - Updated Census estimates to account for growth/development
- Enhanced public and stakeholder outreach
  - Online polling
  - Nextdoor Poll
- Risk assessment graphics and supplement appendix

New Additions





Question: When you moved into your home, did you consider the impact that a natural or non-natural disaster could have on your home?

Yes, I considered the potential impact	**56%**
No, it was not something I considered	44%

181 votes Closed

DOUGLAS COUNTY COLORADO
Local Natural Hazard Mitigation Plan

Local Planning Committee **UPDATE** Oct. 2020

CORE PLANNING TEAM

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OUTREACH COORDINATOR
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MEDIA RELATIONS
Wendy Holmes
Wholmes@douglas.co.us

NEXT STEERING COMMITTEE MEETING

Oct. 28, 2020
1:30 - 3:30 p.m.
Virtual Meeting
https://bit.ly/33namIm

Are you and your family natural disaster-resilient?

Douglas County seeks your input on the countywide Local Natural Hazard Mitigation Plan.

Your opinion is needed on the County's plan to create a safer, more disaster-resilient community.

During the next four months we will be reaching out, asking for your input on the County's update to the **FEMA-required Local Natural Hazard Mitigation Plan**, starting now with a recently-posted, **quick public opinion poll**, and ending with your input on the draft plan in January 2021.

Why is the plan important? "As just one example, the threat we saw from wildfires this year was mitigated by excellent planning and execution of that plan, ensuring that natural hazards didn't become natural disasters," said Abe Laydon Douglas County Commissioner. "The county's role in averting loss of life and property damage is successful because of the ongoing engagement of our exceptional citizens and community partners in proactive hazard mitigation planning."

That's why Douglas County and multiple local and regional government partners and stakeholders are engaged in the development of a ***Local Natural Hazard Mitigation Plan update***. This plan will help us reduce the County's vulnerability to these natural hazards – and thus reduce or eliminate long-term risk to people and property from hazards.

First steps first.... in fewer than 10 minutes your input will make a huge difference in community resiliency during a disaster. Please help us become better informed by participating **in a quick questionnaire** regarding your concerns and your level of preparedness.

According to the US Department of Homeland Security, hazard mitigation planning and the implementation of risk reduction activities can significantly reduce the physical, financial, and emotional losses caused by disasters.

For more information visit **douglas.co.us** and search Local Natural Hazard Mitigation Plan.

Draft Plan Review Section Contents

TETRA TECH

Volume I

- Section 1 – Introduction
- Section 2 – Plan Adoption
- Section 3– Planning Process
  - Stakeholder Outreach & Involvement
  - Public Outreach
- Section 4 – County Profile
- Section 5 – Risk Assessment
  - Methodology and Tools
  - Hazard Identification
  - Hazard Sections
  - Hazard Ranking

Hazards of Concern Assessed – Natural

2021 Hazard Mitigation Plan Hazards of Concern	
NATURAL HAZARDS	**NATURAL HAZARDS CONT'D**
Dam Failure	Severe Weather – Lightening
Drought	Severe Weather – Hail
Earthquake (HAZUS)	Severe Weather – Thunderstorms and Wind
Extreme Temperatures – heat and cold	Tornadoes
Flood (HAZUS)	Wildfire
Geological – Erosion, Land Subsidence, & Sinkholes	**NON-NATURAL HAZARDS**
Geological – Expansive Soils	Animal Disease & Pest Outbreak
Geological – Slope Failure & Landslide	Pandemic/Epidemic
Severe Winter Storm	Hazardous Materials Spills – Transportation and Pipelines

Draft Plan Review – Section 6 Capability Assessment

TETRA TECH

- Planning, Legal, and Regulatory Capacity
- Administrative and Technical Capacity
- Fiscal Capacity
- Education and Outreach Capacity
- Community Classifications
  - NFIP - CRS
  - Building Codes
  - Firewise
- National Flood Insurance Program
  - Flood Management
- Adaptive Capacity
  - Future Hazard Conditions
- Plan Integration

Draft Plan Review – Section 6 Mitigation Strategy

- Mission Statement
- Goals and Objectives
- Past Mitigation Action Status
- Past Mitigation Accomplishments
- Strengths and Weaknesses Exercise
- 2021 Strategy
  - Warning
  - Data Collection/Studies/Planning
  - Public Outreach
  - Structural
  - Natural Resource Protection
  - Code Development, Update, Enforcement
  - Coordination
  - Continuity of Operations

Draft Plan Review – Section 7 Plan Adoption, Implementation, Maintenance

TETRA TECH

MONITORING - The Core Planning Team

- Monitoring progress and evaluating the effectiveness of the plan, and documenting annual progress
- Collect information from entities involved in implementing mitigation projects.
  - Efforts to obtain outside funding
  - Obstacles or impediments to implementation of actions
- Grant Applications filed by planning participants
- Hazard events and losses occurring in their jurisdiction
- Additional mitigation actions believed to be appropriate and feasible
- Public and stakeholder input

Draft Plan Review – Section 7 Plan Adoption, Implementation, Maintenance

TETRA TECH

EVALUATING

- The HMP will be evaluated on a ___?___ basis to determine the effectiveness of the programs, and to reflect changes that could affect mitigation priorities or available funding – Annual Report
- Appendix - Plan Review Tools, FEMA Guidance Evaluation Forms
- These evaluations will assess whether:
  - Goals and objectives address current and expected conditions
  - The nature or magnitude of the risks has changed
  - Current resources are appropriate for implementing the HMP and if different or additional resources are now available
  - Actions were cost effective
  - Schedules and budgets are feasible
  - Implementation problems, such as technical, political, legal or coordination issues with other agencies are presents
  - Outcomes have occurred as expected
  - Changes in city resources impacted plan implementation (e.g., funding, personnel, and equipment)
  - New agencies/departments/staff should be included, including other local governments as defined under 44 CFR 201.6

Draft Plan Review – Section 7 Plan Adoption, Implementation, Maintenance

TETRA TECH

INTEGRATING

Integrating Hazard Mitigation into existing capabilities

Table 7-2. Safe Growth Check List

Planning Mechanisms	Do you Do This? Yes	Do you Do This? No	Notes: How is it being done or how will this be utilized in the future?
Operating, Municipal and Capital Improvement Program Budgets			
• When constructing upcoming budgets, hazard mitigation actions will be funded as budget allows. Construction projects will be evaluated to see if they meet the hazard mitigation goals.			
• Annually, during adoption process, the municipality will review mitigation actions when allocating funding.			
• Do budgets limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?			
• Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?			
• Do budgets provide funding for hazard mitigation projects identified in the City HMP?			
Human Resource Manual			
• Do any job descriptions specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk?			
Building and Zoning Ordinances			
• Prior to, zoning changes, or development permitting, the municipality will review the hazard mitigation plan and other hazard analyses to ensure consistent and compatible land use.			

TETRA TECH

Volume II

- Section 8 – Planning Partnership
- Section 9 – Jurisdiction Specific Annex
  - Location/Climate
  - History
  - Population/Development Trends
  - Status of previous actions
  - Capability Assessment
  - Integration into Planning
  - Jurisdiction specific hazard history/ranking
  - New Actions

Draft Plan Review – Appendices

- Appendix A – Adoption Resolution
- Appendix B – Meeting Documentation
- Appendix C – Public and Stakeholder Outreach Documentation
- Appendix E – Risk Assessment Supplement
- Appendix E – Mitigation Strategy Supplement
- Appendix F – Plan Review Tools

Draft Review Process

TETRA TECH

County Website, Draft Posted February 10th – 90%

Ways to comment:

- Survey Link
- Email pdf with comments
- Email comment text

1. **Name**
2. **Section**
3. **Page #**
4. **Comment**

Comment #	Reviewer	Section Reviewed	Page #	Comment	Direction from Steering Committee
1	Maya Lordo (County Health Officer) – County Health Department	Disease Outbreak		The Essex County Department of Health would like us to add the following communicable diseases to the Disease Outbreak section of the plan: measles, TB, hepatitis A	Added to Disease Outbreak section as per Captain Esposito
2	Maya Lordo (County Health Officer) – County Health Department	County Annex		**Problem:** While the major hospitals that serve Essex County each have a Community Health Needs Assessment, the County does not have one that specifically looks at countywide using primary data sources. **Solution:** Essex County Health Department will lead the efforts to conduct a Community Health Needs Assessment for the County. They will use primary source health data through the municipal health departments, conduct a community health survey, and involve other county and community stakeholders. This assessment will determine the top three health issues in Essex County. After the assessment is complete, the Health Department will develop appropriate public outreach and education materials.	Added to County Annex
3	Maya Lordo (County Health Officer) – County Health Department	Capability Assessment		The Health Department services all of Essex County's 22 municipalities in the areas of solid waste enforcement. The Health Department is the CEHA agency overseeing Essex Regional Health Commission for noise, air, pesticide, and odor. The Health Department strives to be an impactful, visible and valuable environmental health education resource for all of Essex County.	Added to Capability Assessment
4	John D'Ascensio	Utility Interruption		Utility Interruptions, thankful you, you have identified the water supply issues and the need for Water Tenders. I would like to see add to that although we acquire tenders from other areas of the State, we are depleting those areas of the fire protection.	Updated Utility Interruption section
5	John D'Ascensio	Public outreach		Why/how were the three languages selected for the multi-lingual outreach?	Email correspondence with reply to John sent on January 5, 2020: *We selected Spanish and Portuguese because, after English, they are the top two languages spoken in the County as identified by the American Community Survey.*
6	Hudson County Engineer (Tom Malavasi) – shared information during Hudson County Mitigation Strategy Workshop	County Annex		Tetra Tech emailed Sanjeev and [illegible] Captain Esposito on January 20, 2020 seeking review and approval of the following new mitigation action in the County annex (#22). **Problem:** There are four bridges that cross the Passaic River that are owned with Essex County: 1. Clay Street; 2. Jackson Street, 3. Harrison Ave., 4. Keyland Ave. These bridges serve as evacuation routes and increased capacity is needed in addition to addressing issues with erosion/pilings.	**TBD**

Next Steps

TETRA TECH

2021 Local Natural Hazard Mitigation Plan
Public Comment Opportunity – February 10, 5:30 p.m.

https://bit.ly/39EAXwa

February 26th Public Comment Period Ends

- March – Draft Plan submitted to State for review/approval
  - Respond to State comments
- Submit to FEMA review/approval
  - Respond to FEMA comments
- Adopt plan upon FEMA Approval-Pending Adoption
  - Planning Participants to adopt by resolution
- Submit signed resolutions to FEMA for Final Approval

Questions ?

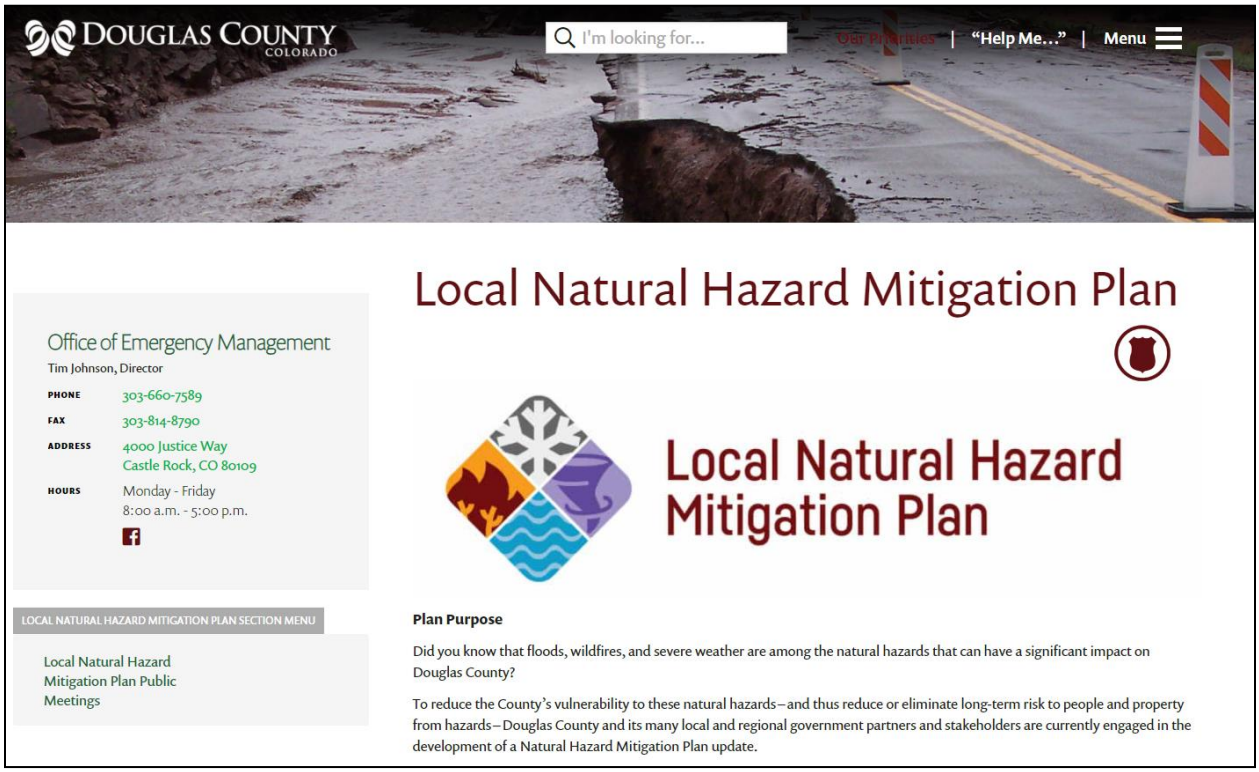
APPENDIX D. PUBLIC AND STAKEHOLDER OUTREACH

This appendix provides documentation of public and stakeholder outreach. Stakeholder involvement in this planning process was broad and productive as discussed and further documented in Section 3 (Planning Process). Public and stakeholder input has been incorporated throughout this HMP as appropriate, as identified in Section 3 and the References section, as well as within specific mitigation initiatives identified within the jurisdictional annexes (Section 9). Respondent feedback filtered by jurisdiction is included in each jurisdictional annex as available to provide an indication of community resident concerns related to natural hazards.

D.1 Website and Social Media Posts

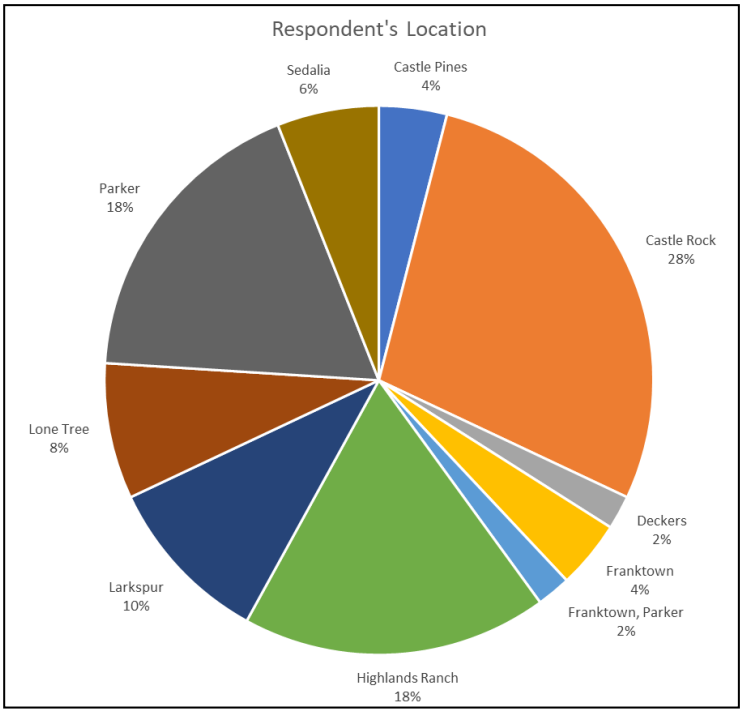
Douglas County uses Nextdoor, Facebook, Twitter, and LinkedIn for social media outreach. They maintained an HMP webpage (https://www.douglas.co.us/natural-hazard-mitigation-plan/) to provide updates to the planning process, notification of upcoming meetings, videos of meetings, and newsletters. The following provides screenshots of websites, news articles, and social media posts.

Figure D-1. Local Natural Hazard Mitigation Plan Webpage



D.2 Douglas County Citizen Survey Results

The County is present on several social media platforms: Nextdoor, Facebook, Twitter, LinkedIn, and YouTube. This helped the County maximize community outreach and engagement throughout the planning process. To gather input from residents, the County set up a series of polls and online surveys using Nextdoor and Microsoft Forms.



This section contains information and results gathered from a series of surveys completed by residents of Douglas County. The main objective of this survey was to gather information from citizens regarding their level of knowledge regarding hazard vulnerability and knowledge of hazard mitigation information for their local communities. Fifty respondents completed the survey over a period of three months during the planning process. The surveys were made available starting on October 19, 2020 and ran through the end of December 2020. A majority of the respondents who completed the survey live in Castle Rock (28%), followed by Highlands Ranch (18%) and Parker (18%). The following provides a summary of how respondents answered each question.

The first question asked respondents to indicate how concerned they are with the identified hazards of concern for Douglas County. Respondents were also asked to identify any other hazards they are concerned with. This list included chemical spills from train accidents, climate change, hail, tornadoes, wildfires, and the drying up of Bear Creek.

- For wildfire, 16% of all respondents indicated they are extremely concerned, while 28% stated they were concerned. Just 6% said that they are not concerned about wildfire, with respondents stating they live in Castle Rock and Highlands Ranch. Those that selected extremely concerned are from Castle Rock, Deckers, Larkspur, Parker and Sedalia.

- For drought, one-third of the respondents (32%) indicated that they are concerned about drought, where only 18% stated that they are extremely concerned. Those that selected extremely concerned are from Castle Rock, Larkspur, Sedalia, Lone Tree, and Parker. Just 2% stated they are not concerned with drought.

- For erosion and deposition, 36% of respondents stated they are somewhat or not concerned about this hazard. No one identified being very or extremely concerned. The respondents who selected somewhat or not concerned reside in Castle Pines, Castle Rock, Deckers, Franktown, Highlands Ranch, Larkspur, Lone Tree, Parker, and Sedalia.

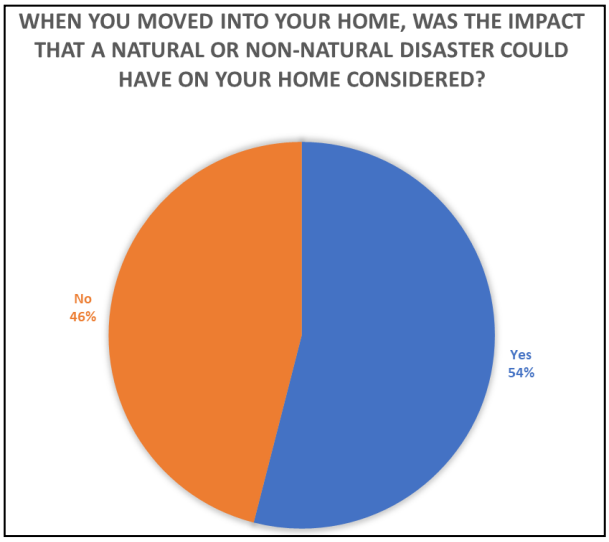
- For flood, a majority of respondents (72%) stated that they are not concerned about flooding. Those who stated that they are somewhat concerned (20%) live in Castle Rock, Franktown, Highlands Ranch, and Parker.

- For landslides, a majority of respondents (64%) stated that they are not concerned about this hazard, while 8% said they are concerned and 28% said they are somewhat concerned. Those that showed some concern live in Castle Rock, Deckers, Highlands Ranch, Larkspur, Parker, and Sedalia.

- For severe winter weather, nearly all respondents stated that they are somewhat to very concerned for winter weather hazards. Just 4% said they are extremely concerned and 4% said they are not concerned.

- For thunderstorms and lightning, approximately half of the respondents said they are somewhat concerned or concerned; 22% said they are very or extremely concerned; and 10% said they are not concerned. Those that stated they are not concerned live in Parker, Highlands Ranch, and Sedalia.

Another question asked was whether or not residents considered the impact of natural and non-natural hazards when they purchased their homes. Over half of the respondents said yes, while the other respondents said no. The location of respondents was split over the two answers.



The next set of questions asked the public if they lived in specific hazard areas. For wildfire, 58% of respondents said they live in an area at risk for wildfire and 40% said they do not. Those that answered 'yes' live in Castle Rock, Deckers, Franktown, Highlands Ranch, Larkspur, Lone Tree, Parker, and Sedalia. Those that answered 'no' live in Castle Pines, Castle Rock, Highlands Ranch, Lone Tree, Parker, and Sedalia. Next, respondents were asked if they live in or near a FEMA-designated floodplain. Out of the 50 responses, only two said yes (Deckers and Parker). Thirty-three said they do not live in or near a floodplain, and 15 were unsure whether or not they live in a floodplain. When asked if they have flood insurance, only one person said yes, three were unsure, and 45 said no. The last hazard-related question asked whether or not their homes are located in a dam failure zone. None of the respondents said yes, 40 said no, and 10 were not sure. Those that answered unsure live in Sedalia, Parker, Highlands Ranch, Castle Pines, Deckers, and Castle Rock.

Respondents were asked if they know multiple ways to evacuate or get out of their neighbors in the event of a hazard. A majority (88%) said yes and 12% said no. Those that said no live in Franktown, Parker, Larkspur, and Castle Rock.

The last set of questions were related to preparedness. Nearly all respondents identified as least one way their household has prepared for natural and non-natural disasters. When asked how prepared respondents are in the event of a natural-caused hazard, 5 said adequately prepared, 6 are not prepared at all, 33 somewhat prepared, 1 very prepared, and 4 well prepared. Forms of emergency notification used by residents include email, text messages, CodeRed, radio, social media (Facebook, Twitter, Nextdoor), and television. Some respondents also said they receive notifications from their local fire and police departments.

APPENDIX E. RISK ASSESSMENT SUPPLEMENT

This appendix contains supporting information for the Risk Assessment (Section 5) as available. It contains excerpts of the previous events and losses as presented in the 2015 HMP, organized by hazard of concern. This information has been compiled into one appendix for ease of reference; however, it has not been updated and is reproduced as documented in the 2015 plan.

In order to create a more streamlined plan, the 2021 HMP was reorganized and condensed into a practical and more readable document for the public with the goal of providing a plan easier to implement for the County and all jurisdictions to support future risk reduction. The information in this appendix supplements the information provided in Section 4.3 of this plan.

This Appendix also addresses differences in vulnerability noted between the 2015 and 2021 plans.

E.1 EXPOSURE AND LOSS ESTIMATE CHANGES

In Section 5.1, the Methodology used in the 2021 risk assessment is extensively described. The 2021 Plan Update includes updated data and new sources that result in differences in exposure and loss estimates. Since 2015, the County's population and building stock has increased. This appendix includes the vulnerability from the 2015 plan, which can be compared against the individual vulnerability assessments found in Section 5.4.

E.2 CRITICAL FACILITIES AND LIFELINES

The identification of community lifelines across Douglas County provides an enhancement to the 2021 HMP. The Local Planning Committee and participating jurisdictions created a new critical facility and lifeline list for the 2021 plan. Tetra Tech collected data provided by the County GIS division, compiled the information into a list, and distributed the list via Survey123 to participating jurisdictions.

FEMA defines a lifeline 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."* Identifying community lifelines will help government officials and stakeholders to prioritize, sequence, and focus response efforts towards maintaining or restoring the most critical services and infrastructure within their respective jurisdiction(s). Identifying potential impacts to lifelines can help to inform the planning process and determining priorities in the event an emergency occur. The following page is FEMA's factsheet that describes lifelines.

E.3 HISTORY OF HAZARD EVENTS IN THE COUNTY

To supplement the information provided in this plan, events documented in the 2015 HMP are included below by hazard of concern. With many sources reviewed for the purpose of this HMP, loss and impact information for events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Homeland Security

Community Lifelines

National Response Framework Update (Fourth Edition)

A lifeline provides indispensable service that enables the continuous operation of critical business and government functions, and is critical to human health and safety, or economic security.

Why a lifelines construct?

Decision-makers must rapidly determine the scope, complexity, and interdependent impacts of a disaster. Applying the lifelines construct allows decision-makers to:

- Prioritize, sequence, and focus response efforts towards maintaining or restoring the most critical services and infrastructure
- Utilize a common lexicon to facilitate unity of purpose across all stakeholders
- Promote a response that facilitates unity of purpose and better communication amongst the whole community (Federal, state, tribal, territorial, and local governments, and private sector and non-governmental entities)
- Clarify which components of the disaster are complex (multifaceted) and/or complicated (difficult), requiring cross-sector coordination

How will lifelines be used?

- Enhance the ability to gain, maintain, and communicate situational awareness for the whole community in responding to disasters
- Analyze impacts to the various lifelines and develop priority focus areas for each operational period during response
- Identify and communicate complex interdependencies to identify major limiting factors hindering stabilization
- Update the National Response Framework to reflect use of lifelines in response planning

What are the opportunities of lifelines?

- Enable a true unity of effort between government, non-governmental organizations, and the private sector, including infrastructure owners and operators
- Integrate preparedness efforts, existing plans, and identify unmet needs to better anticipate response requirements
- Refine reporting sources and products to enhance situational awareness, best determine capability gaps, and demonstrate progress towards stabilization

Lifelines

Visit us at http://www.fema.gov/national-planning-frameworks

"With honor and integrity, we will safeguard the American people, our homeland, and our values."

4.3 Vulnerability Assessment

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

With Douglas County's hazards identified and profiled, the HMPC conducted a vulnerability assessment to describe the impact that each priority hazard would have on the County. The vulnerability assessment quantifies, to the extent feasible using best available data, assets at risk to hazards and estimates potential losses. This section focuses on the risks to the County as a whole. Where available, data from the individual participating jurisdictions was evaluated and integrated here and in the jurisdictional annexes, and noted where the risk differs for a particular jurisdiction within the Planning Area.

This vulnerability assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses. The vulnerability assessment first describes the total vulnerability and values at risk and then discusses vulnerability by hazard.

Data used to support this assessment included the following:

- County GIS data (hazards, base layers, and assessor's data);
- Statewide GIS datasets compiled by the Colorado DHSEM to support mitigation planning;
- County CWPP GIS datasets;
- FEMA's HAZUS-MH 2.1 GIS-based inventory data
- Written descriptions of inventory and risks provided by participating jurisdictions;
- Existing plans and studies; and
- Personal interviews with planning team members and staff from the County and participating jurisdictions.

4.3.1 Douglas County Vulnerability and Assets at Risk

As a starting point for analyzing the Planning Area's vulnerability to identified hazards, the HMPC used a variety of data to define a baseline against which all disaster impacts could be compared. This section describes significant assets at risk if a catastrophic disaster was to occur in the Planning Area. Data used in this baseline assessment included:

- Total values at risk;
- Critical facility inventory;
- Cultural, historical, and natural resources; and
- Growth and development trends.

Total Values at Risk

The following data from the Douglas County Assessor's Office is based on joins and relates of assessor data to the 2014 parcel layer in GIS. This data should only be used as a guideline to overall values in the County, as the information has some limitations. It is also important to note, in the event of a disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss.

Methodology

The 2014 Assessor inventory data was joined to the parcel layer by the parcel number to get a complete inventory of values by property type. By performing this process assessor data was associated with the parcel layer for further analysis. An analysis that was performed is shown in the following tables to show the number of structures, land value and total improved structure value for each parcel by occupancy type and by jurisdiction. The structure count was derived from a building footprint GIS layer. Each parcel record was attributed with its jurisdiction name (Castle Pines, Larkspur, Parker, etc.) based on whether its geographic center fell in or out of those jurisdictional boundaries. For the purposes of tabulating data, the unincorporated county was considered a jurisdiction and is listed in the table as such. A relationship table within the assessor database was used to categorize the property types or Account Types and was summarized into simpler groups for this analysis. One hundred forty six parcels did not have a parcel number or did not join between the parcel and assessor database join; these were put in the Vacant Land category. Nine hundred seventy-one of the parcel records did not have associated improved assessor values, and were therefore left at $0 and treated as unimproved parcels.

Douglas County has a total land value of $11,063,233,441. There are 126,767 parcels in the County with a total improved value of $32,402,076,962. Castle Rock has the most structures and value of the County's jurisdictions; there are 24,519 structures with a total value of $4.9 billion. Parker is close behind with 18,510 structures totaling $4 billion of improved values. Table 4.42 shows the 2014 parcel values for the entire Douglas County Planning Area (i.e., the total values at risk) by jurisdiction. The values for unincorporated Douglas County are provided in Table 4.43 by

property type showing that residential structures dominate with a count of 81,561 and a total value including improvements and land values of $26.9 billion.

Table 4.42. Douglas County Assessor's Inventory: By Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
Aurora*	637	152	536	$46,384,067	$25,761,714	$72,145,781
Castle Pines	4,195	3,338	4,320	$1,281,263,802	$376,824,415	$1,658,088,217
Castle Rock	24,619	17,656	24,519	$4,897,702,996	$1,269,202,509	$6,166,905,505
Larkspur	151	74	204	$13,662,695	$9,603,287	$23,265,982
Littleton*	42	4	111	$3,583,664	$12,347,389	$15,931,053
Lone Tree	4,615	3,596	6,282	$2,439,308,867	$791,236,306	$3,230,545,173
Parker	18,449	14,662	18,510	$4,051,635,888	$1,332,975,205	$5,384,611,093
Unincorporated	74,059	58,160	81,561	$19,668,534,983	$7,245,282,616	$26,913,817,599
Total	**126,767**	**97,642**	**136,043**	**$32,402,076,962**	**$11,063,233,441**	**$43,465,310,403**

Source: 2014 Douglas County Assessor and Parcel
*Aurora and Littleton are not participating in this plan.

Table 4.43. Douglas County Assessor's Inventory of Unincorporated County by Property Type

Property Type	Total Parcel Count	Improved Parcel Count	Total Structures Count	Improved Value	Land Value	Total Value
Agricultural	3,527	1,011	2,351	$408,387,527	$24,891,100	$433,278,627
Commercial	835	700	9,855	$2,120,214,546	$711,957,157	$2,832,171,703
Exempt	5,386	346	1,767	$943,117,742	$879,583,701	$1,822,701,443
HOA	1,307	1	435	$2,522,088	$360,000	$2,882,088
Industrial	140	137	261	$164,583,796	$57,464,699	$222,048,495
Producing Mine	20	0	6	$0	$1,221,200	$1,221,200
Residential	58,087	55,948	61,681	$16,026,843,365	$5,243,000,700	$21,269,844,065
Utilities	148	0	71	$0	$197,376	$197,376
Vacant Land	4,609	17	5,134	$2,865,919	$326,606,683	$329,472,602
Total	**74,059**	**58,160**	**81,561**	**$19,668,534,983**	**$7,245,282,616**	**$26,913,817,599**

Source: 2014 Douglas County Assessor and Parcel

Critical Facility Inventory

For the purposes of this plan, a critical facility is defined as:

> Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in

severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities; (2) High Potential Loss Facilities; and (3) At-Risk Populations Facilities:

- **Essential Services Facilities** include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and equipment, and government operations. Sub-Categories:
  - **Public Safety** – Police stations, fire and rescue stations, emergency operations centers
  - **Emergency Response** – Emergency vehicle and equipment storage and essential governmental work centers for continuity of government operations.
  - **Emergency Medical** – Hospitals, emergency care, urgent care, ambulance services.
  - **Designated Emergency Shelters**.
  - **Communications** – Main hubs for telephone, main broadcasting equipment for television systems, radio and other emergency warning systems.
  - **Public Utility Plant Facilities** – including equipment for treatment, generation, storage, pumping and distribution (hubs for water, wastewater, power and gas).
  - **Essential Government Operations** – Public records, courts, jails, building permitting and inspection services, government administration and management, maintenance and equipment centers, and public health.
  - **Transportation Lifeline Systems** – Airports, helipads, and critical highways, roads, bridges and other transportation infrastructure (Note: Critical highways, roads, etc. will be determined during any hazard-specific evacuation planning and are not identified in this plan).
- **High Potential Loss Facilities** include those facilities that would have a high loss or impact on the community:
  - **Dams**
  - **Hazardous Material Facilities** that include, without limitation, any facility that could, if adversely impacted, release hazardous material(s) in sufficient amounts during a hazard event that would create harm to people, the environment and property.
- **At Risk Population Facilities** include, without limitation, pre-schools, public and private primary and secondary schools, before and after school care centers with 12 or more students, daycare centers with 12 or more children, group homes, and assisted living residential or congregate care facilities with 12 or more residents

A fully detailed list of all critical facilities in the planning area can be found in Appendix E. A summary of critical facilities in the County can be found in Table 4.44.

Table 4.44. Douglas County Critical Facilities Summary Table

Category	Type	Facility Count

Category	Type	Facility Count
At-Risk Population Facilities	Assisted Living	34
	Group Home	5
	School	99
Essential Services Facilities	Administration and Management	1
	Bridge	70
	Cell Tower	138
	Commercial Airports	3
	Courts	1
	EOC	3
	Fire Department	34
	Hospital	3
	IT Infrastructure	3
	Jail	1
	Maintenance/Equipment Center	9
	Microwave	232
	Police	6
	Public Health	2
	Radio Tower	8
	Water Hub/Treatment	103
High Potential Loss Facilities	Dam	3
	Hazardous Material	753
Total		**1,511**

Source: Douglas County GIS

Cultural, Historical, and Natural Resources

Assessing Douglas County's vulnerability to disaster also involves inventorying the natural, historical, 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.
- In the event of a disaster, an accurate inventory of natural, historical and cultural resources allows for more prudent care in the disaster's immediate aftermath when the potential for additional impacts is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, for example, wetlands and riparian habitat which help absorb and attenuate floodwaters and thus support overall mitigation objectives.

Cultural and Historical Resources

Douglas County has a large stock of historically significant homes, public buildings, and landmarks. To inventory these resources, the HMPC collected information from the following sources.

- The **National Register of Historic Places** is 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.
- **The Colorado State Register** contains listings for buildings, structures, sites, objects, or districts designated through the Colorado State Register nomination process. The State Register includes the following:
  - National Register Multiple Resource Areas
  - National Register Thematic Resources
  - State Historical Landmarks
  - Certified Local Districts
  - World Heritage Sites

Historical resources included in the programs above are identified in Table 4.45.

Table 4.45. Douglas County Historical Resources in the State and Federal Register

Name (Landmark Plaque Number)	National Register	Date Listed	State Landmark	State Designation	City
Castle Rock Depot	Y	10/11/1974	Y	5DA.216	Castle Rock
Castle Rock Elementary School	Y	9/20/1984	Y	5DA.342	Castle Rock
First National Bank of Douglas County	Y	4/14/1995	Y	5DA.661	Castle Rock
Benjamin Hammer House	Y	2/3/1993	Y	5DA.645	Castle Rock
Keystone Hotel	Y	6/20/1997	Y	5DA.681	Castle Rock
Castlewood Dam	Y	9/13/1995	Y	5DA.567	Franktown
Cherry Creek Bridge	Y	10/15/2002	Y	5DA1519	Franktown
Evans Homestead Rural Historic Landscape	Y	4/25/2012	Y	5DA.2841	Franktown
Franktown Cave	Y	2/1/2006	Y	5DA.272	Franktown
Pike's Peak Grange No. 163	Y	10/1/1990	Y	5DA.341	Franktown
Rock Ridge Ranch Barn	Y	11/9/1994	Y	5DA.1010	Franktown
American Federation of Human Rights Headquarters	Y	3/19/1998	Y	5DA.1097	Larkspur
Ben Quick Ranch & Fort	Y	10/1/1974	Y	5DA.215	Larkspur

Name (Landmark Plaque Number)	National Register	Date Listed	State Landmark	State Designation	City
Glen Grove School	Y	11/5/1974	Y	5DA.214	Larkspur
John Kinner House	Y	10/11/1974	Y	5DA.213	Larkspur
Lone Tree School	Y	3/8/1995	Y	5DA.344	Larkspur
Reginald Sinclair House	Y	9/20/1991	Y	5DA.966	Larkspur
Spring Valley School / The School House	Y	12/18/1978	Y	5DA.219	Larkspur
Lamb Spring	Y	11/9/1994	Y	5DA.83	Littleton
Louviers Village	Y	7/2/1999	Y	5DA.1391	Louviers
Louviers Village Club	Y	9/22/1995	Y	5DA.1016	Louviers
Ruth Memorial Methodist Episcopal Church	Y	5/1/1989	Y	5DA.890	Parker
Tallman-Newlin House	Y	12/10/1997	Y	5DA.1090	Parker
Bear Cañon Agricultural District	Y	10/29/1975	Y	5DA.212	Sedalia
Cherokee Ranch	Y	10/21/1994	Y	5DA.708	Sedalia
Church of St. Philip-in-the-Field / Bear Cañon Cemetery	Y	4/11/1973	Y	5DA.217	Sedalia
Daniels Park	Y	6/30/1995	Y	5DA.1009	Sedalia
Devils Head Lookout	Y	4/22/2003	Y	5DA.960	Sedalia
Indian Park School	Y	2/8/1978	Y	5A.211	Sedalia
Santa Fe Railway Water Tank / Sedalia Water Tank	Y	4/18/2003	Y	5DA.1385	Sedalia
Roxborough State Archaeological District	Y	1/27/1983	Y	5DA.343	Waterton

Source: Colorado Office of Historical Preservation

It should be noted that these lists may not be complete, as they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by CEQA and NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Douglas County also maintains a Registry of Landmarks designated by the Board of County Commissioners. The landmarks included in the County's registry are listed below in Table 4.46. Three additional sites are slated to be designated between April and June 2015.

Table 4.46. Historical Resources in the Douglas County Registry of Landmarks

Name (Landmark Plaque Number)	Date Listed	City
Abbe Ranch House	2/3/2004	Larkspur
American Federation of Human Rights	5/6/2008	Larkspur

Name (Landmark Plaque Number)	Date Listed	City
Blackfoot Cave	4/14/2015	Cherry Valley
Cedar Hill Cemetery	12/21/2004	Castle Rock
Devil's Head Lookout	2/28/2006	Sedalia
Fletcher Ranch	3/18/2003	Sedalia
Franktown Cemetery	12/27/2005	Franktown
Freedom School	3/24/2015	Larkspur
Friendly-Manhart House	11/7/2000	Sedalia
Frink House	1/6/2009	Larkspur
Gideon Pratt Homestead and Harry C. Pratt Grave	12/12/2000	Franktown
Greenland Townsite	9/13/2011	South of Larkspur, west of I-25
Hilltop School	3/18/2003	Parker
Horace Persse Homestead	9/30/2008	Roxborough
Kleinert Homestead	2/24/2014	Franktown
Kreutzer Homestead	4/11/2000	Sedalia
Loraine Ranch	4/14/2015	Spring Valley
Louviers Village Clubhouse	4/15/2008	Louviers
Lowell's OV Ranch	3/30/2010	South of Castle Rock
Lucas Dairy/Shady Spring Ranch	6/30/2009	Cherry Valley
Manhart House	11/18/2014	Sedalia
Pikes Peak Grange #163	5/22/2012	Franktown
Prairie Canyon Ranch	10/3/2000	South of Franktown along Highway 83
Pretty Woman Ranch	4/4/2006	Sedalia
Rock Ridge Cemetery	6/29/1999	Cherry Valley
Rock Ridge Ranch	12/12/2000	Cherry Valley
Russellville Ranch	2/3/2004	Franktown
Schweiger Ranch	3/16/2004	Lone Tree
Sedalia Fire Station	3/13/1999	Sedalia
Sedalia School House	11/7/2000	Sedalia
Sedalia Water Tank	2/3/2004	Sedalia
Silicated Brick Company	6/19/2007	Southdowns at Roxborough
Spring Valley School District No. 3	3/17/2009	Spring Valley
Twin Creek Ranch	2/9/1999	Castle Rock
YMCA Camp Shady Brook	1/6/2009	Deckers

Source: Douglas County Landmarks Program

Natural Resources

Natural resources are important to include in benefit/cost analyses for future projects and may be used to leverage additional funding for mitigation 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 wetlands areas protects sensitive habitat as well as reducing the force of and storing floodwaters.

Due to Douglas County's unique topography, climate, and location on the Colorado Piedmont, the flora and fauna are representative of both the High Plains and the southern Rocky Mountains. This diverse mixture of geography, geology, and biology, or ecotones, contributes to Douglas County's unique ecological character. Transition zones like these tend to support higher levels of biological diversity than other "non-transitional" areas.

No vertebrates and few invertebrates at the species level are endemic solely to Douglas County; however, there are some species endemic to the Colorado Piedmont that are found in the County, such as Preble's meadow jumping mouse. In some ways, the vegetation of the County is typical of the foothills/prairie ecotone on Colorado's Front Range. Grasslands of the northern County are on well drained sandy soils and receive less moisture than those to the south near the Palmer Divide. The resulting composition of grasslands generally follows this north/south hydrological gradient, with typical shortgrass prairie species such as blue grama (*Bouteloua gracilis*) dominating in the north, and midgrass species such as western wheatgrass (*Agropyron smithii*), needle-and-thread grass (*Stipa comata*), and little bluestem (*Schizachyrium scoparium*) becoming more common to the south. Tallgrass species such as big bluestem (*Andropogon gerardii*) are not uncommon in the uplands.

Gambel oak (*Quercus gambelii*) shrublands are a dominant feature of the Douglas County flora, creating a mosaic of shrubs and grassland that covers the rolling hills of most of the central regions of the County. These shrublands also occur in areas of mixed woodland with ponderosa pine. Riparian areas consist of dense shrubs, especially hawthorn and coyote willow, with some stands of small cottonwoods. Wetlands comprise a small but important portion of the County and are comprised mainly of graminoid types at springs or seeps, or shrub-dominated riparian areas. Coniferous forests of ponderosa pine dominate the mountainous western portions of the County and extend eastward on the higher mesas and along the Palmer Divide. Cooler microhabitats on north-aspect slopes contain mostly Douglas-fir forests with patches of aspen.

Special Status 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 (i.e., endangered species) in the Planning Area. The U.S. Fish and Wildlife Service (USFWS) maintains a list of threatened and endangered species in Colorado. State and federal laws protect the habitat of these species through the environmental review process. Several additional species are of special concern or candidates to make the protected list.

Table 4.47 summarizes Douglas County's special status animal species in the USFWS database.

Table 4.47. Threatened and Endangered Animals in Douglas County

Name	Scientific Name	Status
Whooping crane	*Grus americana*	Experimental Population, Non-Essential
Bald eagle	*Haliaeetus leucocephalus*	Recovery
American peregrine falcon	*Falco peregrinus anatum*	Recovery
Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Piping Plover	*Charadrius melodus*	Threatened
Least tern	*Sterna antillarum*	Endangered
Greenback Cutthroat trout	*Oncorhynchus clarki stomias*	Threatened
Pawnee montane skipper	*Hesperia leonardus montana*	Threatened
Black-footed ferret	*Mustela nigripes*	Experimental Population, Non-Essential
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Threatened

Source: U.S. Fish and Wildlife Service

Table 4.48. Threatened and Endangered Plants in Douglas County

Name	Scientific Name	Status
Colorado Butterfly plant	*Gaura neomexicana var. coloradensis*	Threatened
Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened

Source: U.S. Fish and Wildlife Service

Natural and Beneficial Functions

Floodplains can have natural and beneficial functions. Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater and flood waters. Trees, root mats, and other wetland vegetation also slow the speed of floodwaters and distribute them more slowly over the floodplain. This combined water storage and braking action lowers flood heights and reduces erosion. Wetlands within and downstream of urban areas are particularly valuable, counteracting the greatly increased rate and volume of surface- water runoff from pavement and buildings. The holding capacity of wetlands helps control floods and prevents water logging of crops. Preserving and restoring wetlands, together with other water retention, can often provide the level of flood control otherwise provided by expensive dredge operations and levees.

Figure 4.39 in Section 4.2.13 illustrates the locations of floodplains. These areas, as well as areas of riparian habitat along the rivers and streams in the County may accommodate floodwaters for purposes of groundwater recharge and stormwater management.

Growth and Development Trends

As part of the planning process, the HMPC looked at changes in growth and development, both past and future, and examined these changes in the context of hazard-prone areas, and how the

changes in growth and development affect loss estimates and vulnerability.

More specific information on growth and development for each participating jurisdiction can be found in the jurisdictional annexes.

Current Status and Past Development

The U.S. Census Bureau estimated the population of Douglas County for January 1, 2010 was 287,465, representing an almost thirty-fold increase from just over 8,400 people in 1970. Douglas County's 2014 Demographic Summary states that "between 2000 and 2010, the population of Douglas County increased 62.4%, which made Douglas County the fastest growing county in Colorado, and the 16th fastest growing county in the nation" (http://www.douglas.co.us/documents/douglas-county-demographics-summary.pdf). Table 4.49 illustrates the pace of population growth in Douglas County (for both incorporated and unincorporated areas) dating back to 1940. Table 4.50 shows more recent population trends for each jurisdiction.

Table 4.49. Historical Population of Douglas County

	1930	1940	1950	1960	1970	1980	1990	2000	2010
Population	3,498	3,496	3,507	4,816	8,407	25,153	60,391	175,776	285,465
Change	-	-0.1%	0.3%	37.3%	74.6%	199.2%	140.1%	191.0%	62.4%

Source: U.S. Census Bureau

Table 4.50. Population Growth for Jurisdictions in Douglas County from 1990-2010

	1990	2000	2010	Growth 1990-2000	Growth 2000-2010
Castle Pines*	–	–	10,360	–	–
Castle Rock	8,708	20,224	48,231	132.2%	138.5%
Larkspur	232	234	183	0.1%	-21.8%
Lone Tree**	–	4,873	10,218	–	109.7%
Parker	5,450	53,558	45,297	332.3%	92.3%

Source: U.S. Census Bureau
*Castle Pines did not become a city until 2008.
**Lone Tree was not incorporated until 1996.

Future Population Growth

The 2035 Douglas County Comprehensive Master Plan estimated future population growth for the County. Between 2014 and 2040, the County's population will increase by over 196,000 people as a result of both natural growth through childbirths and in-migration from other parts of the state and nation. Future population projections for Douglas County are shown in Table 4.51.

Table 4.51. Douglas County Population Projections

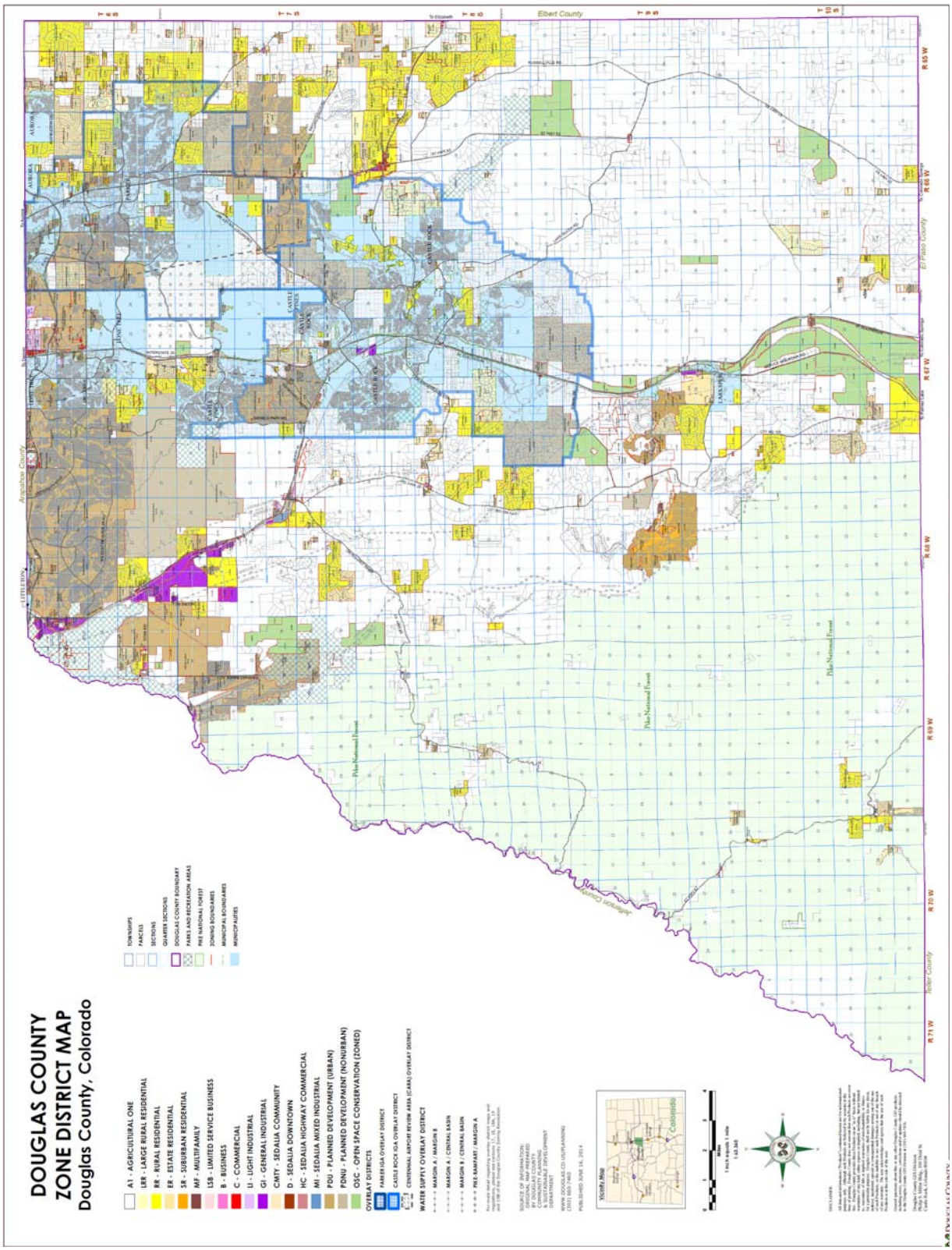
Projections	2010	2020	2030	2040
Douglas County	285,465	352,000	418,000	484,000

Source: 2035 Douglas County Comprehensive Master Plan

Current Land Use/Zoning

Land use and growth management strategies in Douglas County aim to concentrate future development into and toward existing communities through various policies relating to zoning and minimum development standards and requirements. Zoning designations prescribe allowed land uses and minimum lot sizes for the purpose of supporting efficient infrastructure design, conservation of natural resources, and to avoid conflicting uses. The Zoning Resolution (discussed further in Section 4.4.1) governs the use of land for residential and non-residential purposes, limits the height and bulk of buildings and other structures, limits lot occupancy and determines the setbacks and provides for open spaces, by establishing standards of performance and design. Figure 4.47 shows current land use designations in Douglas County.

Figure 4.47. Douglas County Zoning Map



Source: Douglas County Department of Community Development

Future Growth Areas

New Growth Areas

A major new growth area is the planned Sterling Ranch development in the Chatfield Urban Area. Sterling Ranch comprises 3,400 acres south of Chatfield Reservoir and Chatfield State Park, west of Highway 85. The Sterling Ranch website describes the community as follows:

> "This mixed-use, master planned community of authentic Colorado architecture and treasured natural surroundings will be vitalized by mindful, sustainable resources and forward-thinking technologies. All brought together in a shared experience – the quality of nature and the quality of a promising new day come together as one. Sterling Ranch, Colorado will soon be home to over 12,000 new residences, spaciously sweeping across nine unique villages all radiating outward from an amenity-rich town center and grand civic gathering place. Pedestrian friendly planning and design focused on connectivity offers 30 miles of trails, beautiful open space, 2 state parks and 3 regional parks."[11]

Development since 2010 Plan

Douglas County has been one of the fastest growing counties by rate of growth in the nation for roughly the last 20 years. Development in Douglas County is encouraged to occur in existing designated urban areas. This is well-illustrated in Table 4.53, which shows that most permits for new housing in 2013 were issued for urban rather than non-urban units. The number of housing permits issued receded sharply in 2008 and 2009 during the collapse of the U.S. housing bubble (Table 4.54). Housing development in the County began to climb in 2010 and continued to experience positive growth through 2014.

Table 4.52. Annual Housing Growth Rates

Year	Total Housing Units	Annual Growth Rate (%)
2007	102,737	
2008	104,864	2.1%
2009	106,071	1.2%
2010	107,200	1.1%
2011	108,185	0.9%
2012	109,884	1.6%
2013	112,354	2.2%
2014	114,379	1.8%

Source: Douglas County Growth and Development Profile 2013 and 2014 Summary

[11] "The Nature of Sterling Ranch, Colorado." http://sterlingranchcolorado.com/, accessed February 17, 2015

Table 4.53. 2013 Permits for Housing Units

Unit Type	Amount*	% of Total
Single-family residential	1,833	68%
Condos and townhouses	233	9%
Apartments	613	23%
Unincorporated	1,291	48%
Incorporated	1,388	52%
Urban	2,585	96%
Non-Urban	94	4%

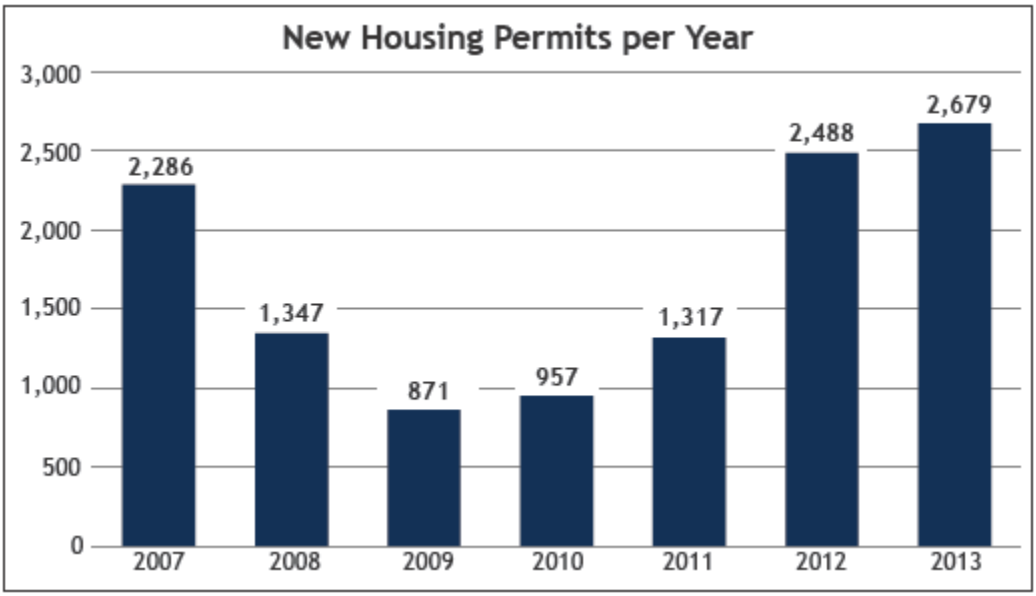
Source: Douglas County Growth and Development Profile 2013
*2,679 total new permits for housing units in 2013

Table 4.54. New Housing Permits

Year	Permits	% Change
2007	2,286	
2008	1,347	-41.1%
2009	871	-35.3%
2010	957	9.9%
2011	1,317	37.6%
2012	2,488	88.9%
2013	2,679	7.7%
2014	3,357	25.3%

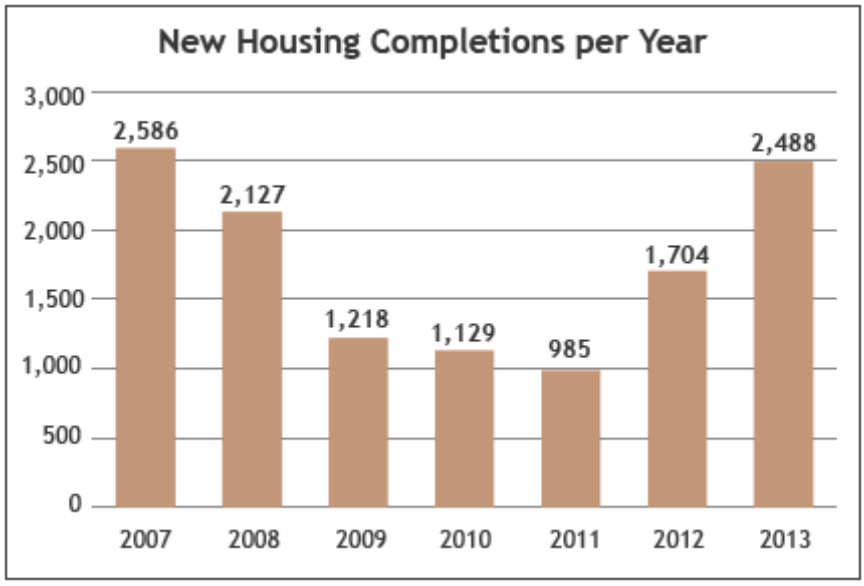
Source: Douglas County Growth and Development Profile 2013 and 2014 Summary

Figure 4.48. Douglas County New Housing Permits per Year



Source: Douglas County Growth and Development Profile 2013

Figure 4.49. Douglas County New Housing Permits per Year



Source: Douglas County Growth and Development Profile 2013

Table 4.55 and Table 4.56 summarize the number and value of structures built in Douglas County from 2010 to 2014 based on a query of the 'year built' values in the parcel database. Over 6,000 structures, with a total value greater than $2.1 billion, were built in that short period of time. The vast majority of these structures were residential, built to accommodate the County's rapidly

growing population. The jurisdictional annexes examine the property type analysis for each participating community. Additional countywide analysis on recent development in mapped hazard areas is discussed in the vulnerability assessments for flood (Section 4.3.6), landslide (Section 4.3.7), erosion (Section 4.3.10), and wildfire (Section 4.3.11).

Table 4.55. Douglas County Structures Built from 2010 to 2014: Total Assets by Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
Aurora*	10	10	10	$3,009,235	$720,000	$3,729,235
Castle Pines	194	193	205	$74,621,727	$20,129,244	$94,750,971
Castle Rock	960	959	1,109	$260,594,463	$58,858,521	$319,452,984
Larkspur	8	7	10	$922,215	$336,000	$1,258,215
Lone Tree	216	216	280	$119,009,158	$47,412,203	$166,421,361
Parker	791	791	864	$182,211,133	$56,753,690	$238,964,823
Unincorporated	3,148	3,147	3,692	$1,008,625,520	$303,066,747	$1,311,692,267
Total	**5,327**	**5,323**	**6,170**	**$1,648,993,451**	**$487,276,405**	**$2,136,269,856**

Source: Douglas County
*The City of Aurora is not participating in this plan

Table 4.56. Douglas County Structures Built from 2010 to 2014: Total Assets by Property Type

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
Agricultural	66	66	65	$24,311,429	$648,699	$24,960,128
Commercial	29	29	319	$81,005,028	$23,792,546	$104,797,574
Exempt	19	19	33	$27,699,059	$13,066,887	$40,765,946
HOA	1	0	1	$0	$0	$0
Industrial	10	10	40	$6,664,955	$3,957,784	$10,622,739
Residential	3,021	3,021	3,232	$868,197,359	$261,163,481	$1,129,360,840
Vacant Land	2	2	2	$747,690	$437,350	$1,185,040
Total	**3,148**	**3,147**	**3,692**	**$1,008,625,520**	**$303,066,747**	**$1,311,692,267**

Source: Douglas County

The completion of the Rueter-Hess reservoir has had a significant impact on development in Douglas County. The construction of the reservoir lasted from 2004 to 2012, and Parker Water and Sanitation District began gradually filling it in 2012. Rueter-Hess is primarily supplied by surface water from Cherry Creek, Newlin Gulch, and return flows from nearby water districts.[12]

[12] Town of Castle Rock, Colorado website. "Rueter-Hess Reservoir." http://www.crgov.com/index.aspx?NID=1277,

The reservoir is primarily used for drinking water storage to supply current and future development in Parker, Castle Rock, Castle Pines, and other local jurisdictions. Recreational uses for the reservoir are under consideration.

4.3.2 Douglas County Vulnerability to Specific Hazards

The Disaster Mitigation Act regulations require that the HMPC evaluate the risks associated with each of the medium and high significance hazards identified in the planning process. This section summarizes the possible impacts and quantifies, where data permits, the County's vulnerability to each of the hazards identified as a priority hazard in Section 4.2.20 Hazards Summary. Where specific hazards vary across the County, additional information can be found in the jurisdictional annexes. The hazards evaluated further as part of this vulnerability assessment include:

- Drought
- Earthquake
- Flood: Dam Failure
- Flood: 100/500 year and Localized Stormwater
- Landslides/ Mud & Debris Flows /Rockfalls
- Severe Weather: Thunderstorms/Heavy Rains
- Severe Weather: Winter Weather
- Soil Hazards: Erosion and Deposition
- Wildfire
- Hazardous Materials: Transportation Incidents

The hazards that were not evaluated include: avalanche, extreme heat, hail, high winds, lightning, tornado, expansive soils, and subsidence. These hazards were all ranked low significance due to a lack of notable past events and damages or low probabilities of occurrence. Earthquake was profiled, despite being ranked low significance, due to the occurrence of damaging and/or widespread earthquakes in the Denver Metro area in the past and the potential, while less likely, for damaging events.

An estimate of the vulnerability of the County to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.

accessed February 17, 2015.

- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.

Vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances, the numbers and types of buildings subject to the identified hazard can be counted and their values tabulated. Other information can be collected in regard to the hazard area, such as the location of critical community facilities (e.g., a fire station), historic structures, and valued natural resources (e.g., an identified wetland or endangered species habitat). Together, this information conveys the impact, or vulnerability, of that area to that hazard.

The HMPC identified five hazards in the Planning Area for which specific geographical hazard areas have been defined and for which sufficient data exists to support a quantifiable vulnerability analysis. These five hazards are: earthquake; flood; hazardous materials: transport incidents; landslide/mud and debris flow/rockfalls; and wildfire. Because these hazards have discrete hazard risk areas, their risk varies by jurisdiction. For flood, landslide, and wildfire, the HMPC inventoried the following for each community, to the extent possible, to quantify vulnerability in identified hazard areas:

- General hazard-related impacts, including impacts to life, safety, and health
- Insurance coverage, claims paid, and repetitive losses (if available)
- Values at risk (i.e., types, numbers, and value of land and improvements)
- Identification of critical facilities at risk
- Identification of cultural and natural resources at risk
- Development trends within the identified hazard area

The HMPC used FEMA's loss estimation software, HAZUS-MH, to analyze the County's vulnerability to earthquakes.

The vulnerability and potential impacts from priority hazards that do not have specific mapped areas nor the data to support additional vulnerability analysis are discussed in more general terms. These include:

- Drought
- Flood: Localized/Stormwater
- Severe Weather: Heavy Rain and Storms
- Severe Weather: Winter Weather

Dam failure does have specific mapped areas; however, the information is deemed too sensitive to

be discussed in this public document. Inundation mapping is included in the Emergency Action Plans (EAPs) of each high hazard dam in the County and kept on file with the dam owners.

4.3.3 Drought Vulnerability Assessment

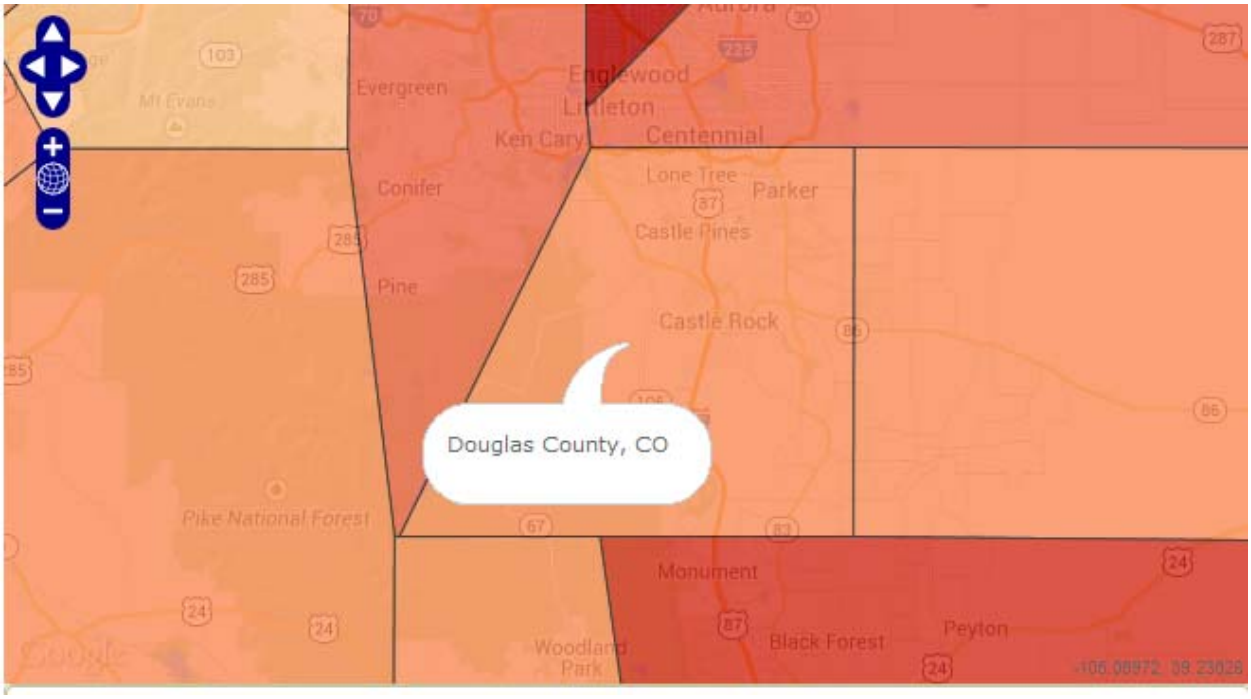
Likelihood of Future Occurrence—Medium
Potential Magnitude—Medium
Overall Vulnerability—Medium

Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically. Drought affects different sectors in different ways and with varying intensities. Adequate water is the most critical issue for agricultural, manufacturing, tourism, recreation, and commercial and domestic use. As the population in the area continues to grow, so too will the demand for water.

Based on historical information, the occurrence of drought in Colorado, including Douglas County, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts is often extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on impacts to individual water users. The vulnerability of Douglas County to drought is countywide, but impacts may vary and include reduction in water supply, agricultural losses, and an increase in dry fuels.

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. Tracking drought impacts can be difficult. The Drought Impact Reporter from the NDMC is a useful reference tool that compiles reported drought impacts nationwide. Figure 4.50 and Table 4.57 show drought impacts for the Douglas County Planning Area from 1850 to November 2014. The data represented is skewed, with the majority of these impacts from records within the past ten years.

Figure 4.50. Drought Impact Reporter for Douglas County Planning Area (1850 to 2013)



Source: National Drought Mitigation Center

Table 4.57. Douglas County Drought Impacts

Category	Number
Agriculture	381
Business and Industry	28
Energy	5
Fire	134
Plans & Wildlife	174
Relief, Response, and Restrictions	214
Society and Public Health	138
Tourism and recreation	41
Water Supply and Quality	191
Total	**1306**

Source: National Drought Mitigation Center

The most significant qualitative impacts associated with drought in the Planning Area are those related to water intensive activities such as agriculture, wildfire protection, municipal usage, commerce, tourism, recreation, and wildlife preservation. Mandatory conservation measures are typically implemented during extended droughts. A reduction of electric power generation and water quality deterioration are also potential problems. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

It is difficult to quantitatively assess drought impacts to Douglas County. Some factors to consider include: the impacts of fallowed agricultural land, habitat loss and associated effects on wildlife, and the drawdown of the groundwater table. The most direct and likely most difficult drought impact to quantify is to local economies, especially agricultural economies. It can be assumed, however, that the loss of production in one sector of the economy would affect other sectors.

Few county-specific drought studies have been conducted, apart from the State of Colorado Drought Mitigation and Response Plan, last updated in 2013. The Colorado Drought Plan evaluated each county's drought vulnerability in seven different sectors, including state assets, agriculture, energy, environment, municipal and industrial, recreation and tourism, and socioeconomics. Each sector examined multiple impact categories. For example, the agricultural sector included three impact categories: livestock, crops, and green industry. The vulnerability of every county was evaluated and given a numerical score for each impact category. A county's overall vulnerability score in a particular sector was based on the combined scores of each impact category. The Colorado Drought Plan results found that Douglas County was highly vulnerable to drought in the agricultural sector and moderately vulnerable in the recreation/tourism and socioeconomic sectors. Specific details for each sector are provided below:

- Agriculture: overall vulnerability score of 3-3.39. Douglas County was in the highest impact score group for livestock inventory and vulnerability and middle group for crop inventory and vulnerability.
- Recreation and tourism: overall vulnerability score of 2-2.9. The County had a high vulnerability score for boating which contributed to its moderate overall vulnerability score, despite having only low or moderate vulnerability scores in other recreation areas such as golf or camping.
- Socioeconomic: overall vulnerability score of 2-2.9. The County was given a score of three out of four in the population growth impact ranking which contributed to its moderate overall vulnerability score.

Development Trends

Drought vulnerability will increase with future development as there will be increased demands for limited water resources. The Douglas County Comprehensive Master Plan discusses this issue in Section 8 Water Quality. Refer to Section 4.4.1 of this plan for additional information on the County's capabilities, goals, and policies regarding drought vulnerability and water resources.

4.3.4 Earthquake Vulnerability Assessment

Likelihood of Future Occurrence—Low
Potential Magnitude—Low
Overall Vulnerability—Low

Although the HMPC feels this is a low significance hazard, due to the existing faults in the County and the potential significance of an earthquake in Colorado, analysis of earthquake is included here.

Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while uninhabited areas are less vulnerable.

Ground shaking is the primary earthquake hazard. Many factors affect the survivability of structures and systems from earthquake-caused ground motions. These factors include proximity to the fault, direction of rupture, epicenter location and depth, magnitude, local geologic and soils conditions, types and quality of construction, building configurations and heights, and comparable factors that relate to utility, transportation, and other network systems. Ground motions become structurally damaging when average peak accelerations reach 10 to 15% of gravity, average peak velocities reach 8 to 12 centimeters per second, and when the Modified Mercalli Intensity Scale is about VII (18-34% peak ground acceleration), which is considered to be very strong (general alarm; walls crack; plaster falls).

Earthquake losses will vary across the Douglas County Planning Area depending on the source and magnitude of the event. The earthquake scenario provides a good estimate of loss to the Planning Area based on a realistic earthquake scenario. The results of this scenario are described below.

2015 Earthquake Scenarios

HAZUS-MH 2.1 was utilized to model earthquake losses for Douglas County. Level 1 analyses were run, meaning that only the default data was used and not supplemented with local building inventory or hazard data. There are certain data limitations when using the default data, so the results should be interpreted accordingly; this is a planning level analysis.

The methodology for running the probabilistic earthquake scenario used probabilistic seismic hazard contour maps developed by the U.S. Geological Survey (USGS) for the 2008 update of the National Seismic Hazard Maps that are included with HAZUS-MH. The USGS maps provide estimates of potential ground acceleration and spectral acceleration at periods of 0.3 second and 1.0 second, respectively. The 2,500 year return period analyzes ground shaking estimates with a 2% probability of being exceeded in 50 years from the various seismic sources in the area. The International Building Code uses this level of ground shaking for building design in seismic areas and is considered more of a worst-case scenario.

The results of the probabilistic scenario are captured in Table 4.58. Key losses included the following:

- Total economic loss estimated for the earthquake was $211.87 million, which includes building losses and lifeline losses based on the HAZUS-MH inventory.
- Building-related losses, including direct building losses and business interruption losses,

totaled $191.86 million.

- Over 4% of the buildings in the County were at least moderately damaged. Eleven buildings were completely destroyed.
- Over 68% of the building- and income-related losses were residential structures. Eighteen percent of the estimated losses were related to business interruptions.
- The early evening earthquake scenario caused the most casualties, though the number is still quite low with one fatality, one life-threatening injury, and four injuries requiring hospitalization.

Table 4.58. Douglas County HAZUS-MH 2,500-year Earthquake Scenario Results

Impacts/Earthquake	Model Results
Residential Buildings Damaged (Based upon 66,000 buildings)	Slight: 6,470 Moderate: 2,182 Extensive: 293 Complete: 11
Building Related Loss	$191,860,000
Total Economic Loss	$211,870,000
Injuries (Based upon 2am time of occurrence)	Without requiring hospitalization: 32 Requiring hospitalization: 3 Life Threatening: 0 Fatalities: 0
Injuries (Based upon 2pm time of occurrence)	Without requiring hospitalization: 28 Requiring hospitalization: 3 Life Threatening: 0 Fatalities: 0
Injuries (Based upon 5pm time of occurrence)	Without requiring hospitalization: 28 Requiring hospitalization: 4 Life Threatening: 1 Fatalities: 1
Essential Facility Damage (Based upon 98 buildings)	None with at least moderate damage
Transportation and Utility Lifeline Damage	None with at least moderate damage
Households w/out Power & Water Service (Based upon 60,924 households)	Power loss @ Day 1: 0 Water loss @ Day 1: 0 Power loss @ Day 3: 0 Water loss @ Day 3: 0 Power loss @ Day 7: 0 Water loss @ Day 7: 0 Power loss @ Day 30: 0 Water loss @ Day 30: 0
Displaced Households	29
Shelter Requirements	15
Debris Generation	60,000 tons

Source: HAZUS-MH 2.1

Development Trends

Although new growth and development corridors would fall in the area potentially affected by earthquake, given the small chance of major earthquake and the building codes in effect, development in the earthquake area will continue to occur.

4.3.5 Flood: Dam Failure

Likelihood of Future Occurrence—Low
Potential Magnitude—Medium
Overall Vulnerability—Medium

Douglas County has 41 dams, 5 of which are rated as high hazard, 5 as significant hazard, and 31 as low hazard. Douglas County has had some minor dam incidents but no complete failures. The potential impacts from a dam failure in the County are largely dependent on the specific dam or jurisdiction in question. Small dams in the County would only cause localized damage in rural areas. Rueter-Hess Dam is only partially full and poses a low risk to Parker. Failure of Cheesman Dam would have a significant impact with floodwaters cascading to Strontia Springs and Chatfield Dam. A catastrophic dam failure of this magnitude would challenge local response capabilities and require timely evacuations to save lives in the western portions of the county. Impacts to life safety would depend on the warning time available and the resources 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 an issue. Due to homeland security concerns specific impacts are not included here.

Development Trends

Flooding due to a dam failure event is likely to exceed the special flood hazard areas regulated through local floodplain ordinances. The County and towns should consider the dam failure hazard when permitting development downstream of the high and significant hazard dams. Low hazard dams could become significant or high hazard dams if development occurs below them. Regular 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.

4.3.6 Flood: 100/500-year and Localized Stormwater Vulnerability Assessment

Likelihood of Future Occurrence—Low for 100/500-year and Medium for localized stormwater
Potential Magnitude—Medium for 100/500-year and Low for localized stormwater
Overall Vulnerability—Medium for both 100/500-year and localized stormwater

Douglas County is located in an area that is prone to very intense rainfall, sometimes of cloudburst magnitude. Floods have resulted from storms covering large areas with heavy general rainfall as well as from storms covering small area with extremely intense rainfall. This section quantifies the vulnerability of the Planning Area to floods.

Historically, the Planning Area has been at risk to stormwater flooding primarily during the spring and summer months when river systems in the County swell with heavy rainfall. Localized flooding also occurs throughout the Planning Area at various times throughout the year with

several areas of primary concern unique to the County and each jurisdiction.

Methodology

Unincorporated Douglas County and its incorporated jurisdictions have mapped FEMA flood hazard areas. GIS was used to determine the possible impacts of flooding within the County and how the risk varies across the Planning Area by jurisdiction. The following methodology was followed in determining improved parcel counts and values at risk to the 1% and 0.2% annual chance flood events.

Douglas County's parcel and associated 2014 assessor data was used as the basis for the countywide inventory of developed parcels, acres, and structure value. The FEMA DFIRM, effective date September 30, 2005, was used as the flood hazard layer for this analysis.

GIS was used to create a centroid, or point representing the center of the parcel polygon. DFIRM flood data was then overlaid on the parcel centroids. For the purposes of this analysis, the flood zone that intersected a parcel centroid was assigned the flood zone for the entire parcel. The model assumes that every parcel with a structure value greater than zero is improved in some way. Specifically, an improved parcel assumes there is a building on it. This approach was used to support the parcel layer analysis as there was no associated building layer available for this analysis. In addition to the centroid analysis, parcel boundary analysis was performed to get total acres and flooded acres by flood zone for each parcel. The parcel layer was intersected with the FEMA DFIRM to obtain the acres flooded values. Once completed the parcel boundary layer was joined to the centroid layer and flooded acre values were transferred based on parcel number.

It is important to note that there could be more than one structure or building on an improved parcel (i.e., condo complex occupies one parcel but might have several structures). Only improved parcels and the value of their improvements were analyzed. The end result is an inventory of the number and types of parcels and buildings subject to the hazards. Results are presented by unincorporated county and incorporated jurisdictions. Detailed tables show counts of parcels by jurisdictions and land use type (Agriculture, Commercial, Exempt, HOA, Industrial, Producing Mine, Residential, Utilities and Vacant Land) within each flood zone.

Each of the flood zones that begins with the letter 'A' depict the Special Flood Hazard Area, or the 1% annual chance flood event (commonly referred to as the 100-year flood). Table 4.59 explains the difference between mapped flood zones. These zones are shown on Figure 4.39.

Table 4.59. Flood Hazard Zones in Douglas County

Flood Zone	Description
1% Annual Chance	100-year Flood: Also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year.
Zone A	100-year Flood: No base flood elevations provided
Zone AE	100-year Flood: Base flood elevations provided

Flood Zone	Description
Zone AO	100-year Flood: Sheet flow areas, base flood depths provided
0.2% Annual Chance	500-year Flood
Zone D	Areas in which flood hazards are undetermined, but possible
Zone X	No flood hazard

Source: HAZUS

Values at Risk

The methodology described previously produced loss estimates for this vulnerability assessment. The methodology and results should be considered 'reasonable' and should be used for flood risk mitigation, emergency preparedness, and response and recovery . Uncertainties are inherent in any loss estimation methodology, and losses will vary depending on the magnitude of the flood event. Other limitations may include incomplete or inaccurate inventories of the built environment. The assessed values, for example, are well below the actual market values; thus, the actual value of assets at risk may be significantly higher than those included therein. Also, this loss estimation assumes no mitigation and does not account for buildings that may have been elevated above the 1% annual chance event according to local floodplain management regulations.

Douglas County Planning Area

Table 4.60 and Table 4.61 contain flood analysis results for the entire Douglas County Planning Area. This includes unincorporated Douglas County and the incorporated communities. These tables show the number of parcels and values exposed to the 1% annual chance and 0.2% annual chance flood events by jurisdiction and land use type for the entire Douglas County Planning Area. Figure 4.51 shows the location of properties in FEMA flood zones.

Table 4.60. Douglas County Exposure to 1% Annual Chance Flood Zone by Jurisdiction and Property Type

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
Castle Rock	Commercial	5	4	14	$3,015,500	$1,578,076	$4,593,576
	Exempt	81	1	11	$4,480	$4,881,361	$4,885,841
	HOA	1	0	1	$0	$0	$0
	Residential	39	34	48	$1,763,415	$933,678	$2,697,093
	Utilities	1	0	0	$0	$0	$0
	Vacant Land	14	1	5	$17,836	$1,002,333	$1,020,169
	Total	**141**	**40**	**79**	**$4,801,231**	**$8,395,448**	**$13,196,679**
Larkspur	Commercial	7	3	9	$974,510	$632,188	$1,606,698
	Exempt	12	2	5	$772,897	$1,142,901	$1,915,798

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
	Residential	9	9	10	$808,222	$455,000	$1,263,222
	Utilities	1	0	0	$0	$0	$0
	Vacant Land	4	0	2	$0	$327,868	$327,868
	Total	**33**	**14**	**26**	**$2,555,629**	**$2,557,957**	**$5,113,586**
Lone Tree	Agricultural	2	0	1	$0	$1,797	$1,797
	Exempt	4	0	1	$0	$89,556	$89,556
	Total	**6**	**0**	**2**	**$0**	**$91,353**	**$91,353**
Parker	Agricultural	1	0	0	$0	$1,190	$1,190
	Commercial	2	0	0	$0	$17,700	$17,700
	Exempt	98	6	11	$691,591	$12,531,887	$13,223,478
	HOA	11	0	0	$0	$0	$0
	Residential	5	3	4	$653,552	$207,705	$861,257
	Utilities	1	0	0	$0	$0	$0
	Vacant Land	7	0	0	$0	$743,741	$743,741
	Total	**125**	**9**	**15**	**$1,345,143**	**$13,502,223**	**$14,847,366**
Unincorporated	Agricultural	104	46	65	$13,789,952	$949,030	$14,738,982
	Commercial	13	11	15	$2,017,855	$2,295,072	$4,312,927
	Exempt	240	13	99	$3,581,017	$26,063,528	$29,644,545
	HOA	22	0	13	$0	$0	$0
	Industrial	6	6	7	$624,040	$1,511,492	$2,135,532
	Residential	125	110	120	$24,861,032	$15,928,416	$40,789,448
	Utilities	4	0	0	$0	$0	$0
	Vacant Land	38	0	11	$0	$2,890,243	$2,890,243
	Total	**552**	**186**	**330**	**$44,873,896**	**$49,637,781**	**$94,511,677**
	Grand Total	**857**	**249**	**452**	**$53,575,899**	**$74,184,762**	**$127,760,661**

Source: Douglas County 2014 Assessor & Parcel Data; Douglas County DFIRM

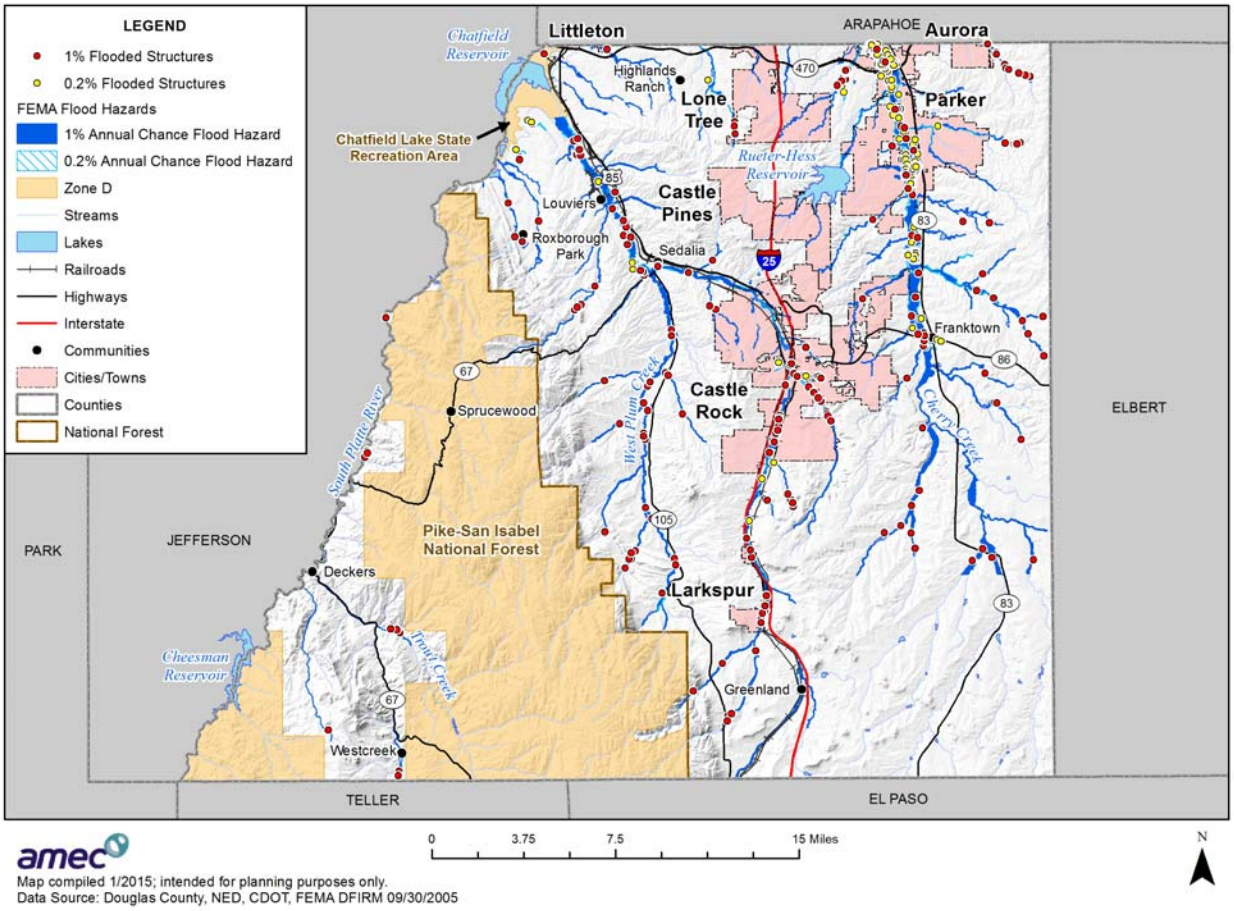
Table 4.61. Douglas County Exposure to 0.2% Annual Chance Flood Zone by Jurisdiction and Property Type

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
Castle Rock	Agricultural	14	0	18	$0	$2,741	$2,741
	Commercial	2	2	16	$1,402,310	$391,090	$1,793,400
	Exempt	17	0	3	$0	$74,668	$74,668
	HOA	1	0	0	$0	$0	$0
	Industrial	1	1	1	$490,335	$262,665	$753,000
	Residential	9	9	9	$1,069,946	$170,250	$1,240,196
	Vacant Land	5	0	3	$0	$908,582	$908,582

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Land Value	Total Value
	Total	**49**	**12**	**50**	**$2,962,591**	**$1,809,996**	**$4,772,587**
Larkspur	Commercial	2	1	5	$362,177	$213,870	$576,047
	Exempt	1	1	1	$147,670	$40,000	$187,670
	Residential	1	1	1	$124,985	$80,000	$204,985
	Total	**4**	**3**	**7**	**$634,832**	**$333,870**	**$968,702**
Parker	Agricultural	1	0	0	$0	$810	$810
	Commercial	18	10	62	$28,897,896	$17,554,185	$46,452,081
	Exempt	125	15	21	$23,698,806	$5,404,382	$29,103,188
	HOA	6	0	0	$0	$0	$0
	Residential	758	757	846	$131,232,921	$39,094,720	$170,327,641
	Vacant Land	36	0	22	$0	$5,827,345	$5,827,345
	Total	**944**	**782**	**951**	**$183,829,623**	**$67,881,442**	**$251,711,065**
Unincorporated	Agricultural	11	6	7	$872,623	$137,162	$1,009,785
	Commercial	4	4	13	$3,198,128	$2,297,812	$5,495,940
	Exempt	30	3	14	$54,553	$3,191,908	$3,246,461
	HOA	6	0	6	$0	$0	$0
	Industrial	3	3	5	$416,106	$891,198	$1,307,304
	Residential	307	305	640	$89,380,034	$21,258,054	$110,638,088
	Utilities	1	0	1	$0	$0	$0
	Vacant Land	14	1	11	$318	$626,093	$626,411
	Total	**376**	**322**	**697**	**$93,921,762**	**$28,402,227**	**$122,323,989**
Grand Total		**1,373**	**1,119**	**1,705**	**$281,348,808**	**$98,427,535**	**$379,776,343**

Source: Douglas County 2014 Assessor & Parcel Data; Douglas County DFIRM

Figure 4.51. Douglas County Flood Hazards and Floodprone Improved Properties



According to the flood analysis represented in Table 4.60; Castle Rock and Larkspur have the highest total values exposed in the 1% annual chance flood zone with Castle Rock having 40 improved parcels and total value of improvements at $4.8 million at risk, not including contents. Larkspur has 14 improved parcels with an improved value of $2.6 million at risk, not including contents, in the 1% annual chance flood zone.

Loss Estimates

Table 4.62 shows improved values at risk in the 1% annual chance flood zone and Table 4.63 summarizes improved values at risk in the 0.2% annual chance flood zone. Contents values were estimated as a percentage of building value based on their property type, using FEMA/HAZUS estimated content replacement values. This includes 100% of the structure value for agricultural, commercial, exempt, HOA and utility, 50% for residential, 150% for industrial and 0% for vacant land use classifications. A 20% damage factor was applied to each flood zone's total value of improvements and estimated content to obtain a loss estimate. This analysis is based on a FEMA depth damage function which assumes a two foot deep flood. Land value was not included in this analysis as the land itself is usually not a loss. The unincorporated County has the largest loss

estimate of $15.5 million with Castle Rock having the second highest loss estimate of $1.7 million for the 1% annual chance flood. Parker has the largest loss estimate for the 0.2% annual chance flood at $60.4 million, and the unincorporated County has the second highest loss estimate at over $28.6 million.

Table 4.62. Douglas County Estimated Loss Estimate to 1% Annual Chance Flood Zone Summary

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Total Value	Loss Estimate
Castle Rock	141	40	79	$4,801,231	$3,901,688	$8,702,919	$1,740,584
Larkspur	33	14	26	$2,555,629	$2,151,518	$4,707,147	$941,429
Lone Tree	6	0	2	$0	$0	$0	$0
Parker	125	9	15	$1,345,143	$1,018,367	$2,363,510	$472,702
Unincorporated	552	186	330	$44,873,896	$32,755,400	$77,629,296	$15,525,859
Total	**857**	**249**	**452**	**$53,575,899**	**$39,826,973**	**$93,402,872**	**$18,680,574**

Source: Douglas County 2014 Assessor & Parcel Data; Douglas County DFIRM

Table 4.63. Douglas County Estimated Loss Estimate to 0.2% Annual Chance Flood Zone Summary

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Total Value	Loss Estimate
Castle Rock	49	12	50	$2,962,591	$2,672,786	$5,635,377	$1,127,075
Larkspur	4	3	7	$634,832	$572,340	$1,207,172	$241,434
Lone Tree	0	0	0	$0	$0	$0	$0
Parker	944	782	951	$183,829,623	$118,213,163	$302,042,786	$60,408,557
Unincorporated	376	322	697	$93,921,762	$49,439,480	$143,361,242	$28,672,248
Total	**1,373**	**1,119**	**1,705**	**$281,348,808**	**$170,897,768**	**$452,246,576**	**$90,449,315**

Source: Douglas County 2014 Assessor & Parcel Data; Douglas County DFIRM

Flooded Acres

Also of interest is the land area affected by the various flood zones. The following is an analysis of flooded acres in the County in comparison to total area within the unincorporated county and city limits of each jurisdiction.

Methodology

GIS was used to calculate acres flooded by FEMA flood zones and property type categories. The Douglas County parcel layer and effective DFIRM data were intersected, and each segment divided by the intersection of flood zone and parcels was calculated for acres. This process was conducted for 1% flood chance areas, with each segment being defined by zone type (A, AE, AO)

and acres, and the process repeated for 0.2% flood chance areas. The resulting data tables with flooded acreages were then imported into a database and linked back to the original parcels, including total acres and land/improvement values, by parcel number. Once this was completed, each parcel contained acreage values for flooded acre by zone type within the parcel. In some cases, a single parcel had multiple flooded acres values (e.g., parcels overlapping a 1%-0.2% flood chance boundary). In the tables below each flood zone is represented and then split out by property type, their total flooded acres, total improved acres, and percent of improved acres that are flooded.

Limitations

One limitation of this analysis is that the parcel layer does not contain right-of-ways. Due to this there are voids of land that are not calculated; thus the analysis only represents total parcel acres. The other limitation created by this type of analysis is that improvements are uniformly found throughout the parcel, while in reality, only portions of the parcel are improved, and improvements may or may not fall within the flood zone portion of a parcel; thus, areas of improvements flooded calculated through this method may be higher or lower than those actually seen in a similar real world event.

Table 4.64 represent a detailed and summary analysis of total acres for each FEMA DFIRM flood zone. Table 4.64 gives detailed information for the Planning Area. This information is available for each jurisdiction in their respective annexes.

Table 4.64. Douglas County Planning Area – Flooded Acres by Jurisdiction

Flood Zone	Jurisdiction	Total Parcels Count	Improved Parcel Count	Total Structures Count	Total Acres	Total Flooded Acres	Total Acres with Improvements	Total Flood Acres with Improvements
Zone A	Castle Rock	47	2	18	257	147	0	0
	Lone Tree	6	0	2	70	20	0	0
	Parker	9	0	0	74	30	0	0
	Unincorporated	259	90	152	6,198	1,750	2,963	756
	Total Zone A	**321**	**92**	**172**	**6,599**	**1,947**	**2,964**	**757**
Zone AE	Castle Rock	94	38	61	272	142	6	4
	Larkspur	33	14	26	148	96	64	38
	Parker	116	9	15	1,069	829	119	90
	Unincorporated	284	92	173	4,605	2,504	1,732	890
	Total Zone AE	**527**	**153**	**275**	**6,095**	**3,571**	**1,922**	**1,022**
Zone AO	Unincorporated	9	4	5	57	17	30	8
	Total Zone AO	**9**	**4**	**5**	**57**	**17**	**30**	**8**

Flood Zone	Jurisdiction	Total Parcels Count	Improved Parcel Count	Total Structures Count	Total Acres	Total Flooded Acres	Total Acres with Improvements	Total Flood Acres with Improvements
0.2% Annual Chance	Castle Rock	49	12	50	134	16	5	1
	Larkspur	4	3	7	7	2	6	1
	Parker	944	782	951	749	490	394	264
	Unincorporated	376	322	697	1,329	300	819	155
	Total 0.2%	**1,373**	**1,119**	**1,705**	**2,219**	**808**	**1,224**	**422**
	Grand total	**2,230**	**1,368**	**2,157**	**14,970**	**6,343**	**6,140**	**2,209**

Source: Douglas County 2014 Assessor & Parcel Data; Douglas County DFIRM

Insurance Coverage, Claims Paid, and Repetitive Losses

Unincorporated Douglas County joined the NFIP on September 3, 1980. Castle Rock, Larkspur, Parker, and Lone Tree also participate in the NFIP. Table 4.65 summarizes NFIP insurance data as of November 30, 2014. Table 4.66 lists the number of total losses, closed losses, open losses, closed-without-pay (CWOP) losses, and total payments for the participating communities in Douglas County.

Table 4.65. NFIP Policy Summary

Jurisdiction	Join Date	# of Policies	Insurance In Force
Douglas County	9/3/1980	283	$69,933,300
Castle Rock	8/15/1978	81	$19,880,500
Larkspur	9/30/1987	1	$144,100
Lone Tree	4/8/2005	24	$6,001,000
Parker	9/30/1987	71	$18,144,000
Total	**-**	**460**	**$114,102,900**

Source: FEMA

Table 4.66. NFIP Loss Summary

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
Douglas County	31	21	0	10	$487,024.36
Castle Rock	1	0	0	1	$0.00
Larkspur	-	-	-	-	-
Lone Tree	1	1	0	0	$2,471.80
Parker	1	0	0	1	$0.00
Total	**34**	**22**	**0**	**12**	**$489,496.16**

Source: FEMA

Repetitive Loss Data

Douglas County's vulnerability to flooding is further indicated by its number of Repetitive Loss properties. According to the June 30, 2014 data from FEMA on NFIP communities, there are no

repetitive loss (RL) buildings in the unincorporated County or municipalities.

Populations at Risk

A separate analysis was performed to determine population in flood zones. Using GIS, the DFIRM Flood dataset was overlaid on the improved residential parcel data. Those parcel centroids that intersect a flood zone were counted and multiplied by the Census Bureau Douglas County household factor; results were tabulated by jurisdiction and flood zone (see Table 4.67). According to this analysis, there is a population of 433 in the 1% annual chance flood event, and 2,930 in the 0.2% annual chance flood event.

Table 4.67. Douglas County Planning Area - Improved Residential Parcels and Population in Floodplain

	1% Annual Chance		0.2% Annual Chance	
Jurisdiction	**Improved Residential Parcels**	**Population**	**Improved Residential Parcels**	**Population**
Castle Pines	-	-	-	-
Castle Rock	34	97	9	26
Larkspur	9	20	1	2
Lone Tree	-	-	-	.
Parker	3	8	757	2,051
Unincorporated	110	307	305	851
Total	**156**	**433**	**1,072**	**2,930**

Source: DFIRM, US Census Bureau, 2014 Douglas County Assessor & Parcel Data
* Census Bureau 2010 average household sizes are: Castle Pines – 2.70; Castle Rock – 2.86; Larkspur – 2.26;Lone Tree – 2.54; Parker – 2.71; Unincorporated County – 2.79.

Critical Facilities at Risk

Fifty-two critical facilities in unincorporated Douglas County are located in the 1% annual chance or 0.2% annual chance flood zone, as shown in Table 4.69. Specifics on the other jurisdictions' critical facilities in flood zones are listed in their respective annexes.

Table 4.68. Douglas County Planning Area – Critical Facilities Exposure to FEMA Floodplains

Jurisdiction	1% Annual Chance	0.2% Annual Chance	Total Facility Count
Castle Rock	2	-	2
Lone Tree	1	-	1
Parker	1	28	29
Unincorporated County	45	7	52
Total	**49**	**35**	**84**

Source: Douglas County GIS

Table 4.69. Unincorporated Douglas County Critical Facilities At Risk to FEMA Floodplains

Zone	Category	Type	Facility Count
Zone A	Essential Services Facilities	Bridge	17
Zone A	Essential Services Facilities	Water Hub/Treatment	1
Zone A	High Potential Loss Facilities	Dam	1
Zone A	High Potential Loss Facilities	Hazardous Material	1
Zone AE	Essential Services Facilities	Bridge	19
Zone AE	Essential Services Facilities	Cell Tower	1
Zone AE	Essential Services Facilities	Water Hub/Treatment	1
Zone AE	High Potential Loss Facilities	Dam	1
Zone AE	High Potential Loss Facilities	Hazardous Material	1
Zone AO	Essential Services Facilities	Fire Department	1
Zone AO	Essential Services Facilities	Water Hub/Treatment	1
0.2% Annual Chance	Essential Services Facilities	Fire Department	2
0.2% Annual Chance	Essential Services Facilities	Microwave	3
0.2% Annual Chance	Essential Services Facilities	Water Hub/Treatment	1
0.2% Annual Chance	High Potential Loss Facilities	Hazardous Material	1
Total			**52**

Source: 2014 Douglas County Assessor & Parcel Data

Cultural and Natural Resources at Risk

The Douglas County Planning Area has significant cultural and natural resources located throughout the County as previously described. Risk analysis of these resources was not possible due to data limitations. However, 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.

Development Trends

The County's zoning regulations prohibit various types of development within the floodplain overlay district:

1805.01 Habitable structures, or commercial/industrial structures, except fish hatcheries, water-related recreational facilities, single-family dwellings on nonconforming lots, and reconstruction of nonconforming structures as allowed by a Floodplain Development Permit

1805.02 Storage or processing of materials that are buoyant, flammable, explosive, or could be dangerous or cause injury in the time of flooding

1805.03 Junk or salvage yards, or solid waste disposal facilities or landfills

Section 4.4.1 discusses the County's floodplain regulations in more depth.

Through these regulations the County has minimized, but not eliminated, development in flood zones. Table 4.70 and Table 4.71 summarize development in the 1% and 0.2% annual chance flood zones between 2010 and 2014.

Table 4.70. Douglas County Structures Built from 2010 to 2014: Assets Exposed to the 1% Annual Chance Flood Zone

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Castle Rock	3	3	4	$110,764	$55,382	$30,000	$196,146
Larkspur	2	2	2	$242,884	$121,442	$92,000	$456,326
Unincorporated	8	8	10	$1,454,476	$512,781	$649,435	$2,616,692
Total	**13**	**13**	**16**	**$1,808,124**	**$689,605**	**$771,435**	**$3,269,164**

Source: Douglas County GIS

Table 4.71. Douglas County Structures Built from 2010 to 2014: Assets Exposed to the 0.2% Annual Chance Flood Zone

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Castle Rock	1	1	1	$490,335	$735,503	$262,665	$1,488,503
Larkspur	1	1	1	$147,670	$0	$40,000	$187,670
Parker	38	38	57	$7,284,984	$3,642,160	$1,954,246	$12,881,390
Unincorporated	16	16	28	$4,232,229	$2,116,274	$1,224,550	$7,573,053
Total	**56**	**56**	**87**	**$12,155,218**	**$6,493,936**	**$3,481,461**	**$22,130,615**

Source: Douglas County GIS

While the County has done an excellent job minimizing development in the 100-year floodplain, there are a significant number of structures in the 500-year floodplain, including several that were built in the last five years (see Table 4.61 and Table 4.71). Much of this development has occurred in Parker in particular. The 0.2% annual chance flood zone is less regulated; while these floods are a fairly rare occurrence, people and structures in this zone are still at risk.

The risk of stormwater/localized flooding to future development can be minimized by accurate recordkeeping of repetitive localized storm activity. Mitigating the root causes of the localized stormwater or choosing not to develop in areas that often are subject to localized flooding will reduce future risks of losses due to stormwater/localized flooding.

4.3.7 Landslide/Mud and Debris Flow/Rockfalls Vulnerability Assessment

Likelihood of Future Occurrence—High
Potential Magnitude—Low
Overall Vulnerability—Medium

Landslides in Douglas County include a wide variety of processes resulting in downward and outward movement of soil, rock, and vegetation. Common names for landslide types include slumps, rockslides, debris slides, lateral spreading, debris avalanches, earth flows, and soil creep. Although landslides are primarily associated with slopes greater than 15%, they can also occur in relatively flat areas and as cut-and-fill failures, river bluff failures, lateral spreading landslides, failures associated with quarries, and open-pit mines. Landslides may be triggered by both natural- and human-caused activity.

Methodology

The landslide hazard is made up of these attributes: debris-flow, rockfall-rockslide/debris and slope-failure. The County's parcel layer was used as the basis for the inventory of all parcels within Douglas County. GIS was used to overlay the landslide hazard layer with the parcel layer centroids and where the zones intersected a parcel centroid, it was assigned with that hazard zone for the entire parcel.

Values at Risk

The landslide, debris-flow, rockfall-rockslide/debris and slope-failure layers were intersected with the county parcel layer in GIS to obtain results. This is shown in Figure 4.52. Table 4.72 summarizes the parcels and values exposed to landslides hazards in the jurisdictions and unincorporated Douglas County. The unincorporated County has the most area exposed to landslide with 2,028 total parcels and 1,053 improved parcels with an improved value of $367,441,524 and a total value of $778,835,562. Castle Rock follows with 931 total and 543 improved parcels with and improved value of $198,464,752 and a total value of $361,228,304 exposed to landslides. Table 4.73 shows the unincorporated County's exposure by property type and landslide hazard. Additional details for the jurisdictions are available in their individual annexes.

Figure 4.52. Douglas County Planning Area - Landslide Hazards

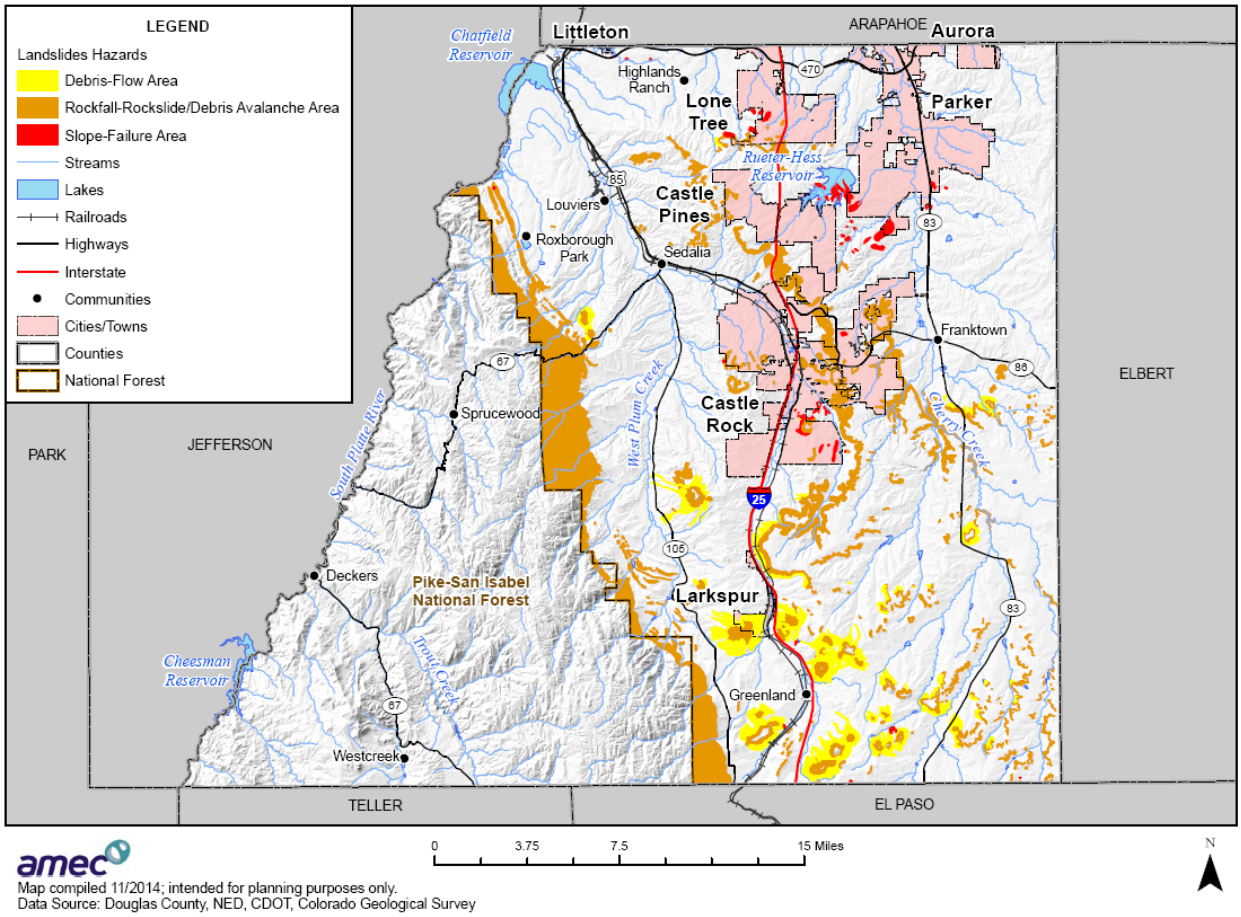


Table 4.72. Douglas County Planning Area – Assets Exposed to Landslide

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Castle Pines	128	97	109	$61,466,476	$30,377,296	$18,008,656	$109,852,428
Castle Rock	931	543	826	$198,464,752	$104,951,045	$57,812,507	$361,228,304
Larkspur	42	26	82	$4,742,998	$3,441,257	$2,094,585	$8,907,340
Lone Tree	60	18	46	$12,960,972	$10,075,852	$7,312,406	$30,349,230
Parker	11	10	11	$3,773,733	$1,886,867	$1,751,139	$7,411,739
Unincorporated	2,028	1,053	1,738	$367,441,524	$202,777,717	$218,333,950	$778,835,562
Total	**3,200**	**1,747**	**2,812**	**$648,850,455**	**$353,510,032**	**$305,313,243**	**$1,296,584,601**

Source: Douglas County assessors data

Table 4.73. Unincorporated Douglas County – Assets Exposed to Landslide by Property Type

Property Type	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Debris Flow Area							
Agricultural	62	28	44	$12,047,092	$12,047,092	$453,397	$24,547,581
Exempt	42	2	17	$1,168,701	$1,168,701	$12,955,995	$15,293,397
Residential	71	62	70	$18,917,251	$9,458,626	$8,165,388	$28,375,877
Utilities	3	0	0	$0	$0	$0	$0
Vacant Land	15	0	8	$0	$0	$1,552,241	$0
Total	**193**	**92**	**139**	**$32,133,044**	**$22,674,419**	**$23,127,021**	**$68,216,855**
Rockfall/Rockslide/Debris Avalanche Area							
Agricultural	184	47	83	$18,195,145	$18,195,145	$1,695,060	$38,085,350
Commercial	7	4	4	$3,532,649	$3,532,649	$1,397,675	$8,462,973
Exempt	142	19	46	$2,821,821	$2,821,821	$45,273,319	$50,916,961
HOA	40	0	4	$0	$0	$0	$0
Producing Mine	1	0	1	$0	$0	$9,207	$9,207
Residential	925	840	927	$287,755,333	$143,877,667	$116,593,013	$548,226,013
Vacant Land	454	7	469	$20,003	$0	$22,191,153	$22,211,156
Total	**1,753**	**917**	**1,534**	**$312,324,951**	**$168,427,282**	**$187,159,427**	**$667,911,660**
Slope-Failure Area							
Agricultural	4	1	1	$294,397	$294,397	$6,459	$595,253
Commercial	3	1	2	$74,107	$74,107	$116,496	$264,710
Exempt	18	0	8	$0	$0	$429,788	$429,788
Residential	46	42	44	$22,615,025	$11,307,513	$6,720,283	$40,642,821
Vacant Land	11	0	10	$0	$0	$774,476	$774,476
Total	**82**	**44**	**65**	**$22,983,529**	**$11,676,017**	**$8,047,502**	**$42,707,048**
Grand Total	**2,028**	**1,053**	**1,738**	**$367,441,524**	**$202,777,718**	**$218,333,950**	**$778,835,563**

Source: Douglas County Assessor's data

Populations at Risk

GIS analysis was performed to determine population in the landslide areas. Using GIS, the Douglas County landslide layer was overlaid on the entire parcel layer. Those parcel centroids that intersect the landslide areas were counted and multiplied by the 2010 Census Bureau average household factors for each jurisdiction and the unincorporated County; results were tabulated by jurisdiction (see Table 4.74). According to this analysis, the unincorporated County has the most people exposed to landslides, followed by Castle Rock.

Table 4.74. Douglas County Planning Area – Population Exposed to Landslide

Jurisdiction	Debris-Flow Area		Rockfall-Rockslide/Debris Avalanche Area		Slope-Failure Area	
	Improved Residential Parcels	Population	Improved Residential Parcels	Population	Improved Residential Parcels	Population
Castle Pines	-	-	95	257	-	-
Castle Rock	2	6	445	1,273	89	255
Larkspur	18	41	-	-	-	-
Lone Tree	-	-	-	-	-	-
Parker	-	-	-	-	10	27
Unincorporated	62	173	840	2,344	42	117
Total	**82**	**219**	**1,380**	**3,873**	**141**	**399**

Source: Douglas County Assessor's data

Critical Facilities at Risk

Landslide analysis was performed on the critical facility inventory in Douglas County and all jurisdictions. GIS was used to determine whether the facility locations intersect the landslide hazard areas provided by Douglas County, and if so, which zones they intersect. There are 58 facilities in the Planning Area in landslide zones, as shown in Table 4.75. Castle Rock and the unincorporated County are the only areas with critical facilities in landslide hazard areas. More details on landslide issues in Castle Rock may be found in the town's annex. Table 4.76 summarizes the critical facilities at risk to landslides in the unincorporated County by hazard area, critical facility category, facility type, and facility count. Details of critical facility definition, type, name and address and jurisdiction by landslide zone are listed in Appendix E.

Table 4.75. Douglas County Planning Area – Critical Facilities at Risk from Landslide

Jurisdiction	Facility Count
Castle Rock	18
Unincorporated County	40
Total	**58**

Source: Douglas County GIS

Table 4.76. Unincorporated Douglas County– Critical Facilities at Risk from Landslide

Landslide Hazard	Category	Type	Facility Count
Debris-Flow Area	Essential Services Facilities	Bridge	1
Debris-Flow Area	Essential Services Facilities	Fire Department	1
Total			**2**
Rockfall/Avalanche Area	At Risk Population Facilities	School	1
Rockfall/Avalanche Area	Essential Services Facilities	Bridge	1
Rockfall/Avalanche Area	Essential Services Facilities	Cell Tower	2
Rockfall/Avalanche Area	Essential Services Facilities	Fire Department	1
Rockfall/Avalanche Area	Essential Services Facilities	Microwave	28
Rockfall/Avalanche Area	Essential Services Facilities	Radio Tower	2
Rockfall/Avalanche Area	At Risk Population Facilities	Hazardous Material	1
Total			**36**
Slope-Failure Area	Essential Services Facilities	Bridge	1
Slope-Failure Area	Essential Services Facilities	Water Hub/Treatment	1
Total			**2**
Grand Total			**40**

Source: Douglas County GIS

Development Trends

Landslide hazard areas are located in every participating jurisdiction in this plan. Development in Douglas County is primarily encouraged in existing urban areas, and because landslide hazard areas are present in every jurisdiction in this plan, new structures in any of the jurisdictions could be at risk. Fortunately, the landslide hazard area in most jurisdictions is fairly small. Castle Rock and the unincorporated County have the most land at risk.

A total of 83 structures were built in landslide hazard areas in the unincorporated County, Castle Rock, Castle Pines, and Larkspur between 2010 and 2014. The large majority of these structures are located in rockfall hazard areas in the unincorporated County. Results of this analysis are shown in Table 4.77 and Table 4.78.

Table 4.77. Douglas County Structures Built from 2010 to 2014: Summary of Assets Exposed to Landslide Hazard Areas

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Castle Pines	6	6	7	$4,728,514	$2,364,257	$1,209,000	$8,301,771
Larkspur	2	2	2	$118,254	$53,651	$76,000	$247,905
Castle Rock	19	19	19	$6,852,926	$3,426,463	$1,236,200	$11,515,589
Unincorporated	54	54	55	$21,003,852	$10,816,843	$7,234,834	$39,055,529
Total	**81**	**81**	**83**	**$32,703,546**	**$16,661,214**	**$9,756,034**	**$59,120,794**

Source: Douglas County GIS

Table 4.78. Douglas County Structures Built from 2010 to 2014: Assets Exposed to Landslide/Debris Flows/Rockfall Hazard Areas

Property Type	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Debris Flow Area							
Castle Rock	1	1	1	$354,228	$177,114	$52,000	$583,342
Larkspur	2	2	2	$118,254	$53,651	$76,000	$247,905
Unincorporated	4	4	4	$1,410,552	$1,020,193	$244,925	$2,675,670
Total	**7**	**7**	**7**	**$1,883,034**	**$1,250,958**	**$372,925**	**$3,506,917**
Rockfall/Rockslide/Debris Avalanche Area							
Castle Pines	6	6	7	$4,728,514	$2,364,257	$1,209,000	$8,301,771
Castle Rock	16	16	16	$6,289,724	$3,144,862	$1,054,200	$10,488,786
Unincorporated	49	49	50	$19,015,834	$9,507,917	$6,905,909	$35,429,660
Total	**71**	**71**	**73**	**$30,034,072**	**$15,017,036**	**$9,169,109**	**$54,220,217**
Slope-Failure Area							
Castle Rock	2	2	2	$208,974	$104,487	$130,000	$443,461
Unincorporated	1	1	1	$577,466	$288,733	$84,000	$950,199
Total	**3**	**3**	**3**	**$786,440**	**$393,220**	**$214,000**	**$1,393,660**
Grand Total	**81**	**81**	**83**	**$32,703,546**	**$16,661,214**	**$9,756,034**	**$59,120,794**

Source: Douglas County GIS

4.3.8 Severe Weather: Thunderstorms and Heavy Rains Vulnerability Assessment

Likelihood of Future Occurrence—High
Potential Magnitude—Medium
Overall Vulnerability—Medium

According to historical hazard data, severe weather is an annual occurrence in Douglas County.

Damage and disaster declarations related to severe weather have occurred and will continue to occur in the future. Heavy rain and thunderstorms are the most frequent type of severe weather occurrences in the County. Lightning often accompanies these storms and has caused damage in the past. However, actual damage associated with the primary effects of severe weather has been limited. It is the secondary hazards caused by weather, such as floods, fire, and agricultural losses that have had the greatest impact on the County. The risk and vulnerability associated with these secondary hazards are discussed in other sections (Section 4.3.6 Flood: 100/500-year and Localized Stormwater).

Development Trends

New critical facilities such as communications towers should be built to withstand heavy rains and thunderstorms. While damages have occurred in the Planning Area in the past due to this kind of severe weather, it is difficult to quantify future deaths, injuries, or damages due to heavy rains or thunderstorms. Future development projects should consider severe weather hazards at the planning, engineering and architectural design stage with the goal of reducing vulnerability. Development trends in the County are not expected to increase vulnerability to the hazard.

4.3.9 Severe Weather: Winter Weather

Likelihood of Future Occurrence—High
Potential Magnitude—Low
Overall Vulnerability—Medium

Douglas County typically experiences multiple winter storms in any given year. This hazard has been critical in its magnitude and severity in the past, as seen during the blizzards of March 2003 and December 2006. Vulnerability is high along busy roadways, particularly on Interstate 25 and Highway 470, where severe winter weather conditions may cause traffic related deaths and injuries. Road closures due to winter weather conditions also restrict or prevent the movement of people and goods and services (including food and gas), which can create the need for emergency sheltering for travelers. Poor road conditions can also delay emergency response.

It is difficult to identify specific winter weather hazard areas within Douglas County. Data was not available to identify specific structures at risk or estimate potential losses to these structures. NCDC data did not provide enough details on past damages and casualties to obtain an average annual loss assessment. If the March 2003 blizzard is used as the event of record, then the Denver Metro area could expect over $31 million in property damages from a severe winter storm. Note that this damage estimate is spread over the entire Denver Metro area; Douglas County's share of the damage would be smaller.

Development Trends

Future residential or commercial buildings built to code should be able to withstand snow loads from severe winter storms. Population growth in the County and growth in visitors will increase

problems with road, business, and school closures and increase the need for snow removal and emergency services related to severe winter weather events.

4.3.10 Soil Hazards: Erosion and Deposition

Likelihood of Future Occurrence—High
Potential Magnitude—Low
Overall Vulnerability—Medium

Two different areas of existing development are vulnerable to erosion. Erosion of soils due to slope grade, soil content and cover, and exposure to weather conditions is fairly limited and generally falls within underdeveloped areas. This is also due to the concurrence of erosion potential with other geologic hazard areas, such as dipping bedrock, which have been mapped by the County. Areas susceptible to wildfire-driven erosion, which often result in debris flow or the erosion and deposition of soil into watersheds, also does not usually directly impact developed areas but can impact transportation and drainage infrastructure. There are some areas of variance, particularly in the wildland-urban interface, where debris flows may impact housing and commercial districts. The larger concern centers on the pollution of the watersheds by soils, which impacts wildlife balances and degrades water quality for downstream habitats. Continued erosion and movement of soils in wildfire areas usually degrade watershed quality and thus exert a larger or disproportionate impact on the larger Planning Area. In addition, recovery for the washed out areas may be prolonged or difficult, as demonstrated in the burn areas of the Hayman fire, due to the loss of nutrient-rich soil. In this sense, 'existing development' may refer to any area vulnerable to wildfire, which covers an extensive portion of the Planning Area.

In addition to the general areas of existing vulnerability, scour critical bridges are also vulnerable to the effects of erosion and deposition. Erosion around bridges may compromise the construction of the structure, making them unsafe. Deposition may also press up against the structures, causing structural strain or sweeping out the structure by debris. In this instance, the vulnerability overlaps those identified in the debris flow section that follows.

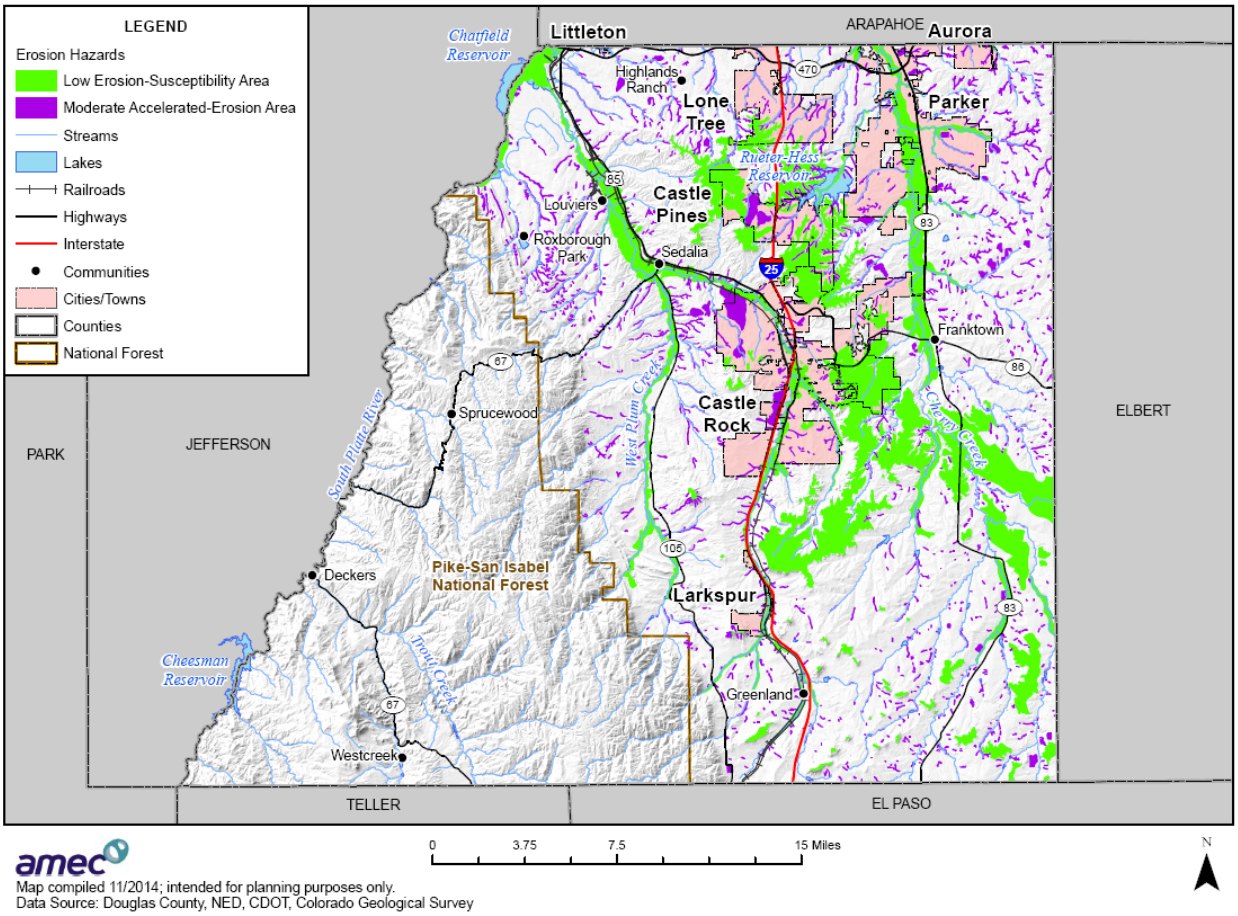
Response and recovery costs to address erosion problems from the Buffalo Creek fire in Jefferson County cost Denver Water alone over $24 million. The cost of the Buffalo Creek fire can be used as an estimate of future losses in Douglas County. However, the exact cost will vary depending on whether wildfires and resulting erosion problems affect critical watersheds. Erosion has been an ongoing issue in the Hayman burn area and will likely continue to cause problems.

Methodology

According to the geologic hazard layer obtained by Douglas County and created by the Colorado Geological Survey there are erosion hazards in the Planning Area (see Figure 4.53). The geologic hazard layer includes spatial data on low and moderate accelerated erosion susceptibility. The County's parcel layer was used as the basis for the inventory of all parcels within Douglas County. GIS was used to overlay the erosion hazard layer with the parcel layer centroids and where the

zones intersected a parcel centroid, it was assigned with that hazard zone for the entire parcel.

Figure 4.53. Douglas County Planning Area - Erosion Hazards



Values at Risk

The erosion layers, low and moderate accelerated erosion susceptibility, were intersected with the county parcel layer in GIS to obtain an estimate of property exposed to erosion hazards. Table 4.79 and Table 4.80 summarize the exposure of each jurisdiction to low erosion susceptibility areas and moderate accelerated erosion areas, respectively. Table 4.81 summarizes the exposure of jurisdictions and unincorporated Douglas County to the erosion hazard. More site specific analyses would be needed to characterize the true risk. There is significant exposure within the low erosion susceptibility areas with a total value of $3.9 billion, which is a combination of improved values and land Values. Castle Rock has the highest exposure to this hazard with a total value of $1.5 billion. Castle Rock also has the most parcels exposed with 6,568 with 4,997 being improved parcels with an improved value of $1.2 billion. Moderate accelerated erosion areas also have an impact to Douglas County with a total value of exposure of $1.6 billion. Castle Rock has the most parcels exposed to moderate accelerated erosion with 2,144 with 1,915 being improved parcels and an improved value of $384 million.

Table 4.79. Douglas County Planning Area – Summary of Assets Exposed to Low Erosion Susceptibility Areas

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Land Value	Total Value
Castle Pines	2,095	1,818	1,986	$657,534,162	$180,677,968	$838,212,130
Castle Rock	6,568	4,997	6,702	$1,203,158,081	$328,063,774	$1,531,221,855
Larkspur	56	27	79	$4,892,112	$4,233,861	$9,125,973
Lone Tree	16	1	3	$554,071	$411,624	$965,695
Parker	2,686	2,073	3,326	$583,712,863	$233,560,551	$817,273,414
Unincorporated	2,733	1,371	2,310	$468,730,634	$245,917,237	$714,647,871
Total	**14,154**	**10,287**	**14,406**	**$2,918,581,923**	**$992,865,015**	**$3,911,446,938**

Source: Douglas County Assessor's data

Table 4.80. Douglas County Planning Area – Summary of Assets Exposed to Moderate Accelerated Erosion Area

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Land Value	Total Value
Castle Pines	845	523	772	$151,911,353	$49,608,760	$201,520,113
Castle Rock	2,144	1,915	2,053	$383,897,482	$103,592,626	$487,490,108
Larkspur	3	0	1	$0	$1,030	$1,030
Lone Tree	40	14	49	$20,811,382	$12,588,747	$33,400,129
Parker	265	210	281	$167,312,517	$22,868,525	$190,181,042
Unincorporated	1,838	1,444	1,901	$542,634,425	$174,865,929	$717,500,354
Total	**5,135**	**4,106**	**5,057**	**$1,266,567,159**	**$363,525,617**	**$1,630,092,776**

Source: Douglas County Assessor's data

Table 4.81. Douglas County Planning Area – Summary of Assets Exposed to Erosion and Deposition – Low and Moderate Total

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Land Value	Total Value
Castle Pines	2,940	2,341	2,758	$809,445,515	$230,286,728	$1,039,732,243
Castle Rock	8,712	6,912	8,755	$1,587,055,563	$431,656,400	$2,018,711,963
Larkspur	59	27	80	$4,892,112	$4,234,891	$9,127,003
Lone Tree	56	15	52	$21,365,453	$13,000,371	$34,365,824
Parker	2,951	2,283	3,607	$751,025,380	$256,429,076	$1,007,454,456
Unincorporated	4,571	2,815	4,211	$1,011,365,059	$420,783,166	$1,432,148,225
Total	**19,289**	**14,393**	**19,463**	**$4,185,149,082**	**$1,356,390,632**	**$5,541,539,714**

Source: Douglas County Assessor's data

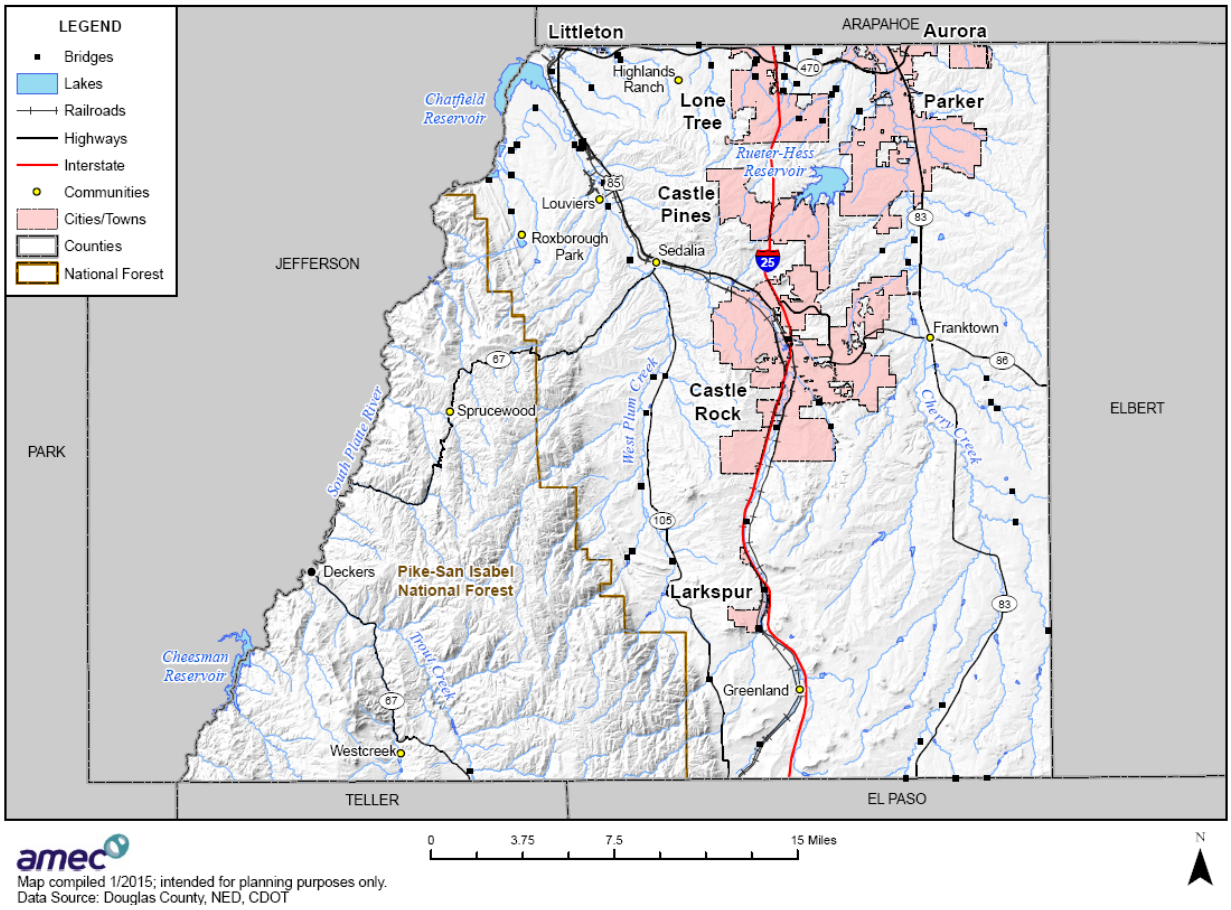
In addition to the general areas of existing vulnerability, scour critical bridges are also vulnerable to the effects of erosion and deposition. These bridges are depicted graphically in Figure 4.54. Table 4.82 lists the scour critical bridges in the Planning Area. Erosion around bridges may compromise the construction of the structure, making them unsafe. Deposition may also press up against the structures, causing structural strain or sweeping out the structure by debris.

Table 4.82. Scour Critical Bridges

Name	Road	Scour Index
Draw	SH 105	3
East Plum Creek	SH 67	3
West Cherry Creek	SH 83	3
Antelope Creek	SH 83	3

Source: Douglas County, NED, CDOT

Figure 4.54. Douglas County Bridges



Critical Facilities at Risk

Erosion analysis was performed on the critical facility inventory in Douglas County and all jurisdictions. GIS was used to determine whether the facility locations intersect erosion hazard areas provided by Douglas County, and if so, which zone they intersect. There are 294 total facilities in the Planning Area at risk in erosion zones, as shown in Table 4.83. The portion of Littleton that lies within Douglas County also has two critical facilities at risk to erosion. More details on erosion issues specific to each affected jurisdiction may be found in the individual annexes. Table 4.84 summarizes the critical facilities at risk to erosion in the unincorporated County by hazard area, critical facility category, facility type, and facility count. Details of critical facility definition, type, name and address and jurisdiction by landslide zone are listed in Appendix E.

Table 4.83. Douglas County Planning Area – Critical Facilities Exposure to Erosion

Jurisdiction	Low Erosion	Moderate Accelerated	Total Facility Count
Castle Pines	7	1	8
Castle Rock	74	7	81
Littleton	2	-	2
Lone Tree	-	3	3
Parker	52	9	61
Unincorporated County	121	18	139
Total	**256**	**38**	**294**

Source: Douglas County GIS

Table 4.84. Unincorporated Douglas County– Critical Facilities Exposure to Erosion

Erosion Hazard	Category	Type	Facility Count
Low Erosion Susceptibility Area	At Risk Population Facilities	Group Home	1
Low Erosion Susceptibility Area	At Risk Population Facilities	School	2
Low Erosion Susceptibility Area	Essential Services Facilities	Bridge	14
Low Erosion Susceptibility Area	Essential Services Facilities	Cell Tower	12
Low Erosion Susceptibility Area	Essential Services Facilities	Fire Department	4
Low Erosion Susceptibility Area	Essential Services Facilities	Microwave	25
Low Erosion Susceptibility Area	Essential Services Facilities	Radio Tower	3
Low Erosion Susceptibility Area	Essential Services Facilities	Water Hub/Treatment	6
Low Erosion Susceptibility Area	High Potential Loss Facilities	Dam	2
Low Erosion Susceptibility Area	High Potential Loss Facilities	Hazardous Material	52
Total			**121**
Moderate Accelerated Erosion Area	At Risk Population Facilities	Assisted Living	3
Moderate Accelerated Erosion Area	At Risk Population Facilities	Group Home	1
Moderate Accelerated Erosion Area	Essential Services Facilities	Bridge	8
Moderate Accelerated Erosion Area	High Potential Loss Facilities	Hazardous Material	6
Total			**18**
Grand Total			**139**

Source: Douglas County GIS

Development Trends

Development on steep slopes is discouraged in the County's Comprehensive Master Plan (Section 9); therefore, future development exposed to slope-driven erosion is unlikely. Future developments may be vulnerable to erosion exacerbated by flooding, high winds, and wildfires.

A total of 257 structures were built in moderate-accelerated erosion hazard areas in the unincorporated County, Castle Rock, Castle Pines, Parker, and Lone Tree between 2010 and 2014. Results of this analysis are shown in Table 4.85.

Table 4.85. Douglas County Structures Built from 2010 to 2014: Summary of Assets Exposed to Moderate Accelerated-Erosion Areas by Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Castle Pines	35	35	35	$9,346,720	$4,673,360	$2,776,250	$16,796,330
Castle Rock	105	105	105	$20,306,057	$10,153,029	$4,995,400	$35,454,486
Lone Tree	1	1	7	$4,964,468	$4,964,468	$3,372,415	$13,301,351
Parker	14	14	14	$2,907,881	$1,453,941	$848,050	$5,209,872
Unincorporated	95	95	96	$33,820,811	$17,597,547	$9,800,846	$61,219,204
Total	**250**	**250**	**257**	**$71,345,937**	**$38,842,344**	**$21,792,961**	**$131,981,242**

Source: Douglas County GIS

4.3.11 Wildfire Vulnerability Assessment

Likelihood of Future Occurrence—High
Potential Magnitude—High
Overall Vulnerability—High

Risk and vulnerability to the Douglas County Planning Area from wildfire is of significant concern, with some areas of the Planning Area being at greater risk than others as described further in this section. High fuel loads in parts of the Planning Area, along with geographical and topographical features, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and sometimes catastrophic fires. During fire season, the dry vegetation and hot and sometimes windy weather, combined with continued growth in the WUI areas, results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. As development continues throughout the Planning Area, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Douglas County Community Wildfire Protection Plan

The 2011 Douglas County CWPP was developed by a Core Team derived from 11 local fire protection districts; Douglas County Emergency Management, Open Space and Natural Resources, Engineering, Public Works Operations Division, and Public Affairs; CSFS, Denver Water, and USFS South Platte Ranger District (SPRD). The full list of collaborating agencies is provided on pages 2 and 11 of the CWPP.

The Wildfire Hazard Potential Map from the CWPP, shown in Figure 4.55, was used as a basis for the quantitative wildfire vulnerability analysis. This map shows wildfire hazard across Douglas County's as a composite analysis of controllability, values, and ignition risk. The Wildfire Hazard Potential Map has detailed information making it possible to develop a more precise quantitative

vulnerability analysis. The methodology is discussed in further detail in the next section.

The Douglas County CWPP contains a second map (Figure 4.56) showing land ownership, wildfire treatment recommendations, and community hazard rankings. The community hazard rankings are based on an average of the values shown in the Wildfire Hazard Potential map. Community hazard rankings include mixed, moderate, high, very high, and extreme hazard, listed in increasing order of the severity. The mixed category is used where hazard rankings can vary within a community. It is important to note that many of the larger mixed areas are located within major urban communities such as Castle Rock and Lone Tree. Colorado has experienced devastating fires in well-developed areas, such as the High Park and Waldo Canyon fires of 2012.

Figure 4.55. Douglas County Wildfire Hazard Potential

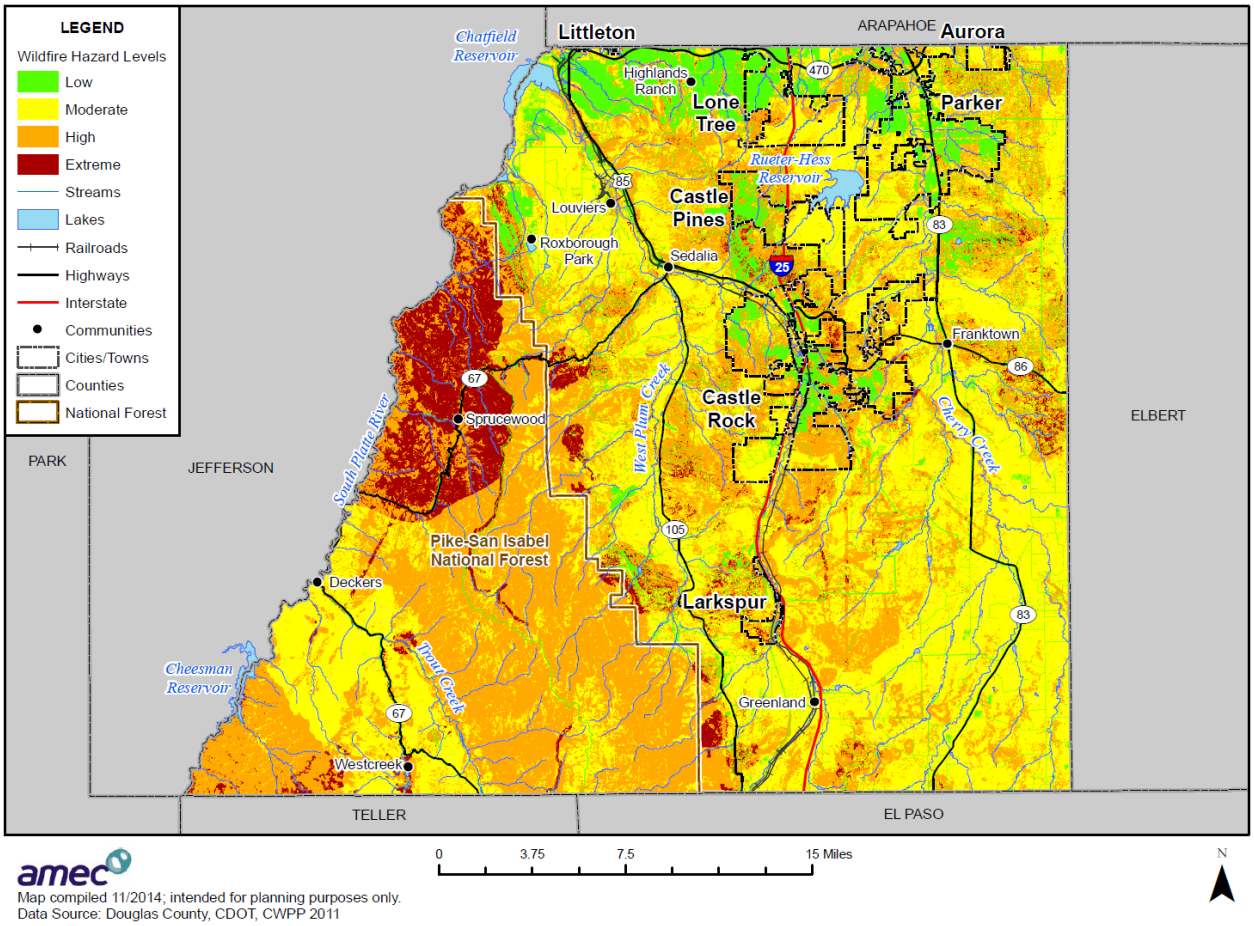
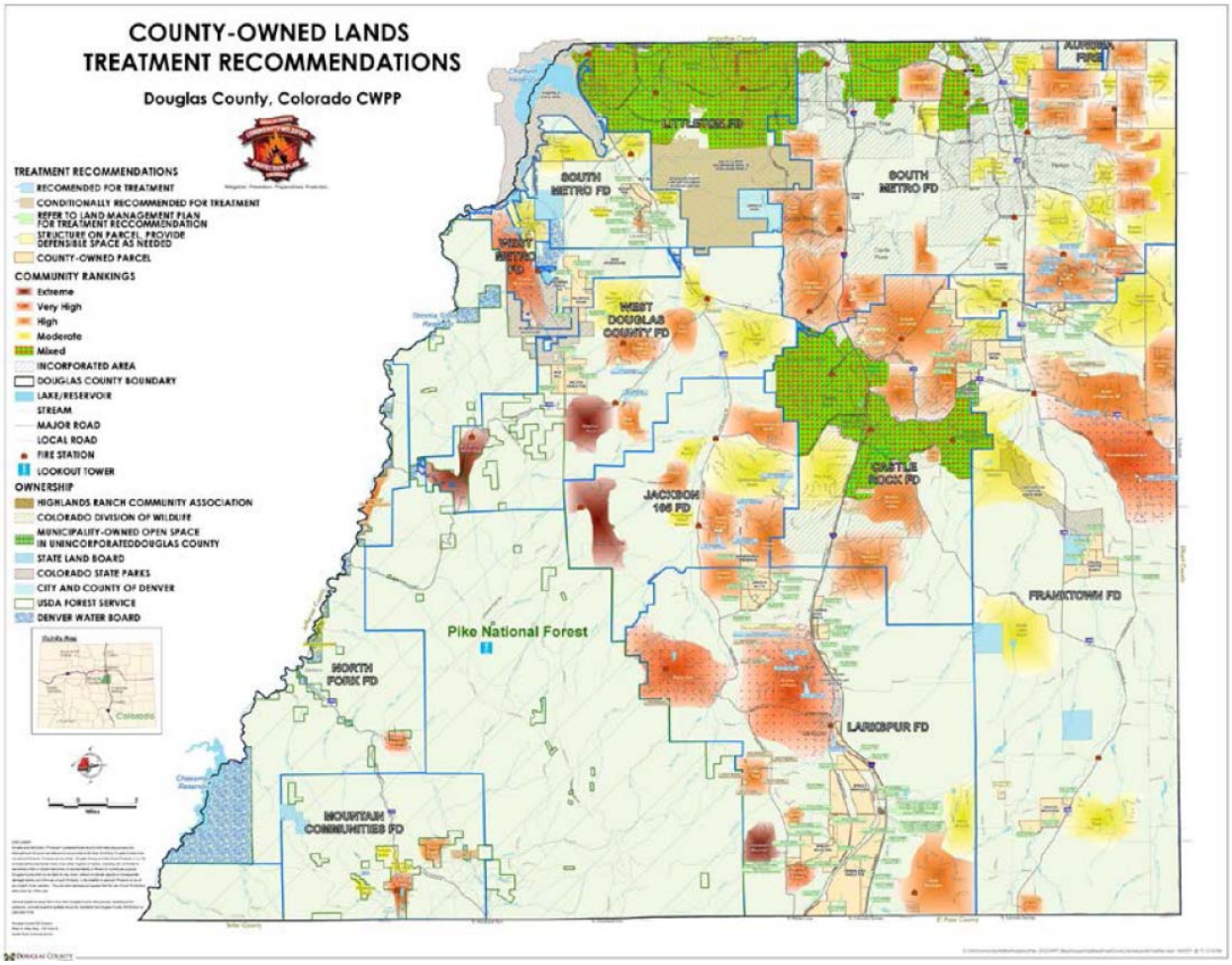


Figure 4.56. County-Owned Lands Treatment Recommendations Map



Methodology

An exposure analysis was performed to quantify risk to wildfire. Potential losses to wildfire were estimated using a countywide Wildfire Hazard Potential GIS layer (created for the Douglas County Community Wildfire Protection Plan) and assessor's data from Douglas County. Potential losses were examined in terms of structures, property value, critical facilities, and people at risk. For all analyses, the threat levels were classified as low, medium, high, and extreme. According to the CWPP, "[t]here is no absolute set of conditions that cause an area to be identified as being in a particular hazard category. Instead, the hazard category identified is a function of the combined factors that influence controllability, values, and ignition risk" (pg. 59).

GIS was used to create a centroid, or point representing the center of the parcel polygon. The CWPP's Wildfire Hazard Potential layer was then overlaid on the parcel centroids. For the purposes of this analysis, the fire hazard zone that intersected a parcel centroid was assigned the severity zone for the entire parcel. The model assumes that every parcel with a structure value greater than zero is improved in some way. Specifically, an improved parcel assumes there is a

building on it.

It is important to note that there could be more than one structure or building on an improved parcel (e.g., condo complex occupies one parcel but might have several structures). Only improved parcels and the value of their improvements were analyzed. The end result is an inventory of the number and types of parcels and buildings subject to the hazards. Results are presented by unincorporated county and incorporated jurisdictions. Detailed tables show counts of parcels by jurisdictions and land use type (Agriculture, Commercial, Exempt, HOA, Industrial, Producing Mine, Residential, Utilities and Vacant Land) within each fire zone.

Fire Severity Values at Risk

Results are represented and sorted by the unincorporated county and jurisdictions. Detailed tables show total parcel counts, improved parcel counts and their structure values by occupancy type (residential, industrial, etc.) and total land values within each fire severity zone. Table 4.86 shows the total counts and structure values of improved parcels in Douglas County.

According to the analysis represented in Table 4.86, Unincorporated Douglas County has 1,440 improved parcels and over $995 million in total value in the extreme severity zone. Of the 1,440 parcels, 1,394 are residential. There is a total of 21,134 improved parcels in the high fire severity zone, 20,514 of which are residential. The total value and loss estimate for the high fire hazard is $15.6 billion which includes estimated content, improved value and land value.

Table 4.86. Fire Risk by Jurisdiction and Property Type

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
Extreme								
Castle Pines	Agricultural	1	0	0	$0	$0	$110	$110
	Commercial	2	0	0	$0	$0	$17,438	$17,438
	Exempt	6	0	4	$0	$0	$216,876	$216,876
	HOA	3	0	0	$0	$0	$0	$0
	Residential	42	39	42	$16,998,350	$8,499,175	$5,080,950	$30,578,475
	Total	**54**	**39**	**46**	**$16,998,350**	**$8,499,175**	**$5,315,374**	**$30,812,899**
Castle Rock	Agricultural	2	0	0	$0	$0	$786	$786
	Commercial	1	1	27	$11,113,512	$11,113,512	$2,836,488	$25,063,512
	Exempt	11	1	2	$8,191,530	$8,191,530	$1,286,612	$17,669,672
	HOA	12	0	2	$0	$0	$0	$0
	Residential	100	88	100	$33,284,971	$16,642,486	$5,881,772	$55,809,229
	Vacant Land	31	0	32	$0	$0	$1,802,335	$1,802,335
	Total	**157**	**90**	**163**	**$52,590,013**	**$35,947,528**	**$11,807,993**	**$100,345,534**
Larkspur	Exempt	1	0	0	$0	$0	$50,000	$50,000
	Residential	1	1	1	$408,667	$204,334	$120,000	$733,001
	Total	**2**	**1**	**1**	**$408,667**	**$204,334**	**$170,000**	**$783,001**
Lone Tree	Agricultural	1	0	0	$0	$0	$3,605	$3,605
	Commercial	1	1	39	$5,097,321	$5,097,321	$222,679	$10,417,321
	Exempt	2	0	0	$0	$0	$628,752	$628,752
	Residential	6	4	6	$1,924,323	$962,162	$652,637	$3,539,122
	Total	**10**	**5**	**45**	**$7,021,644**	**$6,059,483**	**$1,507,673**	**$14,588,800**
Parker	Exempt	3	0	0	$0	$0	$201,924	$201,924
	HOA	2	0	0	$0	$0	$0	$0
	Residential	5	5	5	$1,550,702	$775,351	$370,000	$2,696,053
	Vacant Land	1	0	1	$0	$0	$43,368	$43,368
	Total	**11**	**5**	**6**	**$1,550,702**	**$775,351**	**$615,292**	**$2,941,345**
Unincorporated	Agricultural	52	19	37	$6,416,024	$6,416,024	$208,170	$13,040,218
	Commercial	11	3	4	$808,207	$808,207	$850,640	$2,467,054
	Exempt	137	19	76	$5,130,889	$5,130,889	$48,860,971	$59,122,749
	HOA	53	0	9	$0	$0	$0	$0
	Producing Mine	1	0	1	$0	$0	$9,207	$9,207
	Residential	1,504	1,394	1,500	$476,585,766	$238,292,883	$179,488,883	$894,367,532
	Vacant Land	563	5	530	$4,753	$0	$26,618,913	$26,623,666
	Total	**2,321**	**1,440**	**2,157**	**$488,945,639**	**$250,648,003**	**$256,036,784**	**$995,630,426**
	Grand Total	**2,555**	**1,580**	**2,418**	**$567,515,015**	**$302,133,873**	**$275,453,116**	**$1,145,102,004**

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
High								
Castle Pines	Agricultural	91	0	81	$0	$0	$15,506	$15,506
	Commercial	6	3	53	$10,480,397	$10,480,397	$4,669,961	$25,630,755
	Exempt	78	3	42	$14,001,304	$14,001,304	$2,216,824	$30,219,432
	HOA	60	0	20	$0	$0	$0	$0
	Residential	726	667	721	$278,070,150	$139,035,075	$78,531,194	$495,636,419
	Utilities	4	0	1	$0	$0	$0	$0
	Vacant Land	22	1	31	$719,766	$0	$3,660,247	$4,380,013
	Total	**987**	**674**	**949**	**$303,271,617**	**$163,516,776**	**$89,093,732**	**$555,882,125**
Castle Rock	Agricultural	254	2	201	$277,506	$277,506	$536,121	$1,091,133
	Commercial	40	31	131	$94,535,214	$94,535,214	$25,335,193	$214,405,621
	Exempt	462	33	134	$132,224,647	$132,224,647	$45,624,269	$310,073,563
	HOA	310	0	214	$0	$0	$0	$0
	Industrial	3	3	9	$1,950,632	$2,925,948	$1,384,097	$6,260,677
	Residential	6,146	5,671	6,339	$1,501,319,158	$750,659,579	$313,622,015	$2,565,600,752
	Utilities	3	0	1	$0	$0	$0	$0
	Vacant Land	1,631	4	1,541	$488,544	$0	$47,944,926	$48,433,470
	Total	**8,849**	**5,744**	**8,570**	**$1,730,795,701**	**$980,622,894**	**$434,446,621**	**$3,145,865,216**
Larkspur	Agricultural	3	0	3	$0	$0	$5,803	$5,803
	Commercial	13	7	62	$2,589,647	$2,589,647	$2,736,850	$7,916,144
	Exempt	22	6	10	$1,123,252	$1,123,252	$1,405,019	$3,651,523
	Industrial	1	1	5	$748,789	$1,123,184	$126,187	$1,998,160
	Residential	18	16	49	$2,630,693	$1,315,347	$1,176,113	$5,122,153
	Utilities	3	0	0	$0	$0	$0	$0
	Vacant Land	7	0	4	$0	$0	$758,829	$758,829
	Total	**67**	**30**	**133**	**$7,092,381**	**$6,151,429**	**$6,208,801**	**$19,452,611**
Lone Tree	Agricultural	13	0	1	$0	$0	$9,392	$9,392
	Commercial	20	16	513	$80,388,930	$80,388,930	$20,747,847	$181,525,707
	Exempt	71	6	27	$10,742,121	$10,742,121	$3,905,144	$25,389,386
	HOA	31	0	7	$0	$0	$0	$0
	Residential	586	471	734	$234,949,940	$117,474,970	$61,363,582	$413,788,492
	Vacant Land	44	0	14	$0	$0	$5,172,525	$5,172,525
	Total	**765**	**493**	**1,296**	**$326,080,991**	**$208,606,021**	**$91,198,490**	**$625,885,502**
Parker	Agricultural	13	1	1	$3,942	$3,942	$12,096	$19,980
	Commercial	60	41	205	$79,048,137	$79,048,137	$32,299,144	$190,395,418
	Exempt	208	16	24	$69,031,437	$69,031,437	$42,672,922	$180,735,796
	HOA	165	0	12	$0	$0	$0	$0
	Industrial	1	1	1	$246,834	$370,251	$152,460	$769,545
	Producing Mine	1	0	0	$0	$0	$58,292	$58,292

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
	Residential	1,971	1,851	2,073	$474,077,857	$237,038,929	$139,668,558	$850,785,344
	Utilities	2	0	0	$0	$0	$0	$0
	Vacant Land	515	0	502	$0	$0	$32,858,315	$32,858,315
	Total	**2,936**	**1,910**	**2,818**	**$622,408,207**	**$385,492,696**	**$247,721,787**	**$1,255,622,690**
Unincorporated	Agricultural	853	254	549	$120,519,044	$120,519,044	$7,962,593	$249,000,681
	Commercial	123	83	977	$292,815,314	$292,815,314	$87,033,084	$672,663,712
	Exempt	1,158	85	476	$259,127,986	$259,127,986	$355,746,449	$874,002,421
	HOA	388	0	103	$0	$0	$0	$0
	Industrial	15	15	55	$35,655,210	$53,482,815	$8,607,296	$97,745,321
	Producing Mine	8	0	0	$0	$0	$121,339	$121,339
	Residential	12,415	11,838	13,844	$4,220,933,381	$2,110,466,691	$1,624,930,848	$7,956,330,920
	Utilities	33	0	12	$0	$0	$197,376	$197,376
	Vacant Land	1,686	8	1,491	$2,531,254	$0	$132,971,553	$135,502,807
	Total	**16,679**	**12,283**	**17,507**	**$4,931,582,189**	**$2,836,411,850**	**$2,217,570,538**	**$9,985,564,577**
	Grand Total	**30,283**	**21,134**	**31,273**	**7,921,231,086**	**4,580,801,665**	**3,086,239,969**	**15,588,272,720**
Moderate								
Castle Pines	Agricultural	36	0	27	$0	$0	$81,846	$81,846
	Commercial	11	8	412	$50,457,223	$50,457,223	$14,185,679	$115,100,125
	Exempt	20	2	6	$8,200,874	$8,200,874	$4,104,896	$20,506,644
	HOA	17	0	5	$0	$0	$0	$0
	Residential	139	129	139	$65,623,575	$32,811,788	$18,367,843	$116,803,206
	Utilities	1	0	0	$0	$0	$0	$0
	Vacant Land	3	0	1	$0	$0	$884,722	$884,722
	Total	**227**	**139**	**590**	**$124,281,672**	**$91,469,885**	**$37,624,986**	**$253,376,543**
Castle Rock	Agricultural	939	0	817	$0	$0	$94,130	$94,130
	Commercial	40	33	167	$62,343,982	$62,343,982	$29,676,239	$154,364,203
	Exempt	226	15	101	$124,658,072	$124,658,072	$37,942,118	$287,258,262
	HOA	169	0	57	$0	$0	$0	$0
	Industrial	1	1	2	$3,783,814	$5,675,721	$956,186	$10,415,721
	Residential	3,313	2,910	3,467	$695,396,201	$347,698,101	$148,062,762	$1,191,157,064
	Utilities	5	0	0	$0	$0	$0	$0
	Vacant Land	694	2	624	$553,199	$0	$29,130,296	$29,683,495
	Total	**5,387**	**2,961**	**5,235**	**$886,735,268**	**$540,375,876**	**$245,861,731**	**$1,672,972,875**
Larkspur	Agricultural	2	0	0	$0	$0	$289	$289
	Commercial	2	1	2	$201,920	$201,920	$267,612	$671,452
	Exempt	7	2	3	$266,615	$266,615	$379,702	$912,932
	Residential	14	13	16	$1,330,019	$665,010	$675,000	$2,670,029
	Utilities	1	0	0	$0	$0	$0	$0
	Vacant Land	4	0	4	$0	$0	$146,000	$146,000

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
	Total	**30**	**16**	**25**	**$1,798,554**	**$1,133,545**	**$1,468,603**	**$4,400,702**
Lone Tree	Agricultural	33	0	13	$0	$0	$77,609	$77,609
	Commercial	47	30	442	$373,391,194	$373,391,194	$109,645,101	$856,427,489
	Exempt	91	6	23	$27,708,768	$27,708,768	$8,961,283	$64,378,819
	HOA	33	0	5	$0	$0	$0	$0
	Residential	448	397	493	$177,195,414	$88,597,707	$40,626,251	$306,419,372
	Vacant Land	48	0	16	$0	$0	$11,961,947	$11,961,947
	Total	**700**	**433**	**992**	**$578,295,376**	**$489,697,669**	**$171,272,191**	**$1,239,265,236**
Parker	Agricultural	11	1	2	$86,185	$86,185	$162,992	$335,362
	Commercial	100	72	407	$307,127,785	$307,127,785	$72,655,017	$686,910,587
	Exempt	291	21	56	$91,363,483	$91,363,483	$32,749,203	$215,476,169
	HOA	190	0	17	$0	$0	$0	$0
	Industrial	3	3	17	$3,610,095	$5,415,143	$612,585	$9,637,823
	Residential	3,223	3,112	3,389	$780,282,226	$390,141,113	$224,286,253	$1,394,709,592
	Utilities	12	0	4	$0	$0	$0	$0
	Vacant Land	714	2	561	$117,696	$0	$32,258,760	$32,376,456
	Total	**4,544**	**3,211**	**4,453**	**$1,182,587,470**	**$794,133,709**	**$362,724,810**	**$2,339,445,989**
Unincorporated	Agricultural	2,474	688	1,685	$266,017,677	$266,017,677	$16,093,927	$548,129,281
	Commercial	109	85	1,383	$357,467,930	$357,467,930	$106,350,371	$821,286,231
	Exempt	1,181	115	453	$180,464,428	$180,464,428	$291,244,814	$652,173,670
	HOA	300	1	149	$2,522,088	$2,522,088	$360,000	$5,404,176
	Industrial	33	32	54	$29,588,590	$44,382,885	$14,142,056	$88,113,531
	Producing Mine	11	0	5	$0	$0	$1,090,654	$1,090,654
	Residential	8,550	7,253	9,665	$2,554,513,763	$1,277,256,882	$990,120,854	$4,821,891,499
	Utilities	58	0	32	$0	$0	$0	$0
	Vacant Land	1,745	3	2,165	$16,604	$0	$115,525,270	$115,541,874
	Total	**14,461**	**8,177**	**15,591**	**$3,390,591,080**	**$2,128,111,890**	**$1,534,927,946**	**$7,053,630,916**
	Grand Total	**25,349**	**14,937**	**26,886**	**$6,164,289,420**	**$4,044,922,572**	**$2,353,880,267**	**$12,563,092,259**
Low								
Castle Pines	Agricultural	42	0	40	$0	$0	$6,826	$6,826
	Commercial	26	18	66	$19,796,264	$19,796,264	$8,539,880	$48,132,408
	Exempt	135	4	20	$14,145,527	$14,145,527	$9,888,687	$38,179,741
	HOA	161	0	43	$0	$0	$0	$0
	Residential	2,501	2,464	2,532	$802,770,372	$401,385,186	$224,606,689	$1,428,762,247
	Vacant Land	62	0	34	$0	$0	$1,748,241	$1,748,241
	Total	**2,927**	**2,486**	**2,735**	**$836,712,163**	**$435,326,977**	**$244,790,323**	**$1,516,829,463**
Castle Rock	Agricultural	112	2	87	$7,313	$7,313	$13,038	$27,664
	Commercial	372	353	1,408	$352,019,144	$352,019,144	$142,783,657	$846,821,945
	Exempt	702	70	242	$299,398,569	$299,398,569	$31,304,730	$630,101,868

Jurisdiction	Property Type	Total Parcel Count	Improved Parcel Count	Total Structure Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
	HOA	221	0	85	$0	$0	$0	$0
	Industrial	21	21	37	$14,849,052	$22,273,578	$10,582,039	$47,704,669
	Residential	8,508	8,415	8,543	$1,561,307,936	$780,653,968	$376,602,295	$2,718,564,199
	Utilities	10	0	7	$0	$0	$0	$0
	Vacant Land	280	0	142	$0	$0	$15,800,405	$15,800,405
	Total	**10,226**	**8,861**	**10,551**	**$2,227,582,014**	**$1,454,352,572**	**$577,086,164**	**$4,259,020,750**
Larkspur	Agricultural	1	0	0	$0	$0	$16	$16
	Commercial	12	8	15	$2,298,636	$2,298,636	$631,181	$5,228,453
	Exempt	12	1	5	$325,137	$325,137	$90,686	$740,960
	Residential	23	18	23	$1,739,320	$869,660	$932,000	$3,540,980
	Vacant Land	4	0	2	$0	$0	$102,000	$102,000
	Total	**52**	**27**	**45**	**$4,363,093**	**$3,493,433**	**$1,755,883**	**$9,612,409**
Lone Tree	Commercial	127	122	1,236	$524,505,980	$524,505,980	$238,606,599	$1,287,618,559
	Exempt	291	17	99	$46,915,488	$46,915,488	$15,285,622	$109,116,598
	HOA	110	0	36	$0	$0	$0	$0
	Residential	2,538	2,526	2,563	$956,489,388	$478,244,694	$265,375,780	$1,700,109,862
	Vacant Land	74	0	15	$0	$0	$7,989,951	$7,989,951
	Total	**3,140**	**2,665**	**3,949**	**$1,527,910,856**	**$1,049,666,162**	**$527,257,952**	**$3,104,834,970**
Parker	Agricultural	5	0	1	$0	$0	$2,668	$2,668
	Commercial	294	265	1,362	$378,914,244	$378,914,244	$146,887,190	$904,715,678
	Exempt	876	48	68	$100,234,459	$100,234,459	$45,519,221	$245,988,139
	HOA	348	0	11	$0	$0	$0	$0
	Industrial	20	20	48	$13,547,597	$20,321,396	$5,183,245	$39,052,238
	Residential	9,240	9,203	9,678	$1,752,393,209	$876,196,605	$509,783,148	$3,138,372,962
	Utilities	4	0	0	$0	$0	$0	$0
	Vacant Land	171	0	65	$0	$0	$14,537,844	$14,537,844
	Total	**10,958**	**9,536**	**11,233**	**$2,245,089,509**	**$1,375,666,703**	**$721,913,316**	**$4,342,669,528**
Unincorporated	Agricultural	148	50	80	$15,434,782	$15,434,782	$626,410	$31,495,974
	Commercial	592	529	7,491	$1,469,123,095	$1,469,123,095	$517,723,062	$3,455,969,252
	Exempt	2,910	127	762	$498,394,439	$498,394,439	$183,731,467	$1,180,520,345
	HOA	566	0	174	$0	$0	$0	$0
	Industrial	92	90	152	$99,339,996	$149,009,994	$34,715,347	$283,065,337
	Residential	35,618	35,463	36,672	$8,774,810,455	$4,387,405,228	$2,448,460,115	$15,610,675,798
	Utilities	57	0	27	$0	$0	$0	$0
	Vacant Land	615	1	948	$313,308	$0	$51,490,947	$51,804,255
	Total	**40,598**	**36,260**	**46,306**	**$10,857,416,075**	**$6,519,367,538**	**$3,236,747,348**	**$20,613,530,961**
	Grand Total	**67,901**	**59,835**	**74,819**	**$17,699,073,710**	**$10,837,873,385**	**$5,309,550,986**	**$33,846,498,081**

Analysis results for the entire Douglas County Planning Area are summarized in Table 4.87 which summarizes total parcel counts, improved parcel counts, structure counts and their structure and land values.

Table 4.87. Summary of Fire Risk by Jurisdiction

Jurisdiction	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value/Loss Estimate
Extreme							
Castle Pines	54	39	46	$16,998,350	$8,499,175	$5,315,374	$30,812,899
Castle Rock	157	90	163	$52,590,013	$35,947,528	$11,807,993	$100,345,534
Larkspur	2	1	1	$408,667	$204,334	$170,000	$783,001
Lone Tree	10	5	45	$7,021,644	$6,059,483	$1,507,673	$14,588,800
Parker	11	5	6	$1,550,702	$775,351	$615,292	$2,941,345
Unincorporated	2,321	1,440	2,157	$488,945,639	$250,648,003	$256,036,784	$995,630,426
Total	**2,555**	**1,580**	**2,418**	**$567,515,015**	**$302,133,873**	**$275,453,116**	**$1,145,102,004**
High							
Castle Pines	987	674	949	$303,271,617	$163,516,776	$89,093,732	$555,882,125
Castle Rock	8,849	5,744	8,570	$1,730,795,701	$980,622,894	$434,446,621	$3,145,865,216
Larkspur	67	30	133	$7,092,381	$6,151,429	$6,208,801	$19,452,611
Lone Tree	765	493	1,296	$326,080,991	$208,606,021	$91,198,490	$625,885,502
Parker	2,936	1,910	2,818	$622,408,207	$385,492,696	$247,721,787	$1,255,622,690
Unincorporated	16,679	12,283	17,507	$4,931,582,189	$2,836,411,850	$2,217,570,538	$9,985,564,577
Total	**30,283**	**21,134**	**31,273**	**$7,921,231,086**	**$4,580,801,665**	**$3,086,239,969**	**$15,588,272,720**
Moderate							
Castle Pines	227	139	590	$124,281,672	$91,469,885	$37,624,986	$253,376,543
Castle Rock	5,387	2,961	5,235	$886,735,268	$540,375,876	$245,861,731	$1,672,972,875
Larkspur	30	16	25	$1,798,554	$1,133,545	$1,468,603	$4,400,702
Lone Tree	700	433	992	$578,295,376	$489,697,669	$171,272,191	$1,239,265,236
Parker	4,544	3,211	4,453	$1,182,587,470	$794,133,709	$362,724,810	$2,339,445,989
Unincorporated	14,461	8,177	15,591	$3,390,591,080	$2,128,111,890	$1,534,927,946	$7,053,630,916
Total	**25,349**	**14,937**	**26,886**	**$6,164,289,420**	**$4,044,922,572**	**$2,353,880,267**	**$12,563,092,259**
Low							
Castle Pines	2,927	2,486	2,735	$836,712,163	$435,326,977	$244,790,323	$1,516,829,463
Castle Rock	10,226	8,861	10,551	$2,227,582,014	$1,454,352,572	$577,086,164	$4,259,020,750
Larkspur	52	27	45	$4,363,093	$3,493,433	$1,755,883	$9,612,409
Lone Tree	3,140	2,665	3,949	$1,527,910,856	$1,049,666,162	$527,257,952	$3,104,834,970
Parker	10,958	9,536	11,233	$2,245,089,509	$1,375,666,703	$721,913,316	$4,342,669,528
Unincorporated	40,598	36,260	46,306	$10,857,416,075	$6,519,367,538	$3,236,747,348	$20,613,530,961
Total	**67,901**	**59,835**	**74,819**	**$17,699,073,710**	**$10,837,873,385**	**$5,309,550,986**	**$33,846,498,081**

Populations at Risk

Wildfire risk is greatest to those individuals residing in identified hazard areas. GIS analysis was performed to determine population in the different fire hazard areas. Using GIS, the Douglas County wildfire layers were overlaid on the entire parcel layer. Those parcel centroids that intersect the wildfire hazard potential areas were counted and multiplied by the 2010 Census Bureau average household factors for each jurisdiction and unincorporated area: Castle Pines (2.70), Castle Rock (2.86), Larkspur (2.26), Lone Tree (2.54), Parker (2.71) and Unincorporated areas (2.79); results were tabulated by jurisdiction (see Table 4.88). According to this analysis, there is a total population of 99,947 at risk to moderate, high and extreme wildfire hazards with a total population of 4,272 in the extreme area, 57,297 in the high area, and 38,378 in the moderate hazard area. The Castle Rock jurisdiction has the highest population of potential risk for fire hazards. There is an estimated population of 252 in Castle Rock at risk in the extreme area, 16,219 in the high area, and 8,323 in the moderate area.

Table 4.88. Population at Risk to Wildfire

	Extreme		High		Moderate		Low	
Jurisdiction	**Improved Residential Parcels**	**Population**	**Improved Residential Parcels**	**Population**	**Improved Residential Parcels**	**Population**	**Improved Residential Parcels**	**Population**
Castle Pines	39	105	667	1,801	129	348	2,464	6,653
Castle Rock	88	252	5,671	16,219	2,910	8,323	8,415	24,067
Larkspur	1	2	16	36	13	29	18	41
Lone Tree	4	10	471	1,196	397	1,008	2,526	6,416
Parker	5	14	1,851	5,016	3,112	8,434	9,203	24,940
Unincorporated	1,394	3,889	11,838	33,028	7,253	20,236	35,463	98,942
Total	**1,531**	**4,272**	**20,514**	**57,297**	**13,814**	**38,378**	**58,089**	**161,058**

Critical Facilities at Risk

Wildfire analysis was performed on the critical facility inventory in Douglas County and all jurisdictions. GIS was used to determine whether the facility locations intersect a wildfire hazard area. There are 15 facilities in the extreme fire severity zone, 513 facilities in the high fire severity zone, 301 facilities in the moderate fire severity zone, and 682 facilities in the low fire severity zones, as shown in Table 4.89. Details of critical facility definition, type, name and address and jurisdiction by wildfire zone are listed in Appendix E.

Table 4.89. Douglas County Planning Area – Critical Facilities at Risk to Wildfire Summary

Jurisdiction	Extreme	High	Moderate	Low
Castle Rock	-	79	31	113
Littleton*	-	1	-	2
Lone Tree	-	13	6	44
Parker	-	78	70	107
Unincorporated County	15	342	194	416
Total	**15**	**513**	**301**	**682**

Source: Douglas County GIS

*Littleton is not a participating jurisdiction in this plan, but a portion of the city lies in Douglas County

Table 4.90. Unincorporated Douglas County– Critical Facilities at Risk to Wildfire Detail

Fire Risk	Category	Type	Facility Count
Extreme	At Risk Population Facilities	Assisted Living	1
	Essential Services Facilities	Bridge	2
	Essential Services Facilities	Cell Tower	1
	Essential Services Facilities	Fire Department	1
	Essential Services Facilities	Microwave	3
	Essential Services Facilities	Radio Tower	2
	High Potential Loss Facilities	Dam	1
	High Potential Loss Facilities	Hazardous Material	4
	TOTAL		**15**
High	At Risk Population Facilities	Assisted Living	4
	At Risk Population Facilities	Group Home	3
	At Risk Population Facilities	School	23
	Essential Services Facilities	Bridge	29
	Essential Services Facilities	Cell Tower	38
	Essential Services Facilities	Fire Department	12
	Essential Services Facilities	Maint/Equip Center	1
	Essential Services Facilities	Microwave	91
	Essential Services Facilities	Radio Tower	3
	Essential Services Facilities	Water Hub/Treatment	31
	High Potential Loss Facilities	Hazardous Material	107
	TOTAL		**342**
Moderate	At Risk Population Facilities	Assisted Living	3
	At Risk Population Facilities	School	11
	Essential Services Facilities	Bridge	11
	Essential Services Facilities	Cell Tower	19
	Essential Services Facilities	Commercial Airports	3
	Essential Services Facilities	Fire Department	4
	Essential Services Facilities	IT Infrastructure	1
	Essential Services Facilities	Maint/Equip Center	2
	Essential Services Facilities	Microwave	53
	Essential Services Facilities	Police	1
	Essential Services Facilities	Radio Tower	3
	Essential Services Facilities	Water Hub/Treatment	18
	High Potential Loss Facilities	Dam	1
	High Potential Loss Facilities	Hazardous Material	64
	TOTAL		**194**
Low	At Risk Population Facilities	Assisted Living	9
	At Risk Population Facilities	School	27

Fire Risk	Category	Type	Facility Count
	Essential Services Facilities	Bridge	23
	Essential Services Facilities	Cell Tower	48
	Essential Services Facilities	Fire Department	9
	Essential Services Facilities	Maint/Equip Center	6
	Essential Services Facilities	Microwave	23
	Essential Services Facilities	Water Hub/Treatment	9
	High Potential Loss Facilities	Dam	1
	High Potential Loss Facilities	Hazardous Material	261
	TOTAL		**416**
GRAND TOTAL			**967**

Source: Douglas County GIS

Cultural and Natural Resources at Risk

The Douglas County Planning Area has substantial cultural and natural resources located throughout the County as previously described. In addition, there are other natural resources at risk when wildland-urban interface fires occur. One is the watershed and ecosystem losses that occur from wildfires. This includes impacts to water supplies and water quality as well as air quality. Another is the aesthetic value of the area. Major fires that result in visible damage detract from that value. Other assets at risk include wildland recreation areas, wildlife and habitat areas, rangeland, and timber resources. The loss to these natural resources can be significant.

Other Assets at Risk

In addition to the vulnerability of the County and its jurisdictions, many other stakeholders reside or have significant assets in the area that should be considered in a vulnerability analysis. These stakeholders include individuals, agencies or business entities that could be directly impacted by a catastrophic wildfire. Impacts to stakeholders could range from increased demands on administrative and firefighting resources, to direct loss of life and assets.

Development Trends

The pattern of increased damages is directly related to increased urban growth spread into historical forested areas that have wildfire as part of the natural ecosystem. Many historical wildfires burned only vegetation in the past. However, with new development, a wildfire following a historical pattern now burns developed areas. The Douglas County CWPP identified this trend as well, stating that "[f]uture fires may be more intense than historical fires because the vegetation is denser and the built environment is denser than a century ago…Older developed areas of the County may be at more risk to potential loss from wildfire because of the increased amount of vegetation around homes and the construction materials of the structures" (pg. 25-27). Wildfire risk to new development can be mitigated through building and construction codes and defensible space activities.

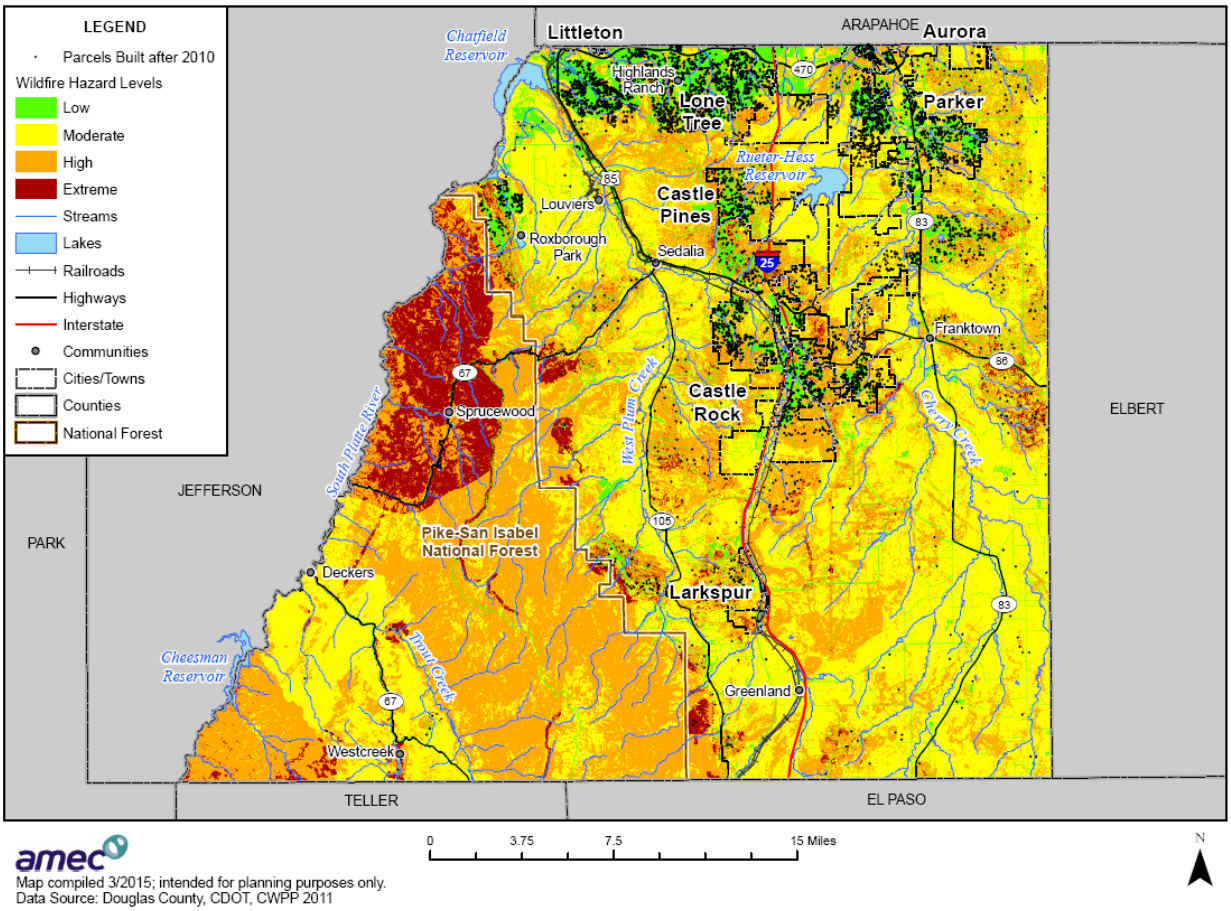
A total of 2,348 structures were built in extreme, high, and moderate wildfire hazard areas in the Planning Area between 2010 and 2014. The total value of these structures is $1,304,881,645, with the majority located in the high wildfire hazard area. The unincorporated County and Castle Rock have the highest number of structures and highest total value at risk. Results of this analysis are shown in Table 4.91 and depicted in Figure 4.57.

Table 4.91. Douglas County Structures Built from 2010 to 2014: Assets Exposed to Wildfire by Hazard Level

Hazard Level	Total Parcel Count	Improved Parcel Count	Total Building Count	Improved Value	Estimated Content Value	Land Value	Total Value
Extreme							
Castle Pines	1	1	1	$643,717	$321,859	$115,000	$1,080,576
Castle Rock	1	1	1	$268,821	$134,411	$80,500	$483,732
Unincorporated	80	80	82	$26,649,148	$13,347,703	$9,189,438	$49,186,289
Total	**82**	**82**	**84**	**$27,561,686**	**$13,803,972**	**$9,384,938**	**$50,750,596**
High							
Castle Pines	35	34	36	$15,190,338	$7,595,169	$4,411,000	$27,196,507
Castle Rock	323	322	350	$103,939,580	$43,744,447	$19,380,042	$167,064,069
Larkspur	6	6	7	$832,715	$413,522	$264,000	$1,510,237
Lone Tree	21	21	23	$10,321,154	$5,160,577	$2,121,700	$17,603,431
Parker	108	108	132	$27,991,428	$14,121,352	$7,881,790	$49,994,570
Unincorporated	684	683	807	$262,481,604	$138,148,866	$88,257,868	$488,888,338
Total	**1,177**	**1,174**	**1,355**	**$420,756,819**	**$209,183,931**	**$122,316,400**	**$752,257,150**
Moderate							
Castle Pines	9	9	10	$4,259,014	$2,129,507	$1,223,000	$7,611,521
Castle Rock	161	161	161	$36,895,395	$18,657,313	$7,381,328	$62,934,036
Lone Tree	27	27	34	$14,239,466	$7,815,629	$5,221,588	$27,276,683
Parker	170	170	208	$51,157,664	$29,880,540	$15,390,939	$96,429,143
Unincorporated	443	443	496	$164,271,724	$91,618,377	$51,732,416	$307,622,517
Total	**810**	**810**	**909**	**$270,823,263**	**$150,101,366**	**$80,949,271**	**$501,873,900**
Grand Total	**2,069**	**2,066**	**2,348**	**$719,141,768**	**$373,089,268**	**$9,384,938**	**$1,304,881,645**

Source: Douglas County GIS

Figure 4.57. Douglas County Build-Out in Wildfire Hazard Areas:2010-2014



4.3.12 Hazardous Material: Transport Incidents Vulnerability Assessment

Likelihood of Future Occurrence—Medium
Potential Magnitude—High
Overall Vulnerability—High

Several major transportation routes cross through Douglas County, including Interstate 25, Highway 470, the Union Pacific railroad, and the Burlington Northern Santa Fe (BNSF) railroad. Hazardous materials are transported along these corridors regularly, if not every day. Residential areas are located in the immediate vicinity of the corridors, potentially presenting a serious public health and safety concern if a hazardous materials incident were to occur in a populated area. GIS analysis was used to determine the number of people potentially at risk to hazardous materials transportation incidents in Douglas County.

Populations at Risk to Hazardous Materials from Transportation Corridors

To determine an estimate of populations at risk from a transportation-related hazardous materials

release within identified transportation corridors, an analysis was performed using GIS. A one-mile buffer was applied to both sides of Highway 470 and Interstate 25 and the Union Pacific and Burlington Northern Santa Fe (BNSF) Railroads, creating a two-mile buffer zone around each corridor. The buffer distance was based on guidelines in the U.S. Department of Transportation's Emergency Response Guidebook that suggest distances useful to protect people from vapors resulting from spills involving dangerous goods considered toxic if inhaled. The recommended buffer distance referred to in the guide as the "protective action distance" is the area surrounding the incident in which people are at risk of harmful exposure. For purposes of this plan, an average buffer distance of one mile was used on either side of the transportation corridor. Actual buffer distances will vary depending on the nature and quantity of the release, whether the release occurred during the night or daytime, and prevailing weather conditions.

Since there is overlapping of the corridors in many locations throughout the County and jurisdictions, individual population analysis was performed for each transportation corridor. In Table 4.92, each buffered transportation corridor was intersected with improved residential parcels and therefore parcels could be counted more than once within this table due to the individual analysis of each corridor. It is important to note that populations associated with commercial, industrial and other property types may also be affected by a hazardous materials release, but no census/population data is associated with these property types and are therefore excluded from this analysis. It is also important to note that the population at risk to a specific incident could vary greatly and would be dependent on accident location, severity and weather conditions.

The two railroads that go through Douglas County are adjacent to each other so the majority of the population in this analysis is duplicated for each railroad. There are 28,853 people that live within the one-mile buffer of the Union Pacific Railroad that passes through Castle Rock and Larkspur. The BNSF Railroad (Burlington Northern Santa Fe Railroad) follows the same corridor through Castle Rock and Larkspur with an estimated population of 30,710. There are 27,560 total people that live within the proximity of Highway 470 that passes through the northern portion Douglas County (which included the Highlands Ranch community) and Lone Tree. A population of 23,081 is within the proximity of Interstate 25 that passes through the Castle Pines, Castle Rock, Larkspur and Lone Tree.

Table 4.92. Populations Exposed by Transportation Corridor

Transportation Corridor	Corridor Length (mi.)	Population*		
		Cities	Unincorporated	Total
Interstate 25	31.7	17,194	5,887	**23,081**
Highway 470	9.6	2,233	25,328	**27,560**
Union Pacific Railroad	43.4	15,458	13,395	**28,853**
BNSF Railroad*	42.5	17,008	13,702	**30,710**

Source: Douglas County GIS, NED, CDOT 2013 HAZMAT Map

*A grand total is not given for affected population because some people may be counted more than once due to the fact that some parcels are intersected by multiple transportation corridors.

Development Trends

Development in the County largely occurs in existing urban areas, many of which lie along transportation corridors. As development in these areas continues to grow, more people will be at risk to hazardous materials transportation incidents.

4.4 Douglas County's Mitigation Capabilities

Thus far, the planning process has identified the hazards posing a threat to the Planning Area and described, in general, the vulnerability of the County to these risks. The next step is to assess what loss prevention mechanisms are already in place. This part of the planning process is the mitigation capability assessment. Combining the risk assessment with the mitigation capability assessment results in the County's net vulnerability to disasters, and more accurately focuses the goals, objectives, and proposed actions of this plan.

The HMPC used a two-step approach to conduct this assessment for the County. First, an inventory of common mitigation activities was made through the use of a matrix. The purpose of this effort was to identify policies and programs that were either in place, needed improvement, or could be undertaken if deemed appropriate. Second, the HMPC conducted an inventory and review of existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses or if they inadvertently contributed to increasing such losses.

This section presents Douglas County's mitigation capabilities and discusses select state and federal mitigation capabilities that are applicable to Douglas County. Information about capabilities specific to the other participating jurisdictions can be found in the annexes.

Similar to the HMPC's effort to describe hazards, risks, and vulnerability of Douglas County, this mitigation capability assessment describes the County's existing capabilities, programs, and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This assessment is divided into four sections: regulatory mitigation capabilities are discussed in Section 4.4.1; administrative and technical mitigation capabilities are discussed in Section 4.4.2; fiscal mitigation capabilities are discussed in Section 4.4.3; and mitigation outreach and partnerships are discussed in Section 4.4.4.

4.4.1 Douglas County's Regulatory Mitigation Capabilities

Table 4.93 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, and indicates those that are in place in Douglas County. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities.

APPENDIX F. MITIGATION STRATEGY SUPPLEMENT

This appendix summarizes additional activities and resources provided to plan participants to support the update of the mitigation strategy.

IMPORTANT! READ THIS

Phase 1 and Phase 2 templates were previously provided to your jurisdiction for completion. If your jurisdiction returned completed Phase 1 and Phase 2 templates:

- The Phase 1 and Phase 2 content you provided is already incorporated into your Phase 3 template.
- Please review the template to see if we have inserted any comments requesting further work to be done on Phase 1 and Phase 2

    - ***If any comments are included, please address them.*** Then, begin your work on Phase 3 following the Phase 3 instructions beginning on page 10.
    - If no comments are included, then you **DO NOT** need to do any further work on the Phase 1 and Phase 2 content. ***Go directly to the instructions for Phase 3, beginning on page 9.***

If your jurisdiction has **NOT** yet done any work on the Phase 1 and Phase 2 templates, then follow the instructions below for providing the Phase 1 and Phase 2 information.

If your jurisdiction started work on the Phase 1 or Phase 2 template but never completed and submitted it, please copy the work you had completed so far into the new template you received for Phase 3. Then complete Phases 1 and 2 following the instructions provided here.

PHASE 1 AND PHASE 2 INSTRUCTIONS

CHAPTER TITLE

You jurisdiction's name has already been entered as the title of the chapter. Please review and correct if needed.

HAZARD MITIGATION PLAN POINT OF CONTACT

Provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

Note: Both of these contacts should match the contacts that were designated in your jurisdiction's letter of intent to participate in this planning process. If you have changed the primary or secondary contact, please let the planning team know by inserting a comment into the document.

JURISDICTION PROFILE

Provide information specific to your jurisdiction as indicated, in a style similar to the examples provided below. This should be information that will not be provided in the overall mitigation plan document.

Location

Describe the community's location, size and prominent features, similarly to the example below

> The City of Jones is in the northwest portion of Smith County, along the Pacific Coast in northern California. It is almost 300 miles of San Francisco. The city's total area is 4.2 square miles, with boundaries generally extending north-south from State Highway 111 to the Johnson River and east-west from Coast Road to East Frank Avenue. The City of Allen is to the north, unincorporated county is to the west, the City of Bethany is to the south, and the Pacific Ocean is to the west.
>
> Jones is home to the University of Arbor, Bickerson Manufacturing, and the western portion of Soosoo National Park.

History

Describe the community's history, focusing on economy and development, and note its year of incorporation, similarly to the example below

> The City of Jones was incorporated in 1858. The area was settled during the gold rush in the 1850s as a supply center for miners. As the gold rush died down, timber and fishing became the area's major economic resources. By 1913, the Jones Teachers College, a predecessor to today's University of Arbor, was founded. Recently, the presence of the college has come to shape Jones' population into a young and educated demographic. In 1981 the City developed the Jones Marsh and Wildlife sanctuary, an environmentally friendly sewage treatment enhancement system.
>
> With numerous annexations since its original incorporation, the city's area has almost doubled. Today it features a commercial core in the center of the city, with mostly residential areas to the north and south, the university to the west and the national park on the east.

Climate

Describe the community's key climate characteristics, similarly to the example below

> Jones' weather is typical of the Northern California coast, with mild summers and cool, wet winters. It rarely freezes in the winter and it is rarely hot in the summer. Annual average rainfall is over 40 inches, with 80 percent of that falling from November through April. The average year-round temperature is 59ºF. Humidity averages 72 to 87 percent. Prevailing winds are from the north, and average 5 mph.

Governing Body Format

Describe the community's key governance elements, similarly to the example below

> The City of Jones is governed by a five-member city council. The City consists of six departments: Finance, Environmental Services, Community Development, Public Works, Police and the City Manager's Office. The City has 13 commissions and task forces, which report to the City Council.
>
> The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.

Complete the table providing the names and titles of members of the local mitigation planning team responsible for completion of this annex. Team membership should consist of agencies with authority to regulate development and enforce local ordinances or regulatory standards, such as building/fire code enforcement, emergency management,

emergency services, floodplain management, parks and recreation, planning/community development, public information, public works/engineering, stormwater management, transportation, or infrastructure.

CURRENT TRENDS

Population

For population data, use the most current population figure for your jurisdiction based on an official means of tracking (e.g., the U.S. Census or state office of financial management).

> According to California Department of Finance, the population of Jones as of July 2018 was 17,280. Since 2010, the population has grown at an average annual rate of 1.2 percent, though that rate is declining, with an annual average of only 0.8 percent since 2015.

Development

In the yellow-highlighted text that says "Describe trends in general," provide a brief description of your jurisdiction's recent development trends similar to the following example:

> Anticipated development levels for Jones are low to moderate, consisting primarily of residential development. The majority of recent development has been infill. Residentially, there has been a focus on affordable housing and a push for more secondary mother-in-law units on properties.
>
> The City of Jones adopted its general plan in July 2000. The plan focuses on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan. Future growth and development in the city will be managed as identified in the general plan.

Complete the table titled "Recent and Expected Future Development Trends." Please note:

- The portion of the table requesting the number of permits by year is specifically looking for development permits for new construction. If your jurisdiction does not have the ability to differentiate between permit types, please list the total number of permits and indicate "N/A" (not applicable) for the permit sub-types.
- If your jurisdiction does not have the ability to track the number of permits for each hazard area, please delete the bullet list of hazard areas and insert a qualitative description of where development has occurred.
- Examples of qualitative descriptions of buildout in the jurisdiction are as follows:
  - The Town is close to being built out. Most new projects involve the demolition of an existing residence and construction of a new replacement residence. A few subdivisions are processed each year.
  - There are five parcels of underdeveloped land within the city limits. According to the General Plan, the total potential units for these parcels is 33 units.

CAPABILITY ASSESSMENT

Please note that it is unlikely that you will be able to complete all sections of the capability assessment on your own. You will likely need to reach out to other departments within your local government, such as planning, finance, public works, etc. It may be beneficial to provide these individuals with background information about this planning process, as you will want input from them again during Phase 3 of your annex development.

Fill in your jurisdiction's name where indicated on the first line of the first paragraph under the heading "1.4 Capability Assessment."

Legal and Regulatory Capability

In the table titled "Legal and Regulatory Capability," indicate "Yes" or "No" for each listed code, ordinance, requirement or planning document in each of the following columns:

- **Local Authority**—Enter "Yes" if your jurisdiction has prepared or adopted the identified item; otherwise, enter "No." If yes, then enter the code, ordinance number, or plan name and its date of adoption in the comments column. ***Note: If you are entering yes, please be sure that you are providing a comment with the appropriate code, ordinance or plan.***
- **Other Jurisdiction Authority**—Enter "Yes" if there are any regulations that may impact your jurisdiction that are enforced or administered by another agency (e.g., a state agency or special purpose district) or if you know that there are any state or federal regulations or laws that would prohibit local implementation of the identified item; otherwise, enter "No." ***Note: If you answer yes, please indicate the other agency in the comments.***
- **State Mandated**—Enter "Yes" if state laws or other requirements enable or require the listed item to be implemented at the local level; otherwise, enter "No." ***Note: If you are entering yes, please be sure that you are providing a comment.***
- **Integration Opportunity**—Enter "Yes" if your jurisdiction has opportunities for integration of the code, ordinance or plan with the hazard mitigation plan. Consider entering "Yes" in the Integration Opportunity column if you answer "yes" to any of the following:

  - If you answered "Yes" in the Local Authority column for this code, ordinance or plan:

    - Does the code, ordinance or plan already address hazards and their potential impacts?
      - If so, should it be updated or revised to reflect new information about risk?
      - If not, will (or should) the code, ordinance or plan be updated over the performance period of the hazard mitigation plan (5 years)?
    - Does the code, ordinance or plan include specific projects that should be reviewed to incorporate hazard mitigation goals?
    - Does the code, ordinance or plan include specific projects that should be included as action items in the hazard mitigation action plan?

  - If you answered "No" in the Local Authority column for this code, ordinance or plan:

    - Will your jurisdiction develop the code, ordinance or plan during the performance period of the hazard mitigation plan?

  Note: Each capability with a "Yes" answer to Integration Opportunity will be discussed in more detail later in the annex. You may wish to keep notes when assessing the Integration Opportunity or review the "Integration with Other Planning Initiatives" section below.

- **Comments**—Enter the code number and adoption date for any local code indicated as being in place; provide other comments as appropriate to describe capabilities for each entry. PLEASE DO NOT OVERLOOK THIS STEP

For the category "Capital Improvement Plan," answer the specific question regarding plan update frequency, in addition to completing the four columns indicating level of capability.

Development and Permit Capabilities

Complete the table titled "Development and Permitting Capabilities."

Fiscal Capability

Complete the table titled "Fiscal Capability" by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter "Yes" if the resource is fully accessible to your jurisdiction. Enter "No" if there are limitations or prerequisites that may hinder your eligibility for this resource.

Administrative and Technical Capability

Complete the table titled "Administrative and Technical Capability" by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter "Yes" or "No" in the column labeled "Available?". If yes, then enter the department and position title in the right-hand column. If you have contract support staff with these capabilities, you can still answer "Yes." Indicate in the department column that this resource is provided through contract support.

Education and Outreach Capabilities

Complete the table titled "Education and Outreach" to indicate your jurisdiction's capabilities and existing efforts regarding natural hazard mitigation education and outreach.

National Flood Insurance Program Compliance

Complete the table titled "National Flood Insurance Program Compliance" by indicating your jurisdiction's capabilities related to each question in the table.

Classification in Hazard Mitigation Programs

Complete the table titled "Community Classifications" to indicate your jurisdiction's participation in various national programs related to natural hazard mitigation. For each program enter "Yes" or "No" in the second column to indicate whether your jurisdiction participates. If yes, then enter the classification that your jurisdiction has earned under the program in the third column and the date on which that classification was issued in the fourth column; enter "N/A" in the third and fourth columns if your jurisdiction is not participating. If you do not know your current classification, information is available at the following websites:

- **Community Rating System**— https://www.fema.gov/media-library-data/1503240360683-30b35cc754f462fe2c15d857519a71ec/20_crs_508_oct2017.pdf
- **Storm Ready**— https://www.weather.gov/stormready/communities
- **Firewise**— http://www.firewise.org/usa-recognition-program/map-of-active-participants.aspx

- **Building Code Effectiveness Grading Schedule (BCEGS)**— https://www.isomitigation.com/bcegs/iso-s-building-code-effectiveness-grading-schedule-bcegs.html
- **Public Protection Classification**— https://firechief.iso.com/FCWWeb/mitigation/ppc0001.jsp

INTEGRATION WITH OTHER PLANNING INITIATIVES

For hazard mitigation planning, "integration" means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning and capital facilities planning, and that relevant information from those sources is used in hazard mitigation. The goal of plan integration is to ensure that the potential impact of hazards is considered in planning for future development. FEMA recommends integration as follows:

- Integrate hazard mitigation plan goals with community objectives (e.g. incorporate the goals for risk reduction and safety into the policies of other plans).

- Use the risk assessment to inform plans and policies (e.g. incorporate risk assessment findings into land use plans, site plan review, emergency operations plans).
- Implement mitigation actions through existing mechanisms (e.g. include mitigation projects in the capital improvement plan).
- Think about mitigation before and after a disaster (e.g. build recovery planning on existing mitigation plans and goals).

After reviewing the plans, programs and ordinances identified in the capability assessment tables, identify all plans and programs that have already been integrated with the hazard mitigation plan, and those that offer opportunities for future integration. The simplest way to do this is to review the Legal and Regulatory Capabilities table to see which items were marked as "Yes" under the Integration Opportunity column.

Existing Integration

In the highlighted bullet list, list items for which you entered "Yes" under the Integration Opportunity column of the "Legal and Regulatory Capability" table because the plan or ordinance already addresses potential impacts or includes specific projects that should be included as action items in the mitigation action plan. Consider listing items marked as Completed in the "Status of Previous Plan Actions" table if they were indicated as being ongoing actions. Provide a brief description of how the plan or ordinance is integrated. Examples are as follows:

- **Capital Improvement Plan**—The capital improvement plan includes projects can help mitigate potential hazards. The City will act to ensure consistency between the hazard mitigation plan and the current and future capital improvement plans. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code and Fire Code**—The City's adoption of the 2016 California building and fire codes incorporated local modifications to account for the climatic, topographic and geographic conditions that exist in the City.
- **General Plan**—The general plan includes a "Safety, Services, and Infrastructure" element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:

  - Geologic and seismic hazards
  - Fire hazards
  - Hazardous materials
  - Flood control

Note: Any plans that fall into this category should be reviewed during the development of the mitigation strategy in Phase 3 and included as appropriate.

Opportunities for Future Integration

List any remaining items that say "Yes" in the Integration Opportunity column in the Legal and Regulatory Capabilities and explain the process by which integration will occur. Examples follow:

- **Zoning Code**—The City of Smithburg is conducting a comprehensive update to its zoning code. The opportunity to incorporate additional mitigation and abatement measures will be contemplated for inclusion into the Code.
- **Capital Improvement Projects**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.

- **Post-Disaster Recovery Plan**—Smithburg does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

After you have accounted for all items marked as "Yes" under the Integration Opportunity column, consider other programs you may have in place in your jurisdiction that include routine consideration and management of hazard risk. Examples of such programs may include: tree pruning programs, right-of-way mowing programs, erosion control or stream maintenance programs, etc. Please add any such programs to the integration discussion and provide a brief description of how these program manage (or could be adapted to manage) risk from hazards.

STATUS OF PREVIOUS PLAN ACTIONS

Please note that this section only applies to jurisdictions that are conducting updates to previously approved hazard mitigation plans. If your jurisdiction has not previously participated in an approved plan, please enter a note stating this, and we will remove this section in your final annex.

All action items identified in prior mitigation planning efforts must be reconciled in this plan update. Action items must all be marked as **ONE** of the following; check the appropriate box (place an X) and provide the following information:

- **Completed—**If an action has been completed since the prior plan was prepared, please check the appropriate box and provide a date of completion in the comment section. If an action has been initiated and is an ongoing program (e.g. annual outreach event), you may mark it as completed and note that it is ongoing in the comments. If an action addresses an ongoing program you would like to continue to include in your action plan, please see the Carried Over to Plan Update bullet below.
- **Removed—**If action items are to be removed because they are no longer feasible, a reason must be given. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible or barriers that prevented the action from being implemented (e.g., "Action no longer considered feasible due to lack of political support."). If the wording and/or intent of a previously identified action is unclear, this can be a reason for removal. A change in community priorities may also be a reason for removal and should be discussed in the comments.
- **Carried Over to Plan Update—**If an action is in progress, is ongoing, or has not been initiated and you would like to carry it over to the plan update, please check the "Check if Yes" column under "Carried Over to Plan Update." Selecting this option indicates that the action will be included in the mitigation action plan for this update. If you are carrying over an action to the update, please include a comment describing any action that has been taken or why the action was not taken (specifically, any barriers or obstacles that prevented the action from moving forward or slowed progress). Leave the last column, "Action # in Update," blank at this point. This will be filled in after completing the updated action plan in Phase 3.

Please ensure that you have provided a status and a comment for each action.

REVIEW AND INCORPORATION OF INFORMATION FOR THIS ANNEX

Please note that this section will ultimately describe all information sources used to develop this annex, but that only the sources used for Phases 1 and 2 will be listed at this point. Additional sources will be added with the preparation of the Phase 3 annex template.

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but please be sure to update and enhance any descriptions. This may seem trivial or unimportant, but it is a requirement to pass the state and FEMA review process.

THIS COMPLETES PHASES 1 AND 2

PHASE 3 INSTRUCTIONS

JURISDICTION-SPECIFIC NATURAL EVENT HISTORY

In the table titled "Past Natural Hazard Events," list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction in the last 5 years. Include the date of the event and the estimated dollar amount of damage it caused. You are welcome to include any events, but special attention should be made to include major storms and federally declared disasters. We recommend including most large-scale disasters, unless you know that there were no impacts to your jurisdiction. Specifically, we recommend that you include these events if you have damage estimate information or can provide a brief description of impacts that occurred within your community. Other potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Resident input.

If you do not have estimates for dollars of damage caused, please list "Not Available" in the appropriate column or simply list a brief description of the damages (e.g. Main Street closed as a result of flooding, downed trees and residential damages). Please note that tracking such damages is a valid and useful mitigation action if your jurisdiction does not currently track such information. For your reference, we have inserted known major events that impacted the county as a whole as well as your specific jurisdiction.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and the economy.

Enter Risk Rank Based on Loss Matrix Spreadsheet and Local Knowledge

Tetra Tech has developed a draft risk ranking for your jurisdiction. The hazard with the highest risk rating (probability x impact) was given a rank of 1; the hazard with the second highest rating is listed with a rank of 2; and so on. Two hazards with equal risk ratings were given the same rank. "High," Medium," and "Low" assignments were given for each hazard of concern based on a total score. To complete this section of the annex template, you need to review the risk ranking provided and then do one of the following:

- **If you agree with the results**, provide a comment that you agree with the ranking.
- **If the results differ from what you know based on substantiated data and documentation**, you may alter the ranking based on this knowledge, and enter the revised ranking into the risk ranking table in your annex.

If you modify the risk ranking based on local knowledge, please note this fact in your template and include what you believe the rank should be and why. For example, a low risk rank may be assigned to drought, but you know that the local economy is heavily reliant on water-using industries, such as agriculture or manufacturing, so you

believe it should be ranked as medium. Remember that this exercise is about categorizing hazards into broad levels of risk (high, medium, low), not precise calculations.

In modifying any risk ratings, keep in mind that one of the purposes of this exercise is to support the selection and prioritization of actions in your plan. **You will need to have at least one true mitigation action for each hazard rated as "high" or "medium."** This is discussed in more detail in the Hazard Mitigation Action Plan section of these instructions.

Review Risk Ranking Process Used in the Loss Matrix

The sections below describe the methodology that was used to derive the risk ranking. They are provided for your information in reviewing the risk ranking prepared for your jurisdiction.

Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. The probability of occurrence of a hazard event is generally based on past hazard events in an area, although weight can be given to expected future probability of occurrence based on established return intervals. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category. Each hazard was assigned a probability factor as follows:

- High—Hazard event is likely to occur within 25 years (Probability Factor = 3)
- Medium—Hazard event is likely to occur within 100 years (Probability Factor = 2)
- Low—Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- None—If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

Potential Impacts of Each Hazard

The impact of each hazard is divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories are also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1. Impact factors for each category (people, property, economy) are described below.

Impacts on People

Values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. Impact factors were assigned as follows:

- High—25 percent or more of the population is exposed to a hazard (Impact Factor = 3)
- Medium—10 percent to 24 percent of the population is exposed to a hazard (Impact Factor = 2)
- Low—9 percent or less of the population is exposed to the hazard (Impact Factor = 1)
- No impact—None of the population is exposed to a hazard (Impact Factor = 0)

For hazards that do not have a defined extent, the entire population or a portion of the population is considered to be exposed, depending on the hazard. For the drought hazard, it is common for jurisdictions to list "low" or "none," because all people in the planning area would be exposed to drought, but impacts to the health and safety of individuals are expected to be minimal.

Impacts on Property

Values are assigned based on the percentage of the total ***property value exposed*** to the hazard event:

- High—25 percent or more of the total replacement value is exposed to a hazard (Impact Factor = 3)
- Medium—10 percent to 24 percent of the total replacement value is exposed to a hazard (Impact Factor = 2)
- Low—9 percent or less of the total replacement value is exposed to the hazard (Impact Factor = 1)
- No impact—None of the total replacement value is exposed to a hazard (Impact Factor = 0)

For those hazards that do not have a defined extent and location (e.g. severe weather) the entire building stock is generally considered to be exposed. For the drought hazard, it is common for jurisdictions to list "low" or "none," because all structures in the planning area would be exposed to drought, but impacts to structures are expected to be minimal.

Impacts on the Economy

Values were assigned based on the percentage of the total ***property value vulnerable*** to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total replacement value of the property exposed to the hazard. For some hazards, such as wildland fire and landslide, vulnerability may be considered to be the same or a portion of exposure due to the lack of loss estimation tools specific to those hazards.

- High—Estimated loss from the hazard is 10 percent or more of the total replacement value (Impact Factor = 3)
- Medium—Estimated loss from the hazard is 5 percent to 9 percent of the total replacement value (Impact Factor = 2)
- Low—Estimated loss from the hazard is 4 percent or less of the total replacement value (Impact Factor = 1)
- No impact—No loss is estimated from the hazard (Impact Factor = 0).

For those hazards that have a defined extent and location, but do not have modelled loss results, loss estimates can be the same as exposure or a portion thereof. For example, a large percentage of the building stock may be exposed to landslide or wildland fire risk, but it would not be expected that one event that resulted in loss to all exposed structures would occur. For those hazards that do not have a defined extent and location, exposure is based on the hazard type.

Risk Rating for Each Hazard

A risk rating for each hazard was determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

Risk Rating = Probability Factor x Weighted Impact Factor {people + property + economy}

This is the number shown in the risk ranking table in your template. Generally, scores of 30 or greater are rated "high", scores between 15 and 30 are rated "medium", and scores of less than 15 are rated "low".

JURISDICTION-SPECIFIC VULNERABILITIES

Repetitive Loss Properties

A repetitive loss property is any property for which FEMA has paid two or more flood insurance claims in excess of $1,000 in any rolling 10-year period since 1978. In the space provided, Tetra Tech has inserted the following information based on data provided by FEMA:

- The number of any FEMA-identified repetitive-loss properties in your jurisdiction.
- The number of any FEMA-identified severe-repetitive-loss properties in your jurisdiction.
- The number (if any) of repetitive-loss or severe-repetitive-loss properties in your jurisdiction that have been mitigated. Mitigated for this exercise means that flood protection has been provided to the structure.

Please note that if your jurisdiction has any repetitive loss properties, we would strongly encourage you to include a mitigation action that addresses mitigating these properties.

Other Vulnerabilities

List any noted vulnerabilities in your jurisdiction related to hazard mitigation that may not be apparent from the risk assessment and other information provided. This may include things such as the following:

- An urban drainage issue that results in localized flooding every time it rains.
- An area of the community that frequently loses power due to a lack of tree maintenance.
- A critical facility, such as a police station, that is not equipped with a generator.
- A neighborhood that has the potential to have ingress and egress cut off as the result of a hazard event, such as a flood or earthquake (e.g. bridge only access).
- Substantial number of buildings in one area of the community are unreinforced masonry or soft-story construction.
- An area along the river is eroding and threatening public and/or private property.
- A large visitor population that may not be aware of tsunami risk.

Spending some time thinking about the results of the risk assessment and other noted vulnerabilities will be a big help in the development of your mitigation strategy. An example is shown in the table below.

Noted Vulnerability	Example Mitigation Action
An urban drainage issue results in localized flooding every time it rains.	Replace undersized culverts that are contributing to localized flooding. Priority areas include: • The corner of Main Street and 1st Street • Old Oak subdivision.

HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

This section is the heart of your jurisdictional annex. This is where you will identify the actions your jurisdiction would like to pursue with this plan. All of the work that you have done thus far should provide you with a plethora of ideas for actions. With this in mind, we recommend that you review the following and develop a list of potential actions:

Wording Your Action Descriptions:

Descriptions of your actions need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan action:

- **Action 1—**Address repetitive-loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Action 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Action 3—**Acquire floodplain property in the Smith subdivision.
- **Action 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

- **Capability Assessment Section of Annex—**Review the Legal and Regulatory Capability table, the Fiscal Capability table, the Administrative and Technical Capability table, the Education and Outreach table, and the Community Classification table.
  - For any capability that you indicated that you did not have, ask yourself – should we have this capability? If yes, consider including an action to develop/acquire the capability.
  - Example: Ensure a staff person from public works and planning are trained in the use of FEMA's benefit-cost analysis software.
  - Review the Legal and Regulatory capabilities. If any have not been reviewed and updated in more than 10 years, consider an action to review and update the capability and, as appropriate, incorporate hazard mitigation principles or information obtained in the risk assessment (Note: actions such as this should also be identified in the opportunities for future integration section). Also, consider including projects or actions that have been identified in other plans and programs such as Capital Improvement Plans, Strategic Plans, etc. as actions in this plan.
  - For any capability that you indicated you do have, consider how this capability can be leveraged to increase or improve hazard mitigation in the jurisdiction.

- **National Flood Insurance Program Compliance Table of this Annex**—Review the table and consider the following:
  - If you have no certified floodplain managers and you have flood risk, consider adding an action to provide key staff members with training appropriate to obtain certification.
  - If your flood damage prevention was last updated in or before 2004, you should identify an action to update your ordinance to ensure it is compliant with NFIP requirements.
  - If you have any outstanding NFIP compliance issues, be sure to add an action to address them.
  - If flood hazard maps do not adequately address the flood risk within your jurisdiction, consider actions to request new mapping or conduct studies.
  - If you don't participate in CRS or you would like to improve your classification, consider this as an action.
  - If the number of flood insurance polices in your jurisdiction is low relative to the number of structures in the floodplain, consider an action that will promote flood insurance in your jurisdiction.

- **Opportunities for Future Integration Section in this Annex**—Review the items you identified in this section. For items that address land use, include them in the prepopulated action in your template that reads as follows: *Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate*

land use decisions in the community, including _____. For other items listed in this section, consider an action that specifically says what the plan, code, ordinance etc. is and how it will be integrated.

- **Jurisdiction-Specific Vulnerabilities Section in this Annex—**Review the items that you have identified in this section and consider actions that will help reduce these vulnerabilities (see mitigation best practices catalog).
- **Mitigation Best Practices Catalog**—A catalog that includes FEMA and other agency identified best practices. Review the catalog and identify those actions that your jurisdiction should consider including in its action plan.
- **Prior Mitigation Planning Efforts**—If your jurisdiction participated in a previous hazard mitigation plan, please be sure to remember to include any actions that were identified as "carry over" actions. Once you have carried them over, return to the Status of Previous Actions table and record the new action number (see discussion below).

Be sure to consider the following factors in your selection of actions:

- Select actions that are consistent with the overall purpose, goals, and objectives of the hazard mitigation plan.
- Identify actions where benefits exceed costs.
- Include any action that your jurisdiction has committed to pursuing regardless of grant eligibility.
- **You must identify at least one true mitigation action (i.e. not a preparedness or response action) that is clearly defined and actionable for hazards ranked as "high" or "medium."**

Review Actions Recommended for All Partners

These actions should be included in every annex and should not be removed, although the specifics should be adjusted as needed for the particulars of each community.

- Where appropriate, support retrofitting, purchase or relocation of structures located in high hazard areas, prioritizing those structures that have experienced repetitive losses and/or are located in high or medium ranked hazard areas.
- Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.
- Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan.
- Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:
  - Enforce the flood damage prevention ordinance.
  - Participate in floodplain identification and mapping updates.
  - Provide public assistance/information on floodplain requirements and impacts.

We also recommend that every planning partner strongly consider the following additional actions, adjusted as needed for the particulars of each community:

- Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.
- Develop a post-disaster recovery plan and a debris management plan.
- Develop and/or update plans that support or enhance continuity of operations following disasters.
- Purchase generators for critical facilities and infrastructure that lack adequate back-up power.

Complete the Table

Complete the table titled "Hazard Mitigation Action Plan Matrix" for all the actions you have identified and would like to include in the plan:

- Enter the action number and description. Replace the "xxx" included in the template with the letter code for your jurisdiction as follows:

  - Douglas County—DC1, DC2, DC3…
  - Castle Pines—CP1, CP2, CP3...
  - Castle Rock—CR1, CR2, CR3…
  - Larkspur—LAR1, LAR2, LAR3…
  - Lone Tree—LT1, LT2, LT3…
  - Parker—PAR1, PAR2, PAR3…

- If the action is carried over from your previous hazard mitigation plan, return to the "Status of Previous Plan Actions" table you completed in Phase 1 and enter the new action number in the column labeled Action # in Update.
- Indicate whether the action mitigates hazards for new and/or existing assets.
- Identify the specific hazards the action will mitigate (note: you must list the hazards, simply indicating all hazards is not deemed acceptable).
- Identify by number the mitigation plan objectives that the action addresses. Indicate who will be the lead in administering the action. This will most likely be a department within your jurisdiction (e.g. planning or public works). If you wish to indicate more than one department, please ensure that it is clear who the lead agency will be and list supporting agencies in the appropriate column.
- Enter an estimated cost in dollars if known; otherwise, enter "High," "Medium" or "Low" as determined for the prioritization process described in the following section.
- Identify funding sources for the action. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment to identify possible sources of funding and refer to **the table below** for project eligibility for FEMA's hazard mitigation assistance grant programs.
- Indicate the time line as "short-term" (1 to 5 years) or "long-term" (5 years or greater) or "ongoing" (a continual program)

Eligible Activities	Hazard Mitigation Grant Program	Building Resilient Infrastructure & Communities	Flood Mitigation Assistance
Property Acquisition and Structure Demolition	√	√	√
Property Acquisition and Structure Relocation	√	√	√
Structure Elevation	√	√	√
Mitigation Reconstruction	√	√	√
Dry Floodproofing of Historic Residential Structures	√	√	√
Dry Floodproofing of Non-residential Structures	√	√	√
Generators	√	√	
Localized Flood Risk Reduction Projects	√	√	√
Non-Localized Flood Risk Reduction Projects	√	√	
Structural Retrofitting of Existing Buildings	√	√	√
Non-Structural Retrofitting of Existing Buildings and Facilities	√	√	√
Safe Room Construction	√	√	
Wind Retrofit for One- and Two-Family Residences	√	√	
Infrastructure Retrofit	√	√	√
Soil Stabilization	√	√	√
Wildland fire Mitigation	√	√	

Post-Disaster Code Enforcement	√		
Advance Assistance	√		
5 Percent Initiative Projects*	√		
Aquifer and Storage Recovery**	√	√	√
Flood Diversion and Storage**	√	√	√
Floodplain and Stream Restoration**	√	√	√
Green Infrastructure**	√	√	√
Miscellaneous/Other**	√	√	√
Hazard Mitigation Planning	√	√	√
Technical Assistance			√
Management Costs	√	√	√

* FEMA allows increasing the 5% Initiative amount up to 10% for a Presidential major disaster declaration under HMGP. The additional 5% can be used for activities that promote disaster-resistant codes for all hazards. As a condition of the award, a disaster-resistant building code must be adopted or an improved Building Code Effectiveness Grading Schedule is required.

** Proposed actions will be evaluated against program requirements. Eligible projects will be approved if funding is available.

Prioritization of Mitigation Actions

Complete the information in the table titled "Mitigation Strategy Priority Schedule" as follows:

- **Action #**—Indicate the action number from the previous annex table (Hazard Mitigation Action Plan Matrix).
- **# of Objectives Met**—Enter the number of objectives the action will meet.
- **Benefits**—Enter "High," "Medium" or "Low" as follows:

  - High: Action will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Action will have a long-term impact on the reduction of risk exposure to life and property, or action will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the action are difficult to quantify in the short term.

- **Costs**—Enter "High," "Medium" or "Low" as follows:

  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed action.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Action is or can be part of an existing ongoing program.
  - If you know the estimated cost of an action because it is part of an existing, ongoing program, indicate the amount.

- **Do Benefits Exceed the Cost?**—Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Action Grant-Eligible?**—Enter "Yes" or "No." Refer to the fact sheet on HMGP, PDM and FMA and the table above.
- **Can Action Be Funded Under Existing Program Budgets?**—Enter "Yes" or "No." In other words, is this action currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Implementation Priority**— Enter "High," "Medium" or "Low" as follows:

- **High Priority**—An action that meets multiple objectives, has benefits that exceed costs, and has a secured source of funding. Action can be completed in the short term (1 to 5 years).
- **Medium Priority**—An action that meets multiple objectives, has benefits that exceed costs, and is eligible for funding though no funding has yet been secured for it. Action can be completed in the short term (1 to 5 years), once funding is secured. Medium-priority actions become high-priority actions once funding is secured.
- **Low Priority**—An action that will mitigate the risk of a hazard, has benefits that do not exceed the costs or are difficult to quantify, has no secured source of funding, and is not eligible for any known grant funding. Action can be completed in the long term (1 to 10 years). Low-priority actions are generally "wish-list" actions. They may be eligible for grant funding from programs that have not yet been identified.

- **Grant Pursuit Priority**— Enter "High," "Medium" or "Low" as follows:

  - **High Priority**—An action that meets identified grant eligibility requirements, has high benefits, and is listed as high or medium implementation priority; local funding options are unavailable or available local funds could be used instead for actions that are not eligible for grant funding.
  - **Medium Priority**—An action that meets identified grant eligibility requirements, has medium or low benefits, and is listed as medium or low implementation priority; local funding options are unavailable.
  - **Low Priority**—An action that has not been identified as meeting any grant eligibility requirements.

This prioritization is a simple way to determine that your identified actions meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM /FMA action grants. The prioritization will identify any actions whose probable benefits will not exceed the probable costs. Those actions identified as high-priority grant funding actions should be closely reviewed for consideration when grant funding opportunities arise.

Note: If a jurisdiction wishes to identify an action as high priority that is outside of the prioritization scheme for high priorities, a note indicating so should be inserted and a rationale should be provided.

An example completed table is provided below.

Table 1-9. Mitigation Strategy Priority Schedule

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Action Grant-Eligible?	Can Action Be Funded Under Existing Programs/ Budgets?	Implementation Priority	Grant Pursuit Priority
EX-1	3	High	High	Yes	Yes	No	Medium	High
EX-2	7	Medium	Low	Yes	No	Yes	High	Low
EX-3	2	Low	Medium	No	No	Maybe	Low	Low
EX-4	10	Low	Low	Yes	No	Yes	High	Low
EX-5	3	Low	Low	Yes	No	Yes	High	Low
EX-6	6	Medium	Low	Yes	No	Yes	High	Low
EX-7	3	Medium	Low	Yes	No	Yes	High	Low
EX-8	1	Medium	Medium	Yes	Yes	No	Medium	High
EX-9	2	Medium	Low	Yes	No	Yes	High	Low
EX-10	7	Medium	Low	Yes	No	Yes	High	Medium
EX-11	3	High	Medium	Yes	Yes	No	Medium	High

Analysis of Mitigation Actions

Complete the table titled "Analysis of Mitigation Actions" summarizing the mitigation actions by hazard of concern and the following eight mitigation types. Please note that an action can be more than one mitigation type:

- **Emergency Services/Warning**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, continuity of operations, and the protection of essential facilities.
- **Community Capacity Building**—Actions that increase or enhance local capabilities to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Includes entity coordination, staff training, memorandums of understanding, data collection, development of plans and studies, and monitoring programs.
- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes adoption of codes and standards, planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform residents and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, wetland restoration and preservation, and green infrastructure.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions. Planning partners should aim to identify at least one action in each category (although this is not required) and should make sure there is at least one action to address "high" and "medium" ranked hazards:

An example completed table is provided below.

Analysis of Mitigation Actions

Hazard Type	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Community Capacity Building
Dam Failure	EX-2, 3, 4, 5	EX-1, 6	EX-4, 6		EX-8, 11		EX-3, 9, 10
Drought	EX-2	EX-1	EX-4				EX-8, 9, 10
Earthquake	EX-2, 3, 4, 5	EX-1, 7	EX-4		EX-8, 11		EX-3, 4, 8, 9
Flooding	EX-2, 3, 4, 5	EX-1, 6, 7	EX-4, 6	EX-9	EX-8, 11	EX-4	EX-3, 4, 8, 9
Landslide	EX-2, 3, 4, 5	EX-1, 7	EX-4		EX-8, 11	EX-4	EX-3, 4, 10
Severe Weather	EX-2, 3, 4, 5	EX-1, 7, 9	EX-4		EX-8, 9, 11		EX-8, 9, 10
Wildland fire	EX-2, 3, 4, 5	EX-1, 7, 9	EX-4, 9	EX-9	EX-8, 11		EX-3, 9, 10

REVIEW AND INCORPORATION OF INFORMATION FOR THIS ANNEX

Please note that this section will ultimately describe all information sources used to develop this annex. You should have previously listed the sources used for Phases 1 and 2. You should now add any further sources used for the preparation of Phase 3.

This section should describe what resources you used to complete the annex and how you used them. Several items are started for you, but please be sure to update and enhance any descriptions. This may seem trivial or unimportant, but it is a requirement to pass the state and FEMA review process.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates. Please note that this section is optional.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template. Please note that this section is optional.

NEXT STEPS

After all jurisdictions have submitted their annexes, the draft plan will be submitted for public comment. Following the public comment period and any revisions responsive to public comment, the plan will be submitted to state and federal review agencies. At that point planning partners will be asked to begin making preparations to formally adopt the plan.

Once FEMA has reviewed the plan and issued an approved-pending-adoption (APA) notice, planning partners will be asked to adopt the plan. Each planning partner must have its governing board adopt this plan via resolution or ordinance. Once adopted, planning partners will submit adoption information to Tetra Tech, who will submit the proof of adoption to FEMA. Once such adoption has been received, FEMA will issue final approval via a letter for those planning partners who have adopted the plan.

It is important to understand that approval is not final until proof of adoption has been received by FEMA and they have issued a letter specifically naming your jurisdiction. More information on the review and approval process, along with adoption support materials, will be provided at a later date.

Douglas County Hazard Mitigation Plan - Goals

DC1 Warning - Enhance predictive measure including the expansion and protection of warning systems and supporting technologies.

DC2 Data Collection - Enhance the quality of assessments, analysis and planning through the development and collection of data.

DC3 Outreach and Education - Increase public awareness of hazards and their mitigation.

DC4 Mitigate Structures and Protect Lives - Reduce impacts, costs, and damages from hazard events to people, property, local government and private assets, economy, and natural and cultural resources.

DC5 Planning - Coordinate and integrate hazard mitigation activities with local land development planning activities and emergency operations planning to consider resiliency.

DC6 Codes & Standards - Review, update, adopt and enforce local, state and federal plans, codes and regulations to reduce the impacts of natural hazards.

DC7 Entity Coordination - Strengthen communication and coordination among public entities, non-governmental organizations (NGOs), businesses and private citizens.

DC8 Continuity of Operations - Support continuity of operations pre-, during, and post- hazard events including the support of community lifelines.

Douglas County Hazard Mitigation Plan - Objectives

Obj 1: Improve systems that provide warning and emergency communications. (DC-1)

Obj 2: Increase public awareness of risk. (DC-1, 2, 3, 7)

Obj 3: Research, develop, and promote adoption of cost-effective building and development laws, regulations, and ordinances. (DC-2, 4, 6)

Obj 4: Improve hazard information databases and maps and increase accessibility to those resources. (DC – 1, 2, 3, 7, 8)

Obj 5: Develop and provide updated information about threats, hazards, vulnerabilities, and mitigation strategies to state, regional, and local agencies, as well as private sector groups. (DC – 1, 2, 3, 4, 5, 7, 8)

Obj 6: Manage development in geologically hazardous areas and floodplains to protect life and property. (DC – 6, 7)

Obj 7: Incorporate risk reduction considerations in new and updated infrastructure and development plans to reduce the impacts of natural hazards. (DC – 2, 4, 5, 6, 7)

Obj 8: Establish and maintain partnerships among all levels of government, private sector, community groups, and institutions of higher learning that improve and implement methods to protect life and property. (DC – 1, 2, 3, 4, 5, 7, 8)

Obj 9: Improve understanding of the locations, potential impacts, and linkages among threats, hazards, vulnerability, and measures needed to protect life safety and health. (SL -2, 3, 4, 5, 7)

Obj 10: Consider risk reduction in long-term planning. (DC – 2, 4, 6, 7)

Obj 11: Minimize impacts of hazard events to key employers. (DC – 1, 2, 3, 4, 7, 8)

Obj 12: Identify projects that simultaneously reduce risk while increasing operational area resilience and sustainability. (DC – 1, 2, 3, 4, 5, 6, 7, 8)

Obj 13: Establish a partnership among all levels of government and the business community to improve and implement methods to protect property. (DC – 2, 3, 4, 5, 7, 8)

Obj 14: Reduce risks that may impact critical business operations. (DC– 1, 2, 3, 4, 5, 7, 8)

Obj 15: Promote and enhance outreach and education efforts by state, regional and local agencies with hazard mitigation plans and programs to actively encourage engagement of stakeholder groups such as homeowners, private sector businesses, and nonprofit community organizations. (DC – 2, 3, 4, 5, 7, 8)

Obj 16: Inform the public on the risk exposure to natural hazards and ways to increase the public's capability to prepare, respond, recover and mitigate the impacts of these events. (DC– 1, 2, 3, 4, 5, 6, 7)

Obj 17: Modify structures, as necessary, to meet life safety standards. (DC – 3, 4, 6, 7, 8)

Obj 18: Encourage the incorporation of mitigation measures into repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial hazard risk. (DC – 2, 3, 4, 5 6, 7)

Obj 19: Retrofit, purchase, or relocate structures in high hazard areas, especially those known to be repetitively damaged. (DC– 2, 3, 4, 5, 6, 7)

Obj 20: Encourage hazard mitigation measures that promote and enhance natural processes and minimize adverse impacts on the ecosystem. (DC– 2, 3, 4, 5, 6, 7)

Obj 21: Promote enforcement of relevant state regulations and local ordinances that significantly reduce life loss and injuries. (DC– 2, 3, 4, 5, 6, 7)

Obj 22: Strengthen local building code enforcement. (DC– 2, 3, 4, 6, 7)

Obj 23: Ensure continuity of operations of essential county government services. (DC – 2, 3, 4, 5, 7, 8)

Obj 24: Protect rare, endangered, unusual, or educationally important natural resources. (DC – 2, 3, 5, 6, 7)

Obj 25: Provide incentives for development and land use techniques that reduce risks. (DC- 2, 3, 4, 5, 6, 7)

APPENDIX G. PLAN MAINTENANCE TOOLS

This appendix includes tools and worksheets to facilitate plan maintenance and review by the Douglas County Project Management Team and Local Planning Committee.

In the first year of the performance period, an online performance progress reporting system, the BATool[SM] will provide municipal and county representatives direct access to their mitigation initiatives to easily update the status of each project, document successes or obstacles to implementation, add or delete projects to maintain mitigation project implementation. This online program will capture information and roll all input into a report to summarize mitigation strategy progress.

The FEMA 386-4 guidance worksheets are also available to assist with progress reporting. These worksheets are provided below for ease of access to the HMP Coordinator and Local Planning Committee to maintain the 2021 HMP throughout its period of performance.

Worksheet #1 Progress Report step 2

Progress Report Period: _____ to _____
(date) (date)

Project Title: _____ Project ID#: _____

Responsible Agency: _____

Address: _____

City/County: _____

Contact Person: _____ Title: _____

Phone #(s): _____ email address: _____

List Supporting Agencies and Contacts:

_____

_____

_____

Total Project Cost: _____

Anticipated Cost Overrun/Underrun: _____

Date of Project Approval: _____ Start date of the project: _____

Anticipated completion date: _____

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase): _____

_____

_____

Milestones	Complete	Projected Date of Completion

Plan Goal(s)/Objective(s) Addressed:

Goal: _____

Objective: _____

Indicator of Success (e.g., losses avoided as a result of the acquisition program):

In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.

_____

_____

Status (Please check pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):

Project Status

☐ Project on schedule

☐ Project completed

☐ Project delayed*

*explain: _____

_____

☐ Project canceled

Project Cost Status

☐ Cost unchanged

☐ Cost overrun*

*explain: _____

_____

☐ Cost underrun*

*explain: _____

_____

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

_____

_____

_____

_____

B. What obstacles, problems, or delays did you encounter, if any?

_____

_____

_____

C. How was each problem resolved?

_____

_____

_____

Next Steps: What is/are the next step(s) to be accomplished over the next reporting period?

Other comments:

Adapted from the North Carolina HMGP Progress Report Form at http://www.dem.dcc.state.nc.us/mitigation/document_index.htm.

Worksheet #2 Evaluate Your Planning Team step 3

When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:	YES	NO
Have there been local staffing changes that would warrant inviting different members to the planning team?		
Comments/Proposed Action:		
Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team?		
Comments/Proposed Action:		
Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team?		
Comments/Proposed Action:		
Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently?		
Comments/Proposed Action:		
Are there ways to gain more diverse and widespread cooperation?		
Comments/Proposed Action:		
Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?		
Comments/Proposed Action:		

If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.

Worksheet #3 Evaluate Your Project Results step 3

Project Name and Number: _____

_____

Project Budget: _____

_____

Project Description: _____

_____

_____

Associated Goal and Objective(s): _____

_____

_____

Indicator of Success (e.g., losses avoided): _____

_____

_____

Insert location map.

Include before and after photos if appropriate.

Was the action implemented? ☐ **YES** ☐ **NO**

IF NO

Why not?	**YES**	**NO**
Was there political support for the action?	☐	☐
Were enough funds available?	☐	☐
Were workloads equitably or realistically distributed?	☐	☐
Was new information discovered about the risks or community that made implementation difficult or no longer sensible?	☐	☐
Was the estimated time of implementation reasonable?	☐	☐
Were sufficient resources (for example staff and technical assistance) available?	☐	☐

IF YES

What were the results of the implemented action? _____

_____

_____

_____

_____

_____

_____

	YES	NO
Were the outcomes as expected? If No, please explain:		
Did the results achieve the goal and objective(s)? Explain how:		
Was the action cost-effective? Explain how or how not:		
What were the losses avoided after having completed the project?		
If it was a structural project, how did it change the hazard profile?		
Additional comments or other outcomes:		

Date: _____

Prepared by: _____

Worksheet #4 Revisit Your Risk Assessment step 4

Risk Assessment Steps	Questions	YES	NO	COMMENTS
Identify hazards	Are there new hazards that can affect your community?			
Profile hazard events	Are new historical records available?			
	Are additional maps or new hazard studies available?			
	Have chances of future events (along with their magnitude, extent, etc.) changed?			
	Have recent and future development in the community been checked for their effect on hazard areas?			
Inventory assets	Have inventories of existing structures in hazard areas been updated?			
	Is future land development accounted for in the inventories?			
	Are there any new special high-risk populations?			
Estimate losses	Have loss estimates been updated to account for recent changes?			

If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly.

Worksheet #1 Progress Report step 2

Progress Report Period: October 1, 2003 (date) to December 31, 2003 (date)

Project Title: Raging River Views Park Flood Acquisition Project Project ID#: HVMP-2003-01

Responsible Agency: Hazardville Department of Planning

Address: 1909 Burnham Way

City/County: Hazardville, Emergency

Contact Person: Eunice Euclid Title: Grants Administrator

Phone #(s): (555) 555-8473 email address: eeuclid@town.hazardville.en

List Supporting Agencies and Contacts:

Hazardville Department of Housing: Noah Hudson (555) 555-8465

Hazardville Habitat for Humanity: Carter Goodman (555) 555-9432

Total Project Cost: $360,000

Anticipated Cost Overrun/Underrun: $N/A

Date of Project Approval: July 21, 2003 Start date of the project: November 15, 2003

Anticipated completion date: Summer 2005

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase):

Acquire and demolish 14 structures located at the Raging River Views Park. Work with Habitat for Humanity and the Department of Housing to construct new housing or rehabilitate existing housing for displaced low-income residents. The Department of Housing will also provide funds for temporary housing to displaced residents.

Milestones	Complete	Projected Date of Completion
Conduct surveys of ground and first-floor elevations	✓	
Obtain Notices of Intent by owners	✓	
Conduct structure appraisals	✓	
Send letters of offer to homeowners		1/31/04
Perform title work		3/30/04
Acquire structures		6/30/04
Begin construction of new housing or reconstruction of existing housing for relocated residents		6/30/04
Send payment for relocation to renters		9/30/04
Finalize contract for demolition		1/12/05
Demolish structures		4/26/05
Landscape open parcels		6/30/05

Plan Goal(s)/Objective(s) Addressed:

Goal: Minimize losses to existing and future structures within hazard areas.

Objective: Reduce potential damages to the manufactured home park in the floodplain.

Indicator of Success (e.g., losses avoided as a result of the acquisition program):

In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.

Losses Avoided. After a major flood (100-year), the Department of Economic Development will assist the Planning Department in calculating the losses avoided.

Status (Please check pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):

Project Status

- [x] Project on schedule
- [ ] Project completed
- [ ] Project delayed*

*explain:

- [ ] Project canceled

Project Cost Status

- [x] Cost unchanged
- [ ] Cost overrun*

*explain:

- [ ] Cost underrun*

*explain:

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

The Department of Planning contacted the owners of the properties vulnerable to floods to determine their willingness to sell their properties. Of the 14 property owners contacted, 10 agreed to have their homes acquired. An appraiser contracted by the Department of Planning estimated the value of the 10 properties.

B. What obstacles, problems, or delays did you encounter, if any?

The owners of four properties refused to sell. There has been some limited neighborhood opposition to various suggestions for the community open space created by the acquisitions.

C. How was each problem resolved?

The Department of Planning has proposed to the residents a design charrette to develop alternatives for the open space that would be created, with the understanding that no permanent structures can be constructed on the open parcels after acquisition and demolition has been completed. Recreational activities will be limited to passive uses such as trails and bike paths.

Next Steps: What is/are the next step(s) to be accomplished over the next reporting period?

1. Send offer letters to homeowners.
2. Do title work.
3. Work with the Department of Housing and Habitat for Humanity to identify existing housing for rehabilitation and viable vacant parcels to construct new housing for the displaced residents.

Other comments:

None

Adapted from the North Carolina HMGP Progress Report Form at http://www.dem.dcc.state.nc.us/mitigation/document_index.htm.

Worksheet #2 Evaluate Your Planning Team step 3

When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:	YES	NO
Have there been local staffing changes that would warrant inviting different members to the planning team?		✓
Comments/Proposed Action: NA		
Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team?	✓	
Comments/Proposed Action: Hazardville Habitat for Humanity has been invaluable to assisting the relocation of former Raging River Views Park residents. The organization should be invited to participate in THORR.		
Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team?	✓	
Comments/Proposed Action: It is essential that the Department of Public Works be represented at each meeting because so many mitigation actions involve them. However, representatives from the department have been unable to attend meetings consistently since the development of the plan. THORR will work with the departments director to find consistent, active representation.		
Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently?	✓	
Comments/Proposed Action: Again, the Department of Public Works has been unable to provide timely progress reports of its mitigation actions. Administrative duties and paperwork have fallen through the cracks since the department has been assigned numerous new duties to Hazardville's mitigation efforts. Perhaps the department, in partnership with THORR, should approach the Town Council for funding for more department staff.		
Are there ways to gain more diverse and widespread cooperation?	✓	
Comments/Proposed Action: THORR members believe that better publicity about mitigation actions will garner more interest from the public, affected/interested organizations, and state agencies.		
Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?	✓	
Comments/Proposed Action: THORR has learned about new PDM funding. The state has asked that local jurisdictions submit applications for brick and mortar projects and risk assessments studies.		

If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.

Worksheet #3 Evaluate Your Project Results step 3

Project Name and Number:

Raging River Views Park Flood Acquisition Project (HVMP-2003-01)

Project Budget:

$360,000

Project Description:

Acquisition and demolition of 14 flood-prone structures

Associated Goal and Objective(s):

Goal: Minimize losses to existing and future structures within hazard areas

Objective: Reduce potential damages to the manufactured home park in the floodplain

Indicator of Success (e.g., losses avoided):

Losses avoided by acquisition and demolition of flood-prone structures

Town of Hazardville Composite Loss Map developed previously during risk assessment (see FEMA 386-2).

Was the action implemented? ☑ YES ☐ NO

IF NO

Why not?	YES	NO
Was there political support for the action?	☐	☐
Were enough funds available?	☐	☐
Were workloads equitably or realistically distributed?	☐	☐
Was new information discovered about the risks or community that made implementation difficult or no longer sensible?	☐	☐
Was the estimated time of implementation reasonable?	☐	☐
Were sufficient resources (for example staff and technical assistance) available?	☐	☐

IF YES

What were the results of the implemented action?

Of the 14 proposed properties, 10 were acquired. The benefit-cost ratio is 2.19, based on project benefits of $789,000 and costs of $360,274. Benefits are based on the net present value of the avoided damages over the project life. Furthermore, about 40 people are no longer in the path of a potential flood, making emergency rescue operations in that area less likely and evacuation easier.

	YES	NO
Were the outcomes as expected? If No, please explain:		✓
The project originally set out to acquire 14 properties. Four of the 14 owners did not want to participate in the buyout program.		
Did the results achieve the goal and objective(s)? Explain how:	✓	
Despite four properties still in harm's way, the objective has been largely met. See additional comments.		
Was the action cost-effective? Explain how or how not:	✓	
The FEMA Limited Data module was used to perform the benefit-cost analysis. Data for the analysis was collected from historical flood data and used as benchmarks in the before mitigation section of the analysis. The damages after mitigation section was left blank, due to the properties being permanently acquired, and the economic risk removed completely. The analysis resulted in a benefit-cost ratio of 2.19, with benefits totaling $789,000 for 10 properties.		
What were the losses avoided after having completed the project?		
Total avoided losses are $789,000 over the lifetime of the project (estimated at 100 years).		
If it was a structural project, how did it change the hazard profile?		
N/A		
Additional comments or other outcomes:		
The Planning Department has agreed to work with the remaining four homeowners in evaluating other flood-proofing options.		

Date: October 12, 2005

Prepared by: Hazardville Department of Economic Development
Hazardville Department of Planning

Worksheet #4 Revisit Your Risk Assessment step 4

Risk Assessment Steps	Questions	YES	NO	COMMENTS
Identify hazards	Are there new hazards that can affect your community?		✓	
Profile hazard events	Are new historical records available?		✓	
	Are additional maps or new hazard studies available?	✓		Recently completed maps and studies showing vulnerability of the new coastal development to erosion and tidal surge are available.
	Have chances of future events (along with their magnitude, extent, etc.) changed?		✓	
	Have recent and future development in the community been checked for their effect on hazard areas?	✓		
Inventory assets	Have inventories of existing structures in hazard areas been updated?	✓		
	Is future land development accounted for in the inventories?	✓		The Planning Department is preparing a coastal development plan to ensure that any future development is set back far enough to be outside the erosion zones and the coastal high hazard areas. Current and future road configurations will also be studied to ensure adequate evacuation times before hurricane events.
	Are there any new special high-risk populations?	✓		Coastal residents and business owners.
Estimate losses	Have loss estimates been updated to account for recent changes?	✓		

If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly.

APPENDIX H. LINKAGE PROCEDURES

This Appendix contains the linkage procedures for the Douglas County Local Hazard Mitigation Plan Update.

H.1 Administrative Process for "Linkage" to the Douglas County Local Hazard Mitigation Plan Update

Even though that initial development of the Douglas County Local Hazard Mitigation Plan Update (the Plan) included 10 planning partners, not all eligible jurisdictions within the defined planning area are included in this plan. Completed jurisdictional annexes are presented in Section 9. Any non-participating local governments and other local jurisdictions such as Fire Districts, Utility Districts, School Districts and any other eligible local government as defined in 44 CFR 201.2 within the Douglas County planning area can join this plan as a participating jurisdiction and to ultimately achieve approved status by following the linkage procedures defined in this appendix.

It is assumed that some or all these non-participating local governments may choose to "link" to the Plan at some point in time to gain eligibility for programs under the DMA. In addition, some of the current partnership may not continue to meet eligibility requirements due to the lack of active participation as prescribed by the plan. These "linkage" procedures will define the requirements established by the Douglas County Local Planning Committee and all planning partners for dealing with the increase or decrease in planning partners linked to this plan. It should be noted that currently non-participating jurisdictions within the defined planning area are not obligated to link to this plan. These jurisdictions can choose to do their own "complete" plan that addresses all required elements of section 201.6 of 44CFR.

H.1.1 Increasing the Partnership Through Linkage

Eligibility

Eligible jurisdictions located in the planning area may link to this plan at any point during the plan's performance period. Eligible jurisdictions located in the planning area may link to this plan at any point during the plan's performance period (5 years after final approval). Eligibility will be determined by the following factors:

- The linking jurisdiction is a local government as defined by the Disaster Mitigation Act.
- The boundaries or service area of the linking jurisdiction is completely contained within the boundaries of the planning area established during the 2021 hazard mitigation plan development process.
- The linking jurisdiction's critical facilities were included in the critical facility and infrastructure risk assessment completed during the 2021 plan development process.

Requirements

It is expected that linking jurisdictions will complete the requirements outlined below and submit their completed template to the lead agency Douglas County Office of Emergency Management for review within six months of beginning the linkage process:

1. The Douglas County Local Planning Committee has established an annual window for which linkage to the plan can occur. Linking jurisdictions are instructed to complete the following procedures during this time frame.

2. The current non-participating jurisdiction contacts the Douglas County Hazard Mitigation Planning Coordinator for the Plan and requests a "Linkage Package". The Douglas County Hazard Mitigation Project Contact is:

   Tim Johnson, Director
   Douglas County Office of Emergency Management
   oem@dcsheriff.net

3. The Douglas County Hazard Mitigation Planning Coordinator will provide a linkage packages that includes:

   - Copy of Volume 1 and 2 of the Plan (CD-ROM or flash drive).
   - Planning Partner's Expectations Sheet.
   - A Sample "Letter of Intent" to Link to the Plan.
   - A Jurisdictional Template and Instructions.
   - Catalog of Hazard Mitigation Alternatives or the Mitigation Catalog.
   - A copy of Section 201.6 of Chapter 44, the Code of Federal Regulations (44CFR), which defines the federal requirements for a local hazard mitigation plan.

4. The new jurisdiction will be required to review both volumes of the Plan which includes the following key components for the planning area:

   - The Douglas County risk assessment;
   - The plan's goals and objectives;
   - Plan implementation and maintenance procedures;
   - Catalog of potential mitigation actions; and
   - County-wide initiatives.

Once this review is complete, the jurisdiction will complete its specific jurisdictional annex by following the template and its instructions for completion provided by the Douglas County Hazard Mitigation Planning Coordinator. Technical assistance can be provided upon request by completing the request for technical assistance (TA) form provided in the linkage package. This TA may be provided by the Douglas County Hazard Mitigation Planning Coordinator or any other resource within the Planning Partnership such as a member of the Local Planning Committee or a currently participating jurisdiction. The Douglas County Hazard Mitigation Planning Coordinator will determine who will provide the TA and the possible level of TA based on resources available at the time of the request.

5. The new jurisdiction will also be required to develop a public involvement strategy that ensures their public's ability to participate in the plan development process. At a minimum, the new jurisdiction must try to solicit public opinion on hazard mitigation at the onset of this linkage process and a minimum of one public meeting to present their draft jurisdiction specific annex for comment, prior to adoption by the governing body. The Planning Partnership will have available resources to aid in the public involvement strategy such as the Plan website. However, it will be the new jurisdiction's responsibility to implement and document this strategy for incorporation into their annex.

It should be noted that the Jurisdictional Annex templates do not include a section for the description of the public process. This is because the original partnership was covered under a uniform public involvement strategy that covered the operational area that is described in volume 1 of the plan. Since the new partner was

not addressed by that strategy, they will have to initiate a new strategy, and add a description of that strategy to their annex. For consistency, new partners are encouraged to follow the public involvement format utilized by the initial planning effort as described in Volume I of the Plan.

6. Once their public involvement strategy is completed and they have completed their template, the new jurisdiction will submit the completed package to the Douglas County Hazard Mitigation Planning Coordinator for a pre-adoption review to ensure conformance with the Regional plan format.

7. The Douglas County Hazard Mitigation Planning Coordinator will review for the following:

   - Documentation of public involvement and mitigation action development strategies;
   - Conformance of template entries with guidelines outlined in instructions;
   - Chosen actions are consistent with goals, objectives, and mitigation catalog of Douglas County Hazard Mitigation Plan; and
   - Designated point of contact.

The Douglas County Hazard Mitigation Planning Coordinator may utilize members of the Local Planning Committee or other resources to complete this review. All proposed linked annexes will be submitted to the HMP Planning Committee for their review and comment prior to submittal to the Colorado Division of Homeland Security and Emergency Management.

8. Plans approved and accepted by the Local Planning Committee will then be forwarded to the Colorado Division of Homeland Security and Emergency Management for review with cover letter stating the forwarded plan meets local approved plan standards and whether the plan is submitted with local adoption or for criteria met/plan not adopted review.

9. The Colorado Division of Homeland Security and Emergency Management will review plans for state and federal compliance. Non-compliant plans are returned to the jurisdiction for correction. Compliant plans are forwarded to FEMA Region 8 office for review with annotation as to the adoption status.

10. FEMA Region 8 reviews the new jurisdiction's plan in association with the approved plan to ensure DMA compliance. Region 8 notifies new jurisdiction of results of review with copies to the Colorado Division of Homeland Security and Emergency Management and approved planning authority.

11. New jurisdiction corrects plan’s shortfalls (if necessary) and resubmits to the Colorado Division of Homeland Security and Emergency Management through the approved plan lead agency.

12. For plans with no shortfalls that have not been adopted from the Region 8 review or outstanding corrected shortfalls, the new jurisdiction governing authority adopts the plan (if not already accomplished) and forwards adoption resolution to Region 8f with copies to lead agency and the Colorado Division of Homeland Security and Emergency Management.

13. Region 8 Director notifies new jurisdiction governing authority of plan approval.

The new jurisdiction plan is then included with the Douglas County Local Hazard Mitigation Plan Update and the linking jurisdiction is committed to participate in the ongoing plan implementation and maintenance identified in Volume 1 of the HMP.

APPENDIX I. CRITICAL FACILITIES

Due to the sensitive nature of this information, details of each have been redacted for the public document. A full list of critical facilities identified for the vulnerability analysis is available at the Douglas County Office of Emergency Management. Contact the Hazard Mitigation Coordinator, Tim Johnson, to view the list.