



Multi-Jurisdictional Natural Hazard Mitigation Plan



McKinley County New Mexico



Submitted to
New Mexico Department of
Homeland Security &
Emergency Management
December 2014



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Plan Adoption Resolutions

In accordance with Part 201.6 of the Disaster Mitigation Act of 2000 (DMA 2000), McKinley County, New Mexico has developed this Multi-Jurisdictional Hazard Mitigation Plan to identify hazards that threaten the County and ways to reduce future damages associated with these hazards.

Following this page are the signed adoption resolutions of the County and all participating jurisdictions that have adopted this plan, authorizing municipal government staff to carry out the actions detailed herein.



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McKinley County HMP Adoption Resolution

MCKINLEY COUNTY
STATE OF NEW MEXICO

RESOLUTION NO. OCT-14- 073

MCKINLEY COUNTY MULTI-JURISDICTIONAL
NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Federal Emergency Management Agency and New Mexico Department of Homeland Security and Emergency Management requires any local government seeking participation in FEMA and NMDHSEM programs or resources to have a current Natural Hazard Mitigation Plan; and,

WHEREAS, McKinley County has and will continue to seek funding and participation in FEMA, Homeland Security and NMDHSEM programs and resources; and,

WHEREAS, the 2005 McKinley County and Gallup Mitigation Plan is out of date with the requirements of FEMA and NMDHSEM; and,

WHEREAS, the Board of County Commissioners of McKinley County authorized and commissioned the McKinley County Office of Emergency Management to update and rewrite the McKinley County Multi-Jurisdictional Natural Hazard Mitigation Plan; and,

WHEREAS, this plan was prepared in accordance with the FEMA Part 201.6 of the Disaster Mitigation Act of 2000 (DMA 200) which established a requirement that in order to remain eligible for federal disaster assistance and grant funds, local, state, and tribal governments must develop and adopt hazard mitigation plans; and,

WHEREAS, this plan was prepared by a joint effort of the McKinley County Office of Emergency Management, Public Safety Agencies, the private sector, and other government and non-government agencies; and,

WHEREAS, the updated plan is complete, including FEMA review and approval, and is ready for final approval by the Board of County Commissioners.

THEREFORE, the McKinley County Board of Commissioners in open meeting of October 21st, 2014, hereby resolves that:

- The McKinley County Multi-Jurisdictional Natural Hazard Mitigation Plan of October 21st, 2014, is adopted as the official natural hazard mitigation plan for all declared emergencies and disasters that occur within the unincorporated area of McKinley County; and, the emergencies that occur in other jurisdictions and cross into the McKinley County areas of jurisdiction, regardless of the origin of the incident.
- This approval shall not affect municipal responsibility for emergencies or disaster contained wholly within municipal boundaries.

DOC# 369167

10/22/2014 12:24 PM Page: 1 of 2
RES # 30 CO H K Section: McKinley County



- It is the responsibility of McKinley County officials to control county resources, manage and coordinate those resources for declared disasters and emergencies.
- This approval shall be only for those incidents that directly affect both the county and one or more other emergency planning jurisdictions and only for the duration of the declaration of the emergency or disaster.
- This McKinley County Multi-Jurisdictional Natural Hazard Mitigation Plan has been developed to work and coordinate with other jurisdictions and their emergency operation plans and hazard mitigation plans. Each municipality and other jurisdiction shall remain responsible for their own emergency planning.
- That this plan be incorporated by reference into the McKinley County Comprehensive Plan (September 2012) into the Elements under Item K, Hazard Mitigation.

Passed, Adopted, and, Approved, this 21st day of October, 2014 by the McKinley County Board of Commissioners.


Carol Bowman-Muskett, Chairperson

October 21, 2014
Date

ATTEST:


Harriett K. Becenti, McKinley County Clerk

October 21, 2014
Date

DOC# 369187

10/22/2014 12:34 PM Page 2 of 2
RES R 50.00 H. K. Becenti, McKinley County



City of Gallup HMP Adoption Resolution

CITY OF GALLUP
STATE OF NEW MEXICO

RESOLUTION NO. R2014-40

CITY OF GALLUP MULTI-JURISDICTIONAL
NATURAL HAZARD MITIGATION PLAN

WHEREAS, the Federal Emergency Management Agency and New Mexico Department of Homeland Security and Emergency Management requires any local government seeking participation in FEMA and NMDHSEM programs or resources to have a current Natural Hazard Mitigation Plan; and,

WHEREAS, the City of Gallup will seek funding and participation in FEMA, Homeland Security and NMDHSEM programs and resources; and,

WHEREAS, the 2005 McKinley County and Gallup Mitigation Plan is out of date with the requirements of FEMA and NMDHSEM; and,

WHEREAS, this plan was prepared in accordance with the IFEMA Part 201.6 of the Disaster Mitigation Act of 2000 (DMA 200) which established a requirement that in order to remain eligible for federal disaster assistance and grant funds, local, state, and tribal governments must develop and adopt hazard mitigation plans; and,

WHEREAS, this plan was prepared by a joint effort of the City of Gallup Office of Emergency Management, Public Safety Agencies, the private sector, and other government and non-government agencies; and,

WHEREAS, the updated plan is complete, including FEMA review and approval, and is ready for final approval by the Board of County Commissioners.

THEREFORE, the City of Gallup Mayor and Council in open meeting of October 28th, 2014, hereby resolves that:

- The City of Gallup Multi-Jurisdictional Natural Hazard Mitigation Plan of October 28th, 2014, is adopted as the official natural hazard mitigation plan for all declared emergencies and disasters that occur within the unincorporated area of McKinley County; and, the emergencies that occur in other jurisdictions and cross into the McKinley County areas of jurisdiction, regardless of the origin of the incident.
- This approval shall not affect county responsibility for emergencies or disaster contained wholly within county boundaries.
- It is the responsibility of City of Gallup officials to control county resources, manage and coordinate those resources for declared disasters and emergencies.



- This approval shall be only for those incidents that directly affect both the city and one or more other emergency planning jurisdictions and only for the duration of the declaration of the emergency or disaster.
- This City of Gallup Multi-Jurisdictional Natural Hazard Mitigation Plan has been developed to work and coordinate with other jurisdictions and their emergency operation plans and hazard mitigation plans.
- That this plan be incorporated by reference into the McKinley County Comprehensive Plan (September 2012) into the Elements under Item K, Hazard Mitigation.

PASSED, APPROVED AND ADOPTED this 28th day of October, 2014.

CITY OF GALLUP, NEW MEXICO

By: 
Jackie McKinney, Mayor

ATTEST:


Almo Aberta II, City Clerk



Executive Summary

On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000, also known as DMA 2000. Among its other features, DMA 2000 established a requirement that in order to remain eligible for federal disaster assistance and grant funds, local and state governments must develop and adopt hazard mitigation plans. DMA-2000 (Public Law 106-390) was an amendment of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law 93-288) and incorporated as the Code of Federal Regulations 44 CFR 201.6 dated October, 2007. On February 26, 2002, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (IFR) that sets forth the guidance and regions under which such plans are supposed to be developed. The IFR provides detailed descriptions of both the planning process that states and localities are required to observe and the contents of the plan that emerges. This McKinley County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) responds to those requirements.

Hazard mitigation is often defined as actions taken to reduce the effects of natural hazards on a place and its population. McKinley County and the City of Gallup has taken the initiative to update their 2005 plan to continue the awareness that natural hazards, especially wildfire, drought, flood, and wind, have the potential to affect people, physical assets, and operations in the County and the City. The City of Gallup is the only participating jurisdiction in McKinley County.

Contact information for the Plan is:

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The McKinley County Multi-Jurisdictional Hazard Mitigation Plan is designed to protect people and property from the effects of natural and human-caused hazards. By taking action today, we can reduce the likelihood of injuries, loss of life and damage to our communities. That is what hazard mitigation planning is all about – taking action based on a solid understanding of our vulnerabilities to reduce the impacts of hazards that may strike sometime in the future. In addition to developing a framework for action, the Plan enables participating counties and municipalities to apply for pre and post-disaster mitigation funding that would not otherwise be available. This funding can help local jurisdictions implement identified projects that meet the goals and objectives outlined in the plan.

The County and the City of Gallup were responsible for identifying and vetting their own hazards, risks, and vulnerabilities, then developing their own mitigation projects written in the



form of goals, objectives and actions. The Mitigation Action Plan includes assigned responsibilities, potential funding sources and a timeline for implementation. The Mitigation Action Plan links the broad ideas established in the Plan with strategic, action-oriented tasks. This publication constitutes the Hazard Mitigation Plan, including instructions for its implementation, for McKinley County and the incorporated communities within its borders, including the City of Gallup.

The continually changing nature of hazard risks within McKinley County and City of Gallup requires that updates to this plan occur on a regular basis. An Implementation and Maintenance Plan (Section 5) is included as part of the Plan.

McKinley County and the City of Gallup, New Mexico are threatened by a number of different natural hazards. These hazards endanger the health, safety, and welfare of the County/City's population; jeopardize its economic vitality; and imperil the quality of its environment. To avoid or minimize vulnerability to these hazards, the New Mexico Department of Homeland Security and Emergency Management (NMDHSEM) and the Federal Emergency Management Agency (FEMA) provided support to the McKinley County *Hazard Mitigation Plan for McKinley County, New Mexico* (hereinafter referred to as the "Plan") identifies and profiles those hazards that can affect the County/City, assesses the County/City's vulnerability to these hazards, and identifies alternative mitigation actions. The Plan also includes an implementation strategy for preferred mitigation actions as selected and prioritized by the Mitigation Planning Team (MPT). The McKinley County Office of Emergency Management provided the lead in soliciting the participation from state and local agencies within the county that supported in the update of this hazard mitigation plan.

In addition, because of the diversity of interests in McKinley County and the City of Gallup, the MPT encouraged private sector and citizens to add their voices to the planning process and the decisions that will affect their future. As a result, this document represents the work of citizens, elected and appointed government officials, business leaders, and volunteers of non-profit organizations to develop a plan that will help protect community assets, preserve the economic viability of the community, and save lives. The following summarizes the results of this effort and is organized according to the major sections of the Plan:

Introduction (Section One) – provides an overview of McKinley County and the City of Gallup in the plan, an overall of the county's vulnerability assessment and the process towards developing the plan. The vulnerability analysis overviews the county socioeconomics, the built environment, growth and development and a list of identified public sector-owner and operated critical facilities in the county identified in this Plan. Section two provides additional vulnerability analysis for each hazard at it relates to the McKinley County and the City of Gallup.

Hazard Identification and Risk Assessment (Section Two) – identifies and profiles natural hazards that can affect McKinley County and the City of Gallup, New Mexico as follows:

- Wildland / Urban Interface Fires



- Severe Weather (Includes Thunderstorms, Hail, Lightning, Extreme Heat, High Wind, and High Winds)
- Flooding / Flash Floods
- Drought
- Man Made hazards to include terrorism and hazmat incidents

These hazards are listed in order of priority as determined by the majority of the MPT. A brief summary of the relevant issues is provided for these hazards with more detail regarding the entire list within the Plan.

- **Wildfire/Wildland Urban Interface** – Forestland in the surrounding McKinley County is extremely susceptible to wildfires due to dense timber stands and recent drought conditions. The higher than normal tree densities and accumulation of fuels present a significant, continued threat of wildfire to structures located in the wildland-urban interface area.
- **Floods/Flash Floods** - Flash floods are aptly named: inundation can occur suddenly with high velocity stormwater flows. Although the duration of these events is usually brief, the damages can be quite severe. In the past, flash floods have affected many low-lying areas throughout McKinley County and the City of Gallup and this is expected to continue. However, specific impacts depend on the location, duration, and quantity of rainfall and are therefore difficult to predict. Flash floods are more likely to occur in drainage ways that receive runoff from watersheds with steep slopes and narrow stream valleys. In urban areas, parking lots and other impervious surfaces that shed water rapidly can also contribute to flash floods.
- **Severe Weather (thunderstorms, hail, lightning and high winds, and extreme heat** – All communities within the county experiences some form of severe weather activity annually, based on seasonal meteorological patterns and local topographical conditions. The entire county is susceptible to a full range of weather conditions, including thunderstorms, lightning, hail, high winds, and extreme heat. All areas of the county are susceptible to severe weather conditions, although local topography, such as elevation and land contours, plays a significant part in how weather affects a particular area.
- **Drought**- A drought is a period of prolonged dryness that depletes both ground and surface water. Droughts are common in New Mexico and in McKinley County. The climate in McKinley County is arid with average annual precipitation ranges from less than 12 inches. This normally meager annual precipitation causes extended periods of scant flow in the State's rivers, and any measurable decrease in precipitation rates can create drought conditions in a relatively short period of time.
- **Manmade Hazards** – Human-caused hazards include technological hazards (e.g., hazardous material releases) and terrorism. Both of these are distinct from natural hazards in that they result directly from the actions of people. The term technological hazard refers to incidents that can arise from human activities such as the manufacture,



storage, transportation, and use of hazardous materials. Technological hazards are assumed to be accidental and their consequences unintended. The term terrorism, on the other hand, encompasses intentional, criminal and malicious acts involving weapons of mass destruction (WMDs), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous material releases; and cyber-terrorism (attacks via computer). Technological and terrorism hazards are interrelated in that facilities and transportation routes that handle hazardous materials may be potential targets.

The Risk Assessment portrays the threats of natural hazards, the vulnerabilities of McKinley County to those hazards identified, and the consequences of hazards impacting the community. Each natural hazard identified is addressed as a threat and is identified and profiled in the Hazard Identification. The vulnerabilities to and consequences of a given hazard are addressed in the Vulnerability Analysis. Vulnerability is analyzed in terms of exposure of both population and infrastructure to each hazard. Consequences are identified as anticipated, predicted, or documented impacts caused by a given hazard when considering the vulnerability analysis and the characteristics of the hazard as outlined in its identification.

Goals, Objectives, and Alternative Mitigation Actions (Section Three) – This section of the Plan presents a series of goals and objectives to guide hazard mitigation actions. In addition, this section identifies a series of alternative mitigation actions to address these goals McKinley County and the City of Gallup, New Mexico.

Mitigation Plan and Implementation Strategy (Section Four) – This section of the Plan identifies preferred and prioritized mitigation actions as determined by the MPT as an overall approach to reducing the County/City's vulnerability to natural hazards. This section recommends specific actions and an implementation strategy including details about the organizations responsible for carrying out the action, their estimated cost, possible funding sources, and timelines for implementation.

This plan is an official policy document adopted by the McKinley County Commission and the City of Gallup in order to guide emergency mitigation efforts. It is intended to influence future development decisions, public awareness and training efforts, and other mitigation measures. The scope of the plan is long-range and County-wide. The proposed mitigation strategies may apply to the entire county or to specific jurisdictions as defined in the Mitigation Action Plan, however.

This Plan is specifically written to satisfy the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), which is the latest legislation that guides the hazard planning process. By adopting the Plan, McKinley County and the City of Gallup will become eligible for a variety of federally-funded hazard mitigation grant opportunities for five years. This plan must be updated, approved, and adopted every five years for the County and participating jurisdictions to remain eligible for potential federal mitigation funding streams.



Acknowledgements

Throughout the plan update process, the McKinley County Office of Emergency Management worked tirelessly with city agencies, private organizations and citizens to participate in every step of the mitigation process in updating this comprehensive hazard mitigation plan. A letter of invitation was sent inviting jurisdictions, departments, and agencies of the mitigation effort and requested their participation (Appendix A).

The following individuals and organizations served as members of the McKinley County Mitigation Planning Team or made significant contributions to the planning effort and therefore were instrumental to the development of this plan:

McKinley County Manger – Bruce Swingle
McKinley County Office of Emergency Management – Anthony Dimas, Jr.
McKinley County Office of Emergency Management – Patricia Patterson
McKinley County Office of Emergency Management – Susan Mahooty
McKinley County Office of Emergency Management – Sergio Sotelo
McKinley County Office of Emergency Management – Pearl Reed
McKinley County Metro Dispatch Authority – Glendora Orphey
McKinley County Metro Dispatch Authority – Brenda Graham
McKinley County Geographic Information System – Tim Larson
McKinley County Fire Department – Bill Woolman
McKinley County Fire Department – Ken Hoffman
McKinley County Sheriff's Department – Christopher Escamilla
McKinley County Sheriff's Department – James Mairiono
City of Gallup Office of Emergency Management – JM DeYoung
City of Gallup Police Department – Robert Cron
City of Gallup Geographic Information System – Rick Padilla
New Mexico State Police – Nic Aragon
New Mexico Motor Transportation Department – Larry Moore
New Mexico State Forestry – Todd Haines
Gallup Indian Medical Center – Richard Canning
University of New Mexico – D.L. Stiger
Conoco Phillips – Kim Kamps
B-Sting Ventures, LLC – Brian W. Fields
B-Sting Ventures, LLC – Lora Sedore

B-Sting Ventures, LLC (Albuquerque, NM) acted as the plan development consultant providing hazard mitigation planning services.



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Distribution List

Federal

Regional Administrator FEMA, Region VI, Denton, Texas
U.S. Army Corps of Engineers, District Office, Emergency Management

State

Director, Department of Homeland Security and Emergency Management
New Mexico Energy, Mineral and Natural Resources Department, State Forestry Division

Tribe/Pueblo

Navajo Nation
Pueblo of Zuni
Pueblo of Laguna

County

Emergency Manager, Cibola County
Emergency Manager, San Juan County
Emergency Manager, Sandoval County
Emergency Manager, Apache County, Arizona
Planning and Zoning Department
Flood Plain Manager

City

Emergency Manager, City of Gallup
Planning and Zoning Department
Economic Development Department
Public Works
Gallup Joint Utilities Department
Flood Plain Manager

Other Organizations

New Mexico State Forestry



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Acronyms Used In This HMP Plan

Acronym	Term
ASCE	American Society of Civil Engineers
BCA	Benefit/Cost Analysis
BD/DR	Business Continuity/Disaster Recovery
BFE	Base Floodplain Elevation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe (Railroad)
BSV	B-Sting Ventures, LLC
BWS	Beaufort Wind Scale
CBR	Cost/Benefit Review
CDBG	Community Development Block Grant
CFM	Certified Floodplain Manager
CFOI	Census of Fatal Occupational Injuries
cg	Cloud-to-Ground (lightning)
CMMS	Computerized Maintenance Management System
COE	College of Economics
CRS	Community Rating System (for NFIP)
CWPP	Community Wildfire Protection Plan
DFIRM	Digital Flood Insurance Rate Map
DMA	Disaster Mitigation Act
DMA 2000	Disaster Mitigation Act of 2000
DMA2K	Disaster Mitigation Act of 2000
DOC	Department of Commerce
DOD	Department of Defense
DOI	Department of the Interior



DRMS	NSF Directorate for Social, Behavioral and Economic Science, Division of Social Behavioral and Economic Research, Decision, Risk, and Management Science Program
EAP	Emergency Action Plan
EDA	Economic Development Administration
EF	Enhanced Fujita Scale
EM	Emergency Manager
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ERC	Energy Release Component
ERP	Enterprise Resource Planning
ESRI	Economic and Social Research Institute
FEMA	Federal Emergency Management Agency
FDRS	Fire Danger Rating System
FHBM	Flood Hazard Boundary Map
FIMA	Federal Insurance and Mitigation Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Studies
FMA	Flood Mitigation Assistance
FRCC	Fire Regime Condition Class
FWS	Fish and Wildlife Service
FY	Fiscal Year
GIS	Geographic Information System
GOES	Geostationary Operational Environmental Satellite
GPS	Global Positioning System
GSD	General Services Department
HAZUS-MH	Hazards U.S. Multi-Hazard
HIRA	Hazard Identification and Risk Assessment
HMGP	Hazard Mitigation Grant Program



HMO	Hazard Mitigation Officer
HMP	Hazard Mitigation Plan
HUD	Housing and Urban Development
IA	Individual Assistance
IBC	International Building Code
IFR	Interim Final Rule
KBDI	Keetch-Byram Drought Index
LAL	Lightning Activity Level
LOMR	Letters of Map Revision
LTER	Long Term Ecological Research
MHIRAM	Multi-Hazard Identification and Risk Assessment
MMI	Modified Mercalli Intensity
MPG	Mitigation Planning Group
MPH	Miles Per Hour
NCDC	National Climatic Data Center
NCHS	National Centers for Health Statistics
NDFD	National Digital Forecast Database
NEHRP	National Earthquake Hazard Reduction Program
NEPA	National Environmental Policy Act
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NHPA	National Historic Properties Act
NIBS	National Institute of Building Sciences
NIMS	National Incident Management System
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NMDOT	New Mexico Department of Transportation
MCMPPT	McKinley County Mitigation Planning Team
NMSM	New Mexico School of Mines



NMTEP	New Mexico Tech Emergency Planner
NNMCC	Northern New Mexico Community College
NPS	National Park Service
NRCS	National Resources Conservation Service
NSF	National Science Foundation
NWR	National Wildlife Refuge
NWS	National Weather Service
OCP	Office of Capital Projects
OEM	Office of Emergency Management
PA	Public Assistance
PCD	Planning and Campus Development
PCPI	Per Capita Personal Income
PDA	Preliminary Damage Assessment
PDM	Pre-Disaster Mitigation
PDSI	Palmer Drought Severity Index
PGA	Peak Ground Acceleration
PI	Principle Investigator
PNM	Public Utility Company of New Mexico
POC	Point of Contact
RAOB	Radiosonde Observation
RGIS	Resource Geographic Information System
RH	Relative Humidity
RHS	Rural Housing Service
ROTC	Reserve Officers Training Corp
RUS	Rural Utilities Service
SBA	Small Business Administration
SC	Spread Component
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SRS	Safety and Risk Services



STAPLE+E	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
TERA	Terminal Effects Research and Analysis
TPI	Total Personal Income
USACE	US Army Corp of Engineers
USDA	US Department of Agriculture
USGS	United States Geological Survey
VEI	Volcanic Explosivity Index
WFAS	Wildland Fire Assessment System
WIPP	Waste Isolation Pilot Plant
WUI	Wildland-Urban Interface



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Definitions and Terms

Asset: Any manmade or natural feature that has value, including people; buildings; infrastructure such as bridges, roads, and sewer and water systems; lifelines such as electricity and communication resources; and environmental, cultural, or recreational features such as parks, dunes, wetlands, and landmarks.

Building: A structure that is walled, roofed, principally above ground, and permanently affixed to a site. The term also applies to a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Capability Assessment: An assessment that provides an inventory and analysis of a community or state's current capacity to address the threats associated with hazards. The capability assessment attempts to identify and evaluate existing policies, regulations, programs, and practices that positively or negatively affect the community or state's vulnerability to hazards or specific threats.

Comprehensive Plan: A document, also known as a "general plan," which covers the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all of the physical elements that will determine the community's future development. This plan can discuss the community's desired physical development, desired rate and quantity of growth, community character, transportation services, location of growth, and citing of public facilities and transportation. In most states, the comprehensive plan has no authority in and of itself, but serves as a guide for community decision-making. Not all governmental jurisdictions maintain a plan of this type.

Comprehensive Range of Mitigation Actions: As required by the mitigation strategy, at least two distinct mitigation actions per hazard that are inclusive in nature and which relate to accomplishing the goals and objectives of the plan.

Cost-Benefit Review: An evaluation of the favorable returns that result vs. the monetary expenditures required to complete proposed mitigation actions. When prioritizing actions in a mitigation strategy, a special emphasis shall be made on this economic evaluation. *Note: The Cost-Benefit Review should not be confused with FEMA's Benefit-Cost Analysis software. Though this software can provide you with a method for this evaluation, it is not a required step for completing this prioritization.*

Critical facility: Facilities vital to the health, safety, and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.



Disaster Mitigation Act of 2000 (DMA 2000): DMA 2000 (PL 106-390) is legislation designed to improve the planning process signed into law on October 30, 2000 to amend the Stafford Act. This legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

Duration: How long a hazard event lasts.

Essential Facility: Elements important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.

Evapotranspiration: means the total loss of water from a crop into the air. Water evaporates from any moist surface into the air unless the air is saturated. Water surfaces in contact with air, such as lakes, plant leaves, and moist soils, all evaporate water.

Extent of a Hazard: The magnitude or severity of a hazard. Not to be confused with the location or site of a hazard. The extent and damage predicted by a hazard can be established by comparing previous or predicted hazard events to established technical measures, such as the Fujita Scale for tornados. For example, a community might predict that the typical tornado that would affect them is an F2 storm, with speeds of 150 mph. The Fujita Scale predicts impacts that include “considerable damage, roofs torn off houses, mobile homes demolished, boxcars pushed over” etc. This demonstrates the extent, which is the typical magnitude and impact expected on the community.

Frequency: A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, or extent typically occurs. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average and has a 1% chance (its probability) of happening in any given year. The reliability of frequency information varies depending on the kind of hazard being considered.

Goals: General guidelines that explain what you want to achieve. They are usually broad policy-type statements, long term in nature, and represent global visions.

Governing Body: The governing body of a Tribe, County, Parish or City having legislative and administrative powers, such as passing ordinances and appropriating funds, e.g. city council, county commissioners, quorum court, policy jury, tribal council, etc.

Hazard: A source of potential danger or adverse conditions. A natural event is a hazard when it has the potential to harm people or property. Per the Section 322 of the Disaster Mitigation Act of 2000, only natural hazards are required to be assessed for mitigation planning.

Hazard Event: A specific occurrence of a particular type of hazard.



Hazard Identification: The process of identifying all the types of hazards that threaten or affect a specific planning area.

Hazard Mitigation: Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 404 of the Stafford Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

Hazard Profile: It is a description of the physical characteristics of each hazard identified and a presentation of its various descriptors, including location, extent (magnitude), previous occurrences, and the probability of future events. In most cases, a community can most easily use these descriptors when they are displayed on maps.

Impact: The damage that is expected or predicted by a hazard occurring in a specific area.

Infrastructure: Public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technologies (e.g., telephone lines and Internet access); vital services (e.g., public water supplies and sewer treatment facilities); transportation system components (e.g., airways, airports, and heliports); highways, (e.g., bridges, tunnels, roadbeds, overpasses, railways, rail yards, and depots); and waterways (e.g., canals, locks, seaports, ferries, harbors, dry-docks, piers, and regional dams).

Intensity: A measure of the effects of a hazard event at a particular place.

Interim Final Rule on Local Mitigation Planning (IFR): The governing regulations found in 44 CFR 201.6 which provide the criteria for completing a local hazard mitigation plan. Originally published in the Federal Register on February 26, 2002.

Inventory: The assets identified in a study region, which include buildings and infrastructure.

Location of a Hazard: The area affected by a hazard or hazard event. Some hazards are general to the whole of a planning area (thunderstorms, earthquakes) while others are very specific to known areas (flooding, landslides).

Loss Estimation: Estimation of potential losses by assigning hazard-related costs and losses to inventory data such as data for populations, building stocks, transportation and utility lines, regulated facilities, and more). Loss estimation is essential to decision-making at all levels of government and provides a basis for developing mitigation plans and policies. Loss estimation also supports planning for emergency preparedness, response, and recovery.



Magnitude: A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures to be specific to the hazard.

Mitigate: To cause something to become less harsh or hostile, to make less severe or painful.

Mitigation Actions: Activities or projects that help achieve the goals and objectives of a mitigation plan.

Mitigation Plan: Authorized by Section 322 of the Stafford Act, it is a document that presents a systematic evaluation of the nature and extent of an area's vulnerability to the effects of natural hazards and a description of actions to minimize future vulnerability to hazards. Note: Local Hazard Mitigation Plans must be written to meet 44 CFR Part 201.6 (Interim Final Rule on Local Mitigation Planning) and approved by FEMA for continued eligibility for FEMA mitigation grant programs.

Multi-jurisdictional Mitigation Plan: A mitigation plan that represents the participation of more than one governmental entity in its risk assessment, mitigation strategy, plan maintenance, and adoption. This is opposed to a single-jurisdictional mitigation plan which represents only one governmental entity.

Objectives: Measurable strategies or implementation steps to attain a goal. They are shorter in range and more specific than goals.

Ordinance: A term for a law or regulation adopted by a local government.

Plan Maintenance: An on-going planning function designed to maintain the reliability and accuracy of an approved mitigation plan. This process will include a method and schedule for monitoring, evaluating and updating of the plan following its approval.

Planning: The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

Planning Team: A group composed of government, private sector, and individuals with a variety of skills and areas of expertise, usually appointed by a city or town manager, or chief elected official. The group finds solutions to community mitigation needs and seeks community acceptance of those solutions.

Preparedness: Actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Probability: The numeric or statistical likelihood that a hazard event will occur. Theoretically, the probability of the occurrence of an event is between 0% (indicating that the event will never occur) and 100% (indicating that the event always occurs).



Public Education and Outreach: Any campaign to make the public more aware of hazard mitigation and mitigation programs, including hazard information centers, mailings, public meetings, etc.

Recovery: The actions taken by an individual or community after a catastrophic event to restore order and lifelines in a community.

Reoccurrence Interval: The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.

Resolutions: Expressions of a governing body's opinion, will, or intention that can be executive or administrative in nature. Most planning documents must undergo a council resolution, which must be supported in an official vote by a majority of representatives to be adopted.

Response: The actions taken during and immediately after an event to address immediate life and safety needs and to minimize further damage to properties.

Risk: The estimated impact that a hazard event would have on people, services, facilities, and structures in a community, or the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of damage being sustained above a particular threshold as a result of a specific type of hazard event. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard event. In mathematical terms, Risk=Hazard x Vulnerability.

Risk Assessment: A methodology used to assess potential exposures and estimated losses associated with likely hazard events. A risk assessment process includes four steps: identifying hazards, profiling hazard events, inventorying assets, and estimating losses.

Severity: See magnitude

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL100-107) was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974 (PL 93-288). The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs. It was most recently amended with the enactment of the Disaster Mitigation Act of 2000 (PL 106-390).

STAPLE+E: A systematic evaluation and prioritization method used to assess whether existing and potential alternative mitigation actions fulfill the plan's objectives and if they are appropriate for the planning area. The method evaluates the Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) opportunities and constraints of implementing a particular mitigation action within the jurisdiction.



State Hazard Mitigation Officer (SHMO): The state government representative who is the primary point of contact with FEMA, other state and federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities. This position usually resides in the State Emergency Management Agency.

Strategy: A collection of actions developed to achieve the goals and objectives. In a mitigation plan, the actions are aimed at reducing or eliminating the risk that a hazard presents to a community.

Vulnerability: How exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, its contents, and the economic value of its functions. Vulnerability of an asset may differ from one hazard to another. As well, indirect effects can often be much more widespread and damaging than direct effects of a hazard.

Vulnerability Assessment: An assessment of the extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address the impacts of hazard events on both existing and future conditions.



Section 1 – Introduction

Purpose of the Plan

Across the United States, natural disasters have led to mounting levels of casualties, injury, property damage, and disruption of business and government services. The effect on families and individuals can be enormous and damaged businesses cannot contribute to the economy. The time, money and effort in responding to and recovering from these events redirect public resources and attention from other important programs and problems.

For McKinley County and the City of Gallup, New Mexico, this experience is recent and directly felt through major events such as flash flooding and severe weather events that include extreme cold temperatures. Smaller events lead to more commonplace disruptions such as flooding of bridges and roadways challenging access to those homes and businesses beyond these impasses. Some events, such as droughts and heat waves present more subtle indirect impacts to the community.

The *Hazard Mitigation Plan for McKinley County, New Mexico* is intended to serve many purposes. These include the following:

Enhance Public Awareness and Understanding – to help residents of the County better understand the natural caused hazards that threaten public health, safety, and welfare; economic vitality; and the operational capability of important institutions;

Create a Decision Tool for Management – to provide information that managers and leaders of local government, business and industry, community associations, and other key institutions and organizations need to take action to address vulnerabilities to future disasters;

Promote Compliance with State and Federal Program Requirements – to ensure that the McKinley County community can take full advantage of state and federal grant programs, policies, and regulations that encourage or mandate that local governments develop comprehensive hazard mitigation plans;

Enhance Local Policies for Hazard Mitigation Capability – to provide the policy basis for mitigation actions that should be promulgated by participating jurisdictions to create a more disaster-resistant future; and

Inter-Jurisdictional Coordination of Mitigation-Related Programming – to ensure that proposals for mitigation initiatives are reviewed and coordinated within the County/City and with other jurisdictions that may be included in the initiative.

The elected and appointed officials in McKinley County and the City of Gallup, New Mexico know that mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the effects of natural hazards. The goal of mitigation is to save lives, reduce injuries, property damage and recovery times. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical facilities, reduce exposure to liability and minimize community disruption.



Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions.

The *McKinley County, New Mexico Hazard Mitigation Plan* (the “Plan”) utilizes a multi-agency planning process to identify hazards that can affect the county and to devise mitigation strategies to reduce or eliminate the effects of those hazards. It draws upon the State Plan which provides guidance to local governments in preparing their own mitigation plans by prioritizing mitigation goals and objectives, proposing solutions to certain mitigation problems, and identifying possible funding sources for mitigation projects.

This plan has been updated and prepared in compliance with federal Disaster Mitigation Act of 2000 (DMA 2000), Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, 42 U.S.C. 5165, and the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq., 44 Code of Federal Regulations (CFR) Part 201. This plan identifies hazard mitigation measures intended to eliminate or reduce the effects of future disasters in and surrounding McKinley County.

DMA 2000 intends for hazard mitigation plans to remain relevant and current. Therefore, it requires that State hazard mitigation plans are updated every three years and local plans, including McKinley County, every five years. This means that the Hazard Mitigation Plan for McKinley County uses a five-year planning horizon: it is designed to carry McKinley County through the next five years, after which its assumptions, goals, objectives, etc. will be revisited and the plan resubmitted for approval.

This plan has been developed by the McKinley County Mitigation Planning Team (MPT), with support from an outside consultant at B-Sting Ventures, LLC (“BSV,” the contractor responsible for providing the Planning Committee with hazard mitigation planning support services). The Plan represents the collective efforts of city departments, elected and appointed government officials, business leaders, volunteers of non-profit organizations, local citizens and other stakeholders. This plan does not necessarily represent the views, policies, and procedures of FEMA, although all attempts have been made to comply with common mitigation policies, procedures, and methods employed throughout the County.

McKinley County and the City of Gallup will continue to comply with all applicable federal laws and statutes during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend this plan whenever necessary to reflect changes in state or federal laws and statutes as required in 44 CFR 13.11(d). It is important to note that this document is designed as an instrument of mitigation primarily for natural disasters. Natural disasters cannot be prevented from occurring. However, over the long-term, the continued implementations of this Plan will gradually, but steadily, lessen the impacts associated with hazard events.



Community Background

Overview – McKinley County, New Mexico

Located on the border between New Mexico and Arizona on 5,449 square miles of the San Juan Plateau, McKinley County encompasses an area one hundred miles wide from east to west and forty to seventy miles north to south (Figure 1). Bisected by the Continental Divide, the county encompasses the Chuska and Zuni Mountains with peaks ranging to the 8,969 feet at the summit of Cerros de Alejandro.

McKinley County is located in northwestern New Mexico, bordering San Juan County to the north, Sandoval County to the east, Cibola County to the south, and the State of Arizona to the west. The county consists of 5,455.22 square miles, with a population density of 13.7 persons per square mile.

Approximately 60% of McKinley County's land area, some 1,100 square miles, is Indian Reservation¹ (Figure 30: McKinley County Land Status). McKinley County's economy is mainly agricultural. There are approximately 224 farms with an average size of 14,094 acres, most of which produce cattle, sheep, horses, pigs, or angora goats.

Figure 1: Location of McKinley County, New Mexico



Source: http://en.wikipedia.org/wiki/Santa_Fe,_New_Mexico

¹ New Mexico Economic Development Department Community Profile Input Form for the Community Certification Application

[http://www.co.mckinley.nm.us/mced/pdfs/McKinley%20County%20Community%20Profile%20CCI%2007%20rev%2008\(4\).pdf](http://www.co.mckinley.nm.us/mced/pdfs/McKinley%20County%20Community%20Profile%20CCI%2007%20rev%2008(4).pdf)



The geography that became McKinley County at New Mexico's statehood in 1912 has been populated by Native Americans for centuries, from the Anasazi, or Ancient Ones, to today's contemporary Navajo Nation and Pueblo of Zuni.

McKinley County is home not only to Navajo, Zuni and other Pueblo people, but also to substantial numbers of Apache, Cherokee, Cheyenne, Chippewa, Choctaw, Creek, Iroquois, Kiowa, Pima, Shoshone, Sioux, and a few Alaskan Athabaskan, Blackfoot, Chickasaw, Comanche, Crow, Osage, Paiute, Potawatomi, Seminole, Tlingit, and Tohono O'Odham.

The region is arid high-plateau range land with grasses, shrubs and scattered trees. With some variations for microclimates, annual rainfall averages about 12 inches. Snowfall figures range from an average of 10-15 inches to 82 inches at McGaffey. First frost arrives in western McKinley County about October 10, with the last occurring on about May 10 (Figure 2).

Figure 2: Map of McKinley County Area



Source: Google Maps

Government

McKinley County is governed by a County Commission and has a County Manager, who runs day-to-day operations from the county seat in Gallup. Public safety for McKinley County is provided by the county's Office of Emergency Management (OEM), the sheriff's department and the county fire administration. Public safety efforts are further augmented by the Gallup City Police Department, the New Mexico State Police, and Bureau of Indian Affairs police on the

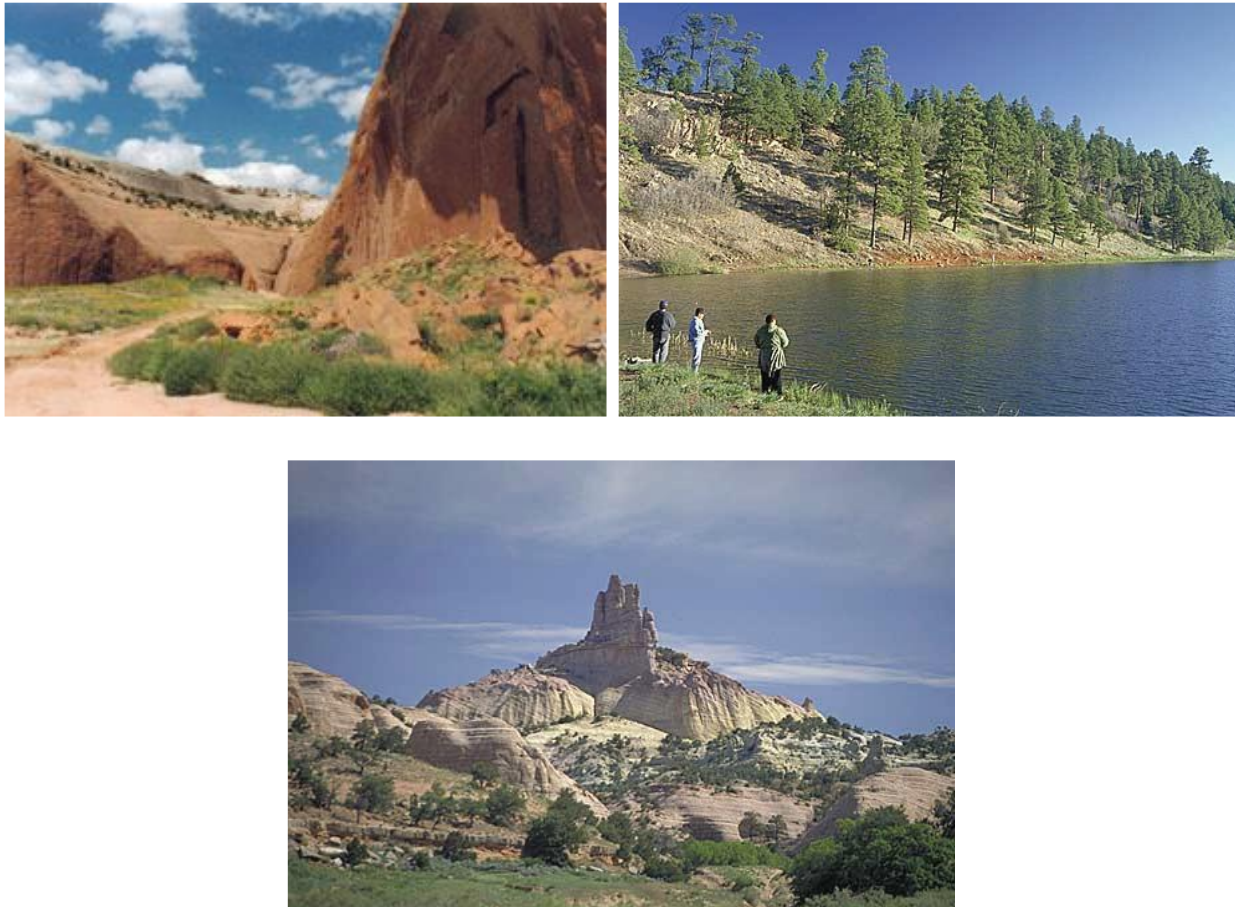


reservations. Fire protection for McKinley County is supplied by the Gallup Fire Department and various volunteer fire departments located throughout the county.

Geographic Features

According to the U.S. Census Bureau, the county has a total area of 5,455 square miles (14,130 km²), of which 5,449 square miles (14,110 km²) is land and 6 square miles (16 km²) (0.12%) is water. McKinley County's landscape is unlike any in the world. The scenic and awe-inspiring atmosphere is created by unique formations, such as, red rock spires and mesas, hogback jagged rocks, deep wooded forests, and high desert plateaus (Figure 3).²

Figure 3: McKinley County, New Mexico Landscape Formations



Source: McKinley County Economic Department

Climate – The city of Gallup and a portion of McKinley County are located on the Colorado Plateau, an area of high desert, country. The elevation at Gallup is approximately 6,515 feet above sea level. Precipitation averages about seven inches per year with roughly 40% falling in July, August and September, and 34% during December to March. Snowfall seldom stays on the ground more than two or three days.

² McKinley County Economic Department
http://www.co.mckinley.nm.us/mced/mced_site_pages/communityprofile.html

McKinley County winters are cold, but with low humidity and lots of sunshine, they are pleasant and seldom onerous. Summer temperatures are moderated by low humidity and high elevation. Evenings are cool and daytime temperatures are comfortable. The average minimum and maximum temperature range is 31.7°F to 64.6°F. The maximum high temperature recorded was 99°F and the maximum low was -57°F. It is sunny about 280 days a year.³

Population – As of the 2010 census, there were 71,492 people residing in the county (Table 1).⁴

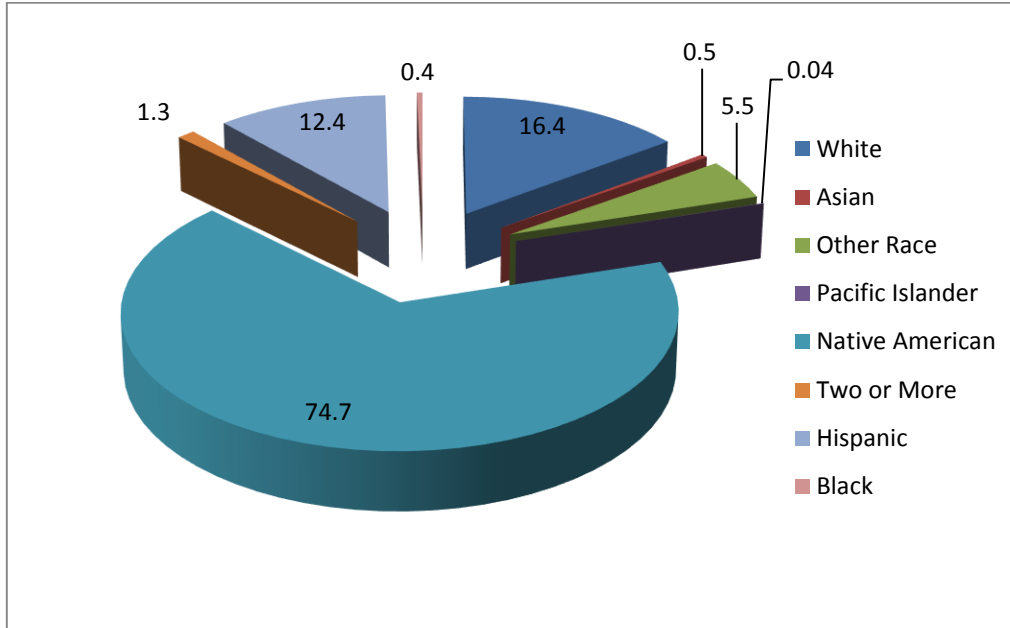
Table 1: McKinley County, New Mexico Population by Decades

McKinley County Population History											
Year	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Population	12,963	13,731	20,643	23,641	27,451	37,209	43,208	56,536	60,686	74,798	71,492
% + or -	-	5.6%	33.5%	12.7%	13.9%	26.2%	13.9%	23.6%	6.8%	18.9%	-4.6%

Source: U.S. Bureau of Census

The racial makeup of the county was 74.72% Native American, 16.39% White, 0.46% Asian, 0.40% Black or African American, 0.04% Pacific Islander, 5.47% from other races, and 2.52% from two or more races. 12.40% of the population was Hispanic or Latino of any race (Figure 4).⁵

Figure 4: McKinley County, New Mexico Racial Makeup



Source: 2010 US Census

³ McKinley County Economic Department
http://www.co.mckinley.nm.us/mced/mced_site_pages/communityprofile.html

⁴ US Census Bureau; <http://quickfacts.census.gov/qfd/states/35/35031.html>

⁵ US Census Bureau; <http://quickfacts.census.gov/qfd/states/35/35031.html>



There were 21,476 households out of which 46.00% had children under the age of 18 living with them, 47.70% were married couples living together, 22.70% had a female householder with no husband present, and 22.30% were non-families. 19.50% of all households were made up of individuals and 5.30% had someone living alone who was 65 years of age or older. The average household size was 3.44 and the average family size was 3.99.

In the county the population was spread out with 38.00% under the age of 18, 9.70% from 18 to 24, 27.80% from 25 to 44, 17.60% from 45 to 64, and 6.90% who were 65 years of age or older. The median age was 27 years. For every 100 females there were 93.50 males. For every 100 females age 18 and over, there were 89.30 males.

The median income for a household in the county was \$25,005, and the median income for a family was \$26,806. Males had a median income of \$26,963 versus \$21,014 for females. The per capita income for the county was \$9,872. About 31.90% of families and 36.10% of the population were below the poverty line, including 42.30% of those under age 18 and 31.50% of those age 65 or over. The county's per-capita income makes it one of the poorest counties in the United States. Table 2 provides an overview of McKinley County and the City of Gallup population.

Table 2: New Mexico Population by Jurisdiction (McKinley County)

McKinley County and the City of Gallup, New Mexico			
County	Population	City	Population:
McKinley	71,492	Gallup	21,699

Source: 2010 US Census

Table 3 shows projected populations for the state and county, population up to 2040. Projected populations for the state and county are based on the UNM Bureau of Business & Economic Research (BBER) Geospatial and Population Studies Group (GPS).

Table 3: McKinley County Projected Populations (1950 - 2030)

New Mexico and McKinley County Projected Population							
Location	2010	2015	2020	2025	2030	2035	2040
New Mexico	2,065,826	2,208,450	2,351,724	2,487,227	2,613,332	2,727,118	2,827,692
McKinley County	71,492	72,691	73,483	73,496	73,805	72,988	71,580

Source: Bureau of Business and Economic Research, University Of New Mexico; <http://bber.unm.edu/demo/PopProjTable1.htm>

Housing Characteristics - McKinley County had a total of 25,813 housing units according to the 2010 U.S. Census which was down by at least 900 homes from the 26,718 housing units in 2000. However, of the 25,813 total housing units approximately 85% or 21,968 were occupied; whereas, in 2000, 21,476 units were occupied households. Also, in 2010, 3,845 housing units were considered vacant/not permanently occupied.



The proportion of vacant units in the City of Gallup was 507 units or 6.3% in 2010 (Total housing units was 8,097 of which 7,590 were occupied) the lowest of any subarea in McKinley County. Gallup's vacancy rate is low compared to the state of New Mexico's total of 12.2% (McKinley County was 14.9%).⁶

McKinley County Economy

Income – As of the 2010, McKinley County is ranked 17th out of 33 New Mexico counties with Annual Average Wage/Salary per Job. As stated earlier, McKinley County's Per Capita Personal Income is lowest in the state. According the U.S. Department of Commerce's Bureau of Economic Analysis, McKinley County's average annual growth rate of Per Capita Personal Income (PCPI) was 5.7 % from 2001-2010. Table 4 provides an overview of the average wage/salary per job in McKinley County.

Table 4: Annual Average Wage/Salary per Job in McKinley County

Year 2000-2010											
County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
McKinley	\$25,128	\$26,616	\$27,007	\$27,158	\$27,972	\$28,858	\$29,880	\$30,992	\$30,789	\$31,744	\$32,364
New Mexico	\$28,091	\$29,397	\$30,393	\$31,318	\$32,562	\$34,002	\$35,503	\$37,147	\$38,686	\$39,336	\$40,199

Source: Northwest New Mexico Fact Book 2012, Northwest NM Council of Governments

Per Capita Personal Income – In 2010, McKinley County had a per capita personal income (PCPI) of \$13,254 and ranked 33rd in the State of New Mexico.⁷ Table 5 provides a count of workers by major industrial sector.⁸

⁶ McKinley County, New Mexico Comprehensive Plan Update;

http://www.theprosperitycollaborative.com/uploads/1/2/8/7/12873976/mckinley_compplan_final_9.28.12.pdf

⁷ http://en.wikipedia.org/wiki/New_Mexico_locations_by_per_capita_income

⁸ Northwest New Mexico Fact Book 2012, Northwest NM Council of Governments



Table 5: McKinley County Worker Counts

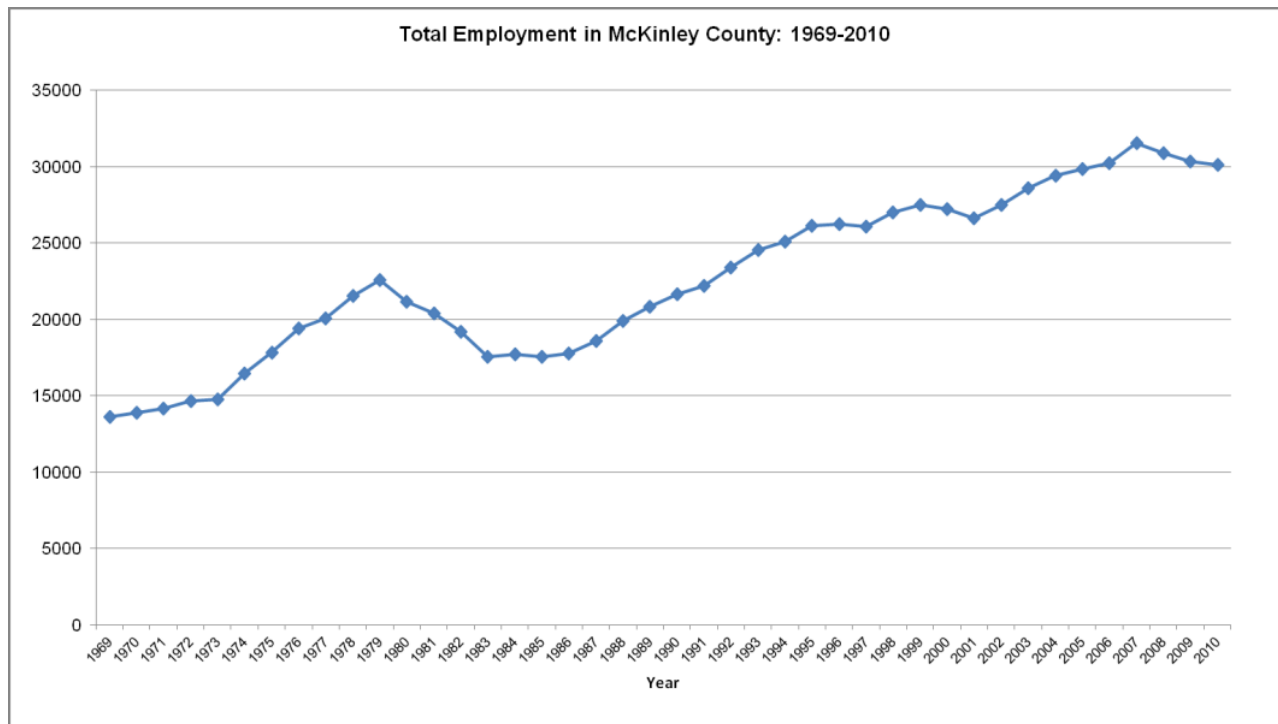
McKINLEY COUNTY COUNTS OF WORKERS BY MAJOR INDUSTRIAL SECTOR										
Sector	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ag. For. Fish. & Hunting	D	0	D	0	0	0	0	0	0	0
Mining	D	697	D	534	569	576	438	151	118	75
Utilities	155	154	152	151	149	163	163	142	161	160
Construction	619	494	679	715	617	761	1,031	922	759	737
Manufacturing	534	592	568	714	709	662	659	648	558	570
Wholesale Trade	672	680	748	690	692	684	622	598	506	545
Retail Trade	3,522	3,600	3,544	3,408	3,384	3,347	3,372	3,333	3,267	3,109
Transportation & Warehousing	296	305	330	372	411	412	406	422	394	388
Information	175	170	170	191	203	189	188	215	223	221
Finance & Insurance	283	322	324	347	418	390	411	414	402	402
Real Estate & Rental Leasing	299	465	153	162	150	146	161	170	182	183
Professional & Technical Services	D	D	262	251	256	271	282	252	223	212
Management of Companies & Enterprises	D	D	17	19	31	24	19	38	40	39
Administrative & Waste Services	363	322	276	280	278	271	310	281	254	266
Educational Services	330	311	189	205	203	209	249	234	205	139
Health Care & Social Assistance	1,896	2,174	2,553	2,803	2,790	2,762	3,008	3,088	3,182	3,289
Arts, Entertainment & Recreation	30	27	29	26	32	36	38	35	31	35
Accommodation & Food Services	2,278	2,331	2,454	2,588	2,684	2,620	2,680	2,660	2,607	2,555
Other Services, ex. Public Administration	575	561	525	509	522	527	527	578	486	482
Unclassified	0	1	0	1	1	4	1	0	0	0
Federal	2,446	2,489	2,552	2,605	2,593	2,598	2,539	2,524	2,570	2,696
State	538	551	551	557	561	568	555	563	562	554
Local	3,873	3,891	4,444	4,354	4,278	4,313	4,472	4,569	4,891	4,709
Total Government	6,857	6,931	7,548	7,515	7,432	7,479	7,566	7,656	8,023	7,959
Total Private	13,038	13,472	13,590	13,965	14,099	14,051	14,564	14,181	13,599	13,405
Grand Total	19,895	20,403	21,138	21,479	21,531	21,530	22,130	21,837	21,620	21,363

Source: New Mexico Comprehensive Plan Update 2012

McKinley County Employment – McKinley County's employment has grown from 13,913 jobs in 1970 to 30,141 jobs in 2010 (U.S. Bureau of Economic Analysis) with a peak of 51,531 jobs in 2007. Over the 40-year period, the County gained an average of 2.4% jobs per year. From 1986-2000, employment growth averaged 3.1% per year. Figure 5 shows the total employment in McKinley County from 1969 – 2010 (McKinley County Comprehensive Plan).



Figure 5: Total County Employment, 1969 – 2010



Source: Bureau of Economic Analysis

From 2000 to 2004 another 2,260 jobs were added; however, from 2005 to 2010 there was a decrease of 100 jobs in McKinley County (New Mexico Department of Labor).

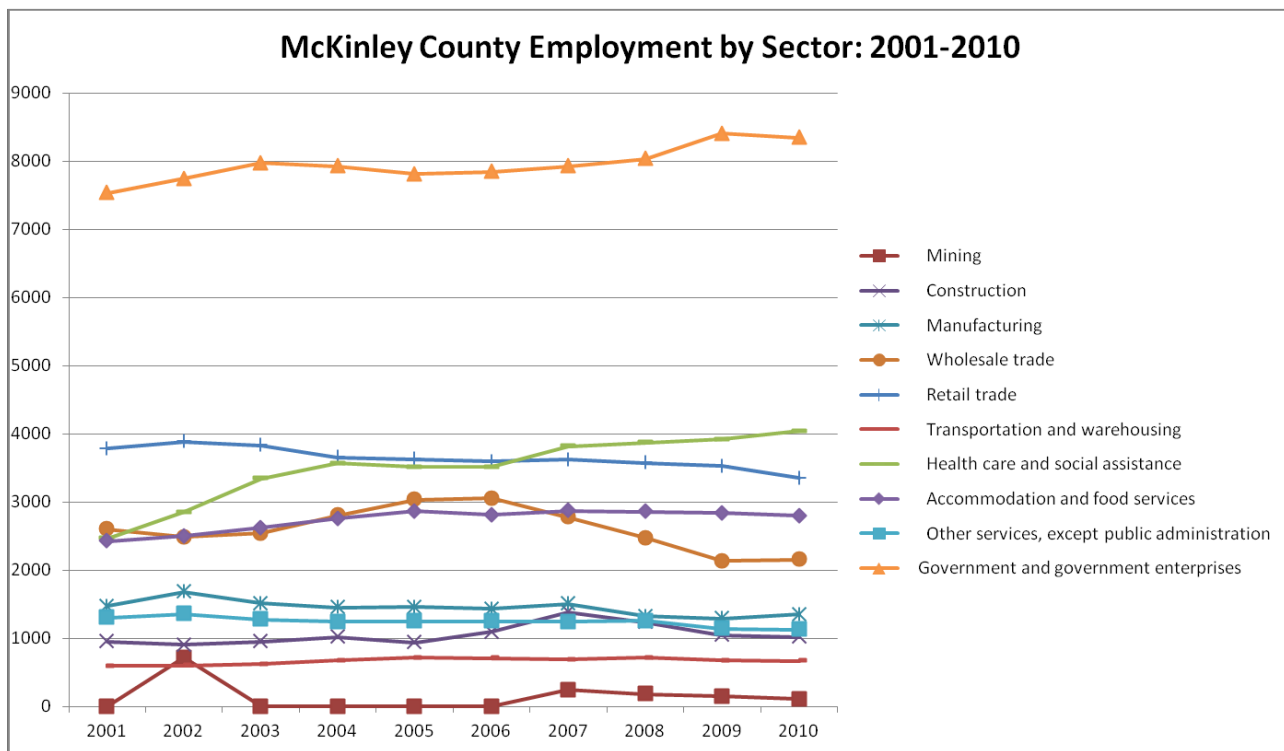
Average earnings per job in real terms (adjusted for inflation to 2000 dollars) fell from \$30,703 in 1970 to \$24,378 in 2000. In 2000, average County earnings were lower than the state average of \$28,283 and the national average of \$36,316. In 1973-1984, County earnings were higher than the U.S. average. This time period corresponds to a spike in mining employment.

Employment by Sector – In mid-2000s, retail and service jobs have shown the greatest growth of all employment sectors. Combined, these sectors are dominant. Retail sales and services in Gallup meet the needs of approximately 120,000 people over a 15,000-square-mile territory in Northwestern New Mexico and Northeastern Arizona (source: Gallup/McKinley County Chamber of Commerce). McKinley County and Apache County, AZ have a combined population of 120,000. However, Health Care and Social Assistance industry sector is on the rise with an increase from 91 establishments in McKinley County in 2005 to 126 establishments as of 2010. The Transportation and Warehousing sector has also seen some growth from 37 establishments in 2005 to 48 establishments in 2010.

Government employment is a very important sector in the County's economy, providing nearly 6,400 jobs by year 2000. The mining sector has diminished. Wholesale trade has grown substantially since 1988. Growth in manufacturing was significant in the 1980s and early 1990s, but has gradually declined since 1994 (McKinley County Comprehensive Plan). Figure 6 shows the employment by sector in McKinley County for 2012 – 2010.



Figure 6: McKinley County Employment by Sector 2001-2010



Source: McKinley County Comprehensive Plan Update, 2012

Major Employers in McKinley County – Table 6 identifies those major employers in McKinley County⁹ and Table XX provides worker counts by major industrial sector.

⁹ McKinley County, New Mexico Comprehensive Plan Update 2012;
http://www.theprospertycollaborative.com/uploads/1/2/8/7/12873976/mckinley_compplan_final_9.28.12.pdf



Table 6: Major Employers in McKinley County

Top Employers in Gallup/McKinley County			
Company	# of Employees	Industry	Location
Gallup-McKinley County Schools	2,000	Education	Gallup
USPHS Gallup Indian Medical Center	1,000	Medical	Gallup
Rehoboth McKinley Christian Hospital	649	Medical	Gallup
Wal-Mart	637	Retail	Gallup
City of Gallup	601	Government	Gallup
Zuni Public Schools	417	Education	Zuni
Giant Refinery and Truck Stop	389	Energy	Jamestown
University of New Mexico - Gallup	242	Education	Gallup
California Supermarkets	240	Retail	Gallup
Bureau of Indian Affairs	210	Government	Gallup
McKinley County	200	Government	Gallup
Burlington Northern Santa Fe Railroad		Transportation	Gallup
Navajo Nation Gaming Enterprise	275	Gaming	Gallup
Bio-Pappel Paper Company		Manufacturing	Prewitt
Navajo Technical College	120	Education	Crownpoint
Lee Ranch Coal Mine	100	Energy	San Mateo
Escalante Generating Station	120	Energy	Prewitt

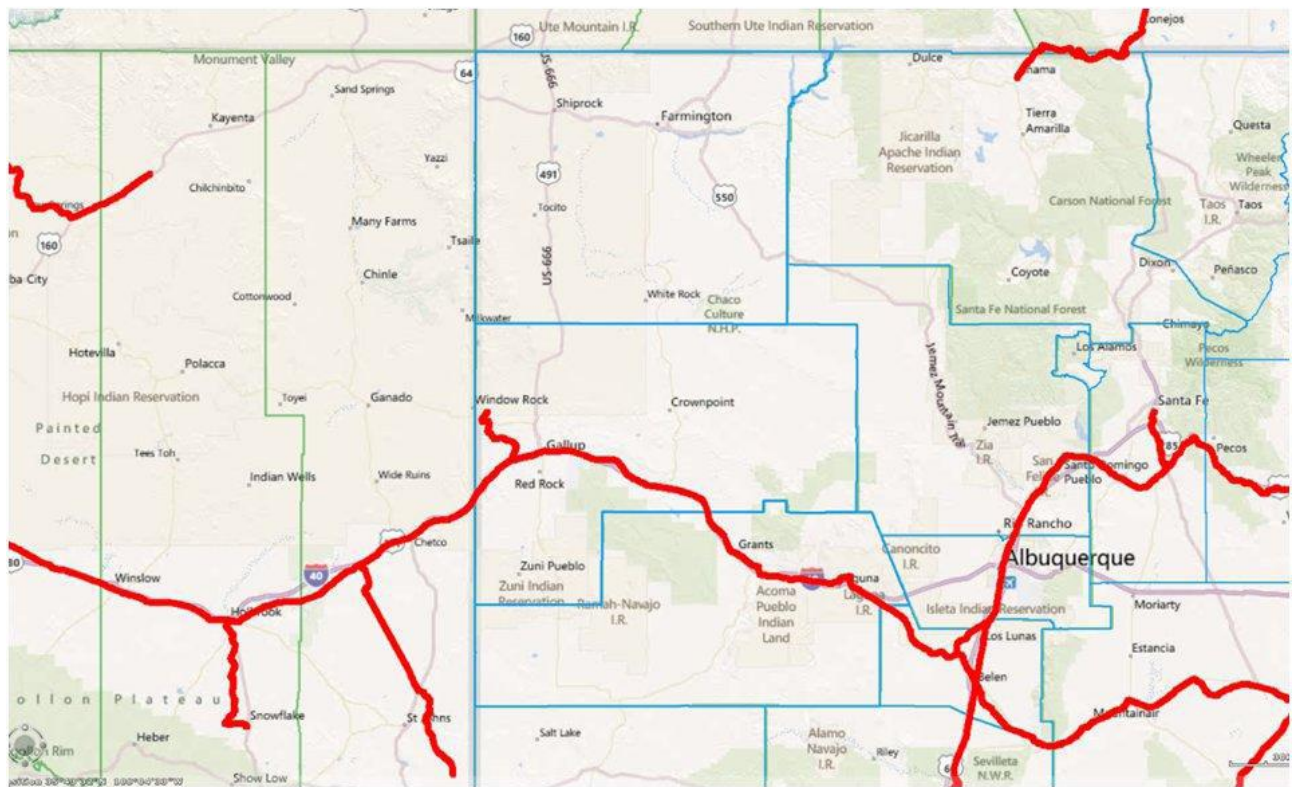
Source: New Mexico Comprehensive Plan Update 2012

Railroad – Amtrak provides rail passenger service in New Mexico. There are two routes that cross the state. The Chicago to Los Angeles route serves Raton, Las Vegas, Lamy (for Santa Fe), Albuquerque and Gallup. The route between New Orleans and Los Angeles, via El Paso, Texas, serves Deming and Lordsburg. Two passenger trains going east and west daily and two Package Express shipments daily serve McKinley County.

The Burlington Northern Santa Fe hauls 90% of all freight originating in New Mexico, and 80% of all cargo terminating here. The company has two north-south lines, one serving the Rio Grande Valley and the other serving the Pecos Valley. East-west lines link the Midwest and California, meeting in Belen. Major communities served by this service are Albuquerque, Artesia, Belen, Carlsbad, Clovis, Gallup, Grants, Las Cruces, Las Vegas, Portales, Raton, Roswell, Santa Fe and Socorro. Figure 7 outlines rail lines through McKinley County.



Figure 7: Rail Lines in McKinley County, New Mexico



Source: Northwest New Mexico Fact Book 2012, Northwest NM Council of Governments

Airports – The airport is owned and operated by the City of Gallup. The airport is located three miles west of downtown Gallup. America West Express and Mesa Airlines have provided airline services at the airport. Gallup is currently negotiating with several firms to provide service once again, and these connecting flights allow a Gallup customer to reach any destination in the world.

Federal Express provides daily overnight express service. Other air freight transportation is available. Trained weather observers provide weather information 24 hours a day. The paved 7300' runway has medium intensity lighting and Runway End Identifier Lights (REILs), and is able to accommodate corporate jets, turbo prop and commuter aircraft.

There are approximately 50 aircraft based at the Gallup Municipal Airport, most of which are hangared. Gallup Flying Service provides air taxi, air ambulance, flight training and sightseeing tours. The airport covers 359 acres and land is available for commercial development.

Interstate and Highways – McKinley County is traversed by Interstate 40, which runs from Cibola County in the southeast to the Arizona state line in the west. The tracks of the Burlington Northern and Santa Fe Railroad lie along this same route. In addition, U.S. Highway 491 (formerly U.S. 666) and N.M. Highway 371 enter McKinley County from San Juan County to the north. U.S. 491 terminates in Gallup, and N.M. 371 terminates in the unincorporated community

of Thoreau. N.M. 602 runs south from Gallup into Cibola County through part of the Zuni Reservation in the county's southwest corner (Figure 31: McKinley County Road System). Large portions of McKinley County are accessible by substandard roads.

Agriculture

- Average size of farms: 21,132 acres
- Average value of agricultural products sold per farm: \$42,674
- The value of nursery, greenhouse, floriculture, and sod as a percentage of the total market value of agricultural products sold: 0.00%
- Average total farm production expenses per farm: \$43,250
- Average market value of all machinery and equipment per farm: \$44,187
- The percentage of farms operated by a family or individual: 86.67%
- Average age of principal farm operators: 55 years
- Average number of cattle and calves per 100 acres of all land in farms: 0.66%

Utilities – Gallup Joint Utilities is one of the largest municipal utilities in the State of New Mexico. The organization provides electricity, water, wastewater treatment, and solid waste collection to approximately 11,000 accounts in the greater Gallup area. Each day, they produce over 3 million gallons of drinking water and treat 2.4 million gallons of wastewater, utilize their 800 miles of transmission and distribution lines to fulfill the electrical demands of over 20,000 citizens and businesses, and collect over 180,000 pounds of solid waste.

Electricity – The City of Gallup provides electricity to the Gallup area with power purchased from Public Service Company of New Mexico.

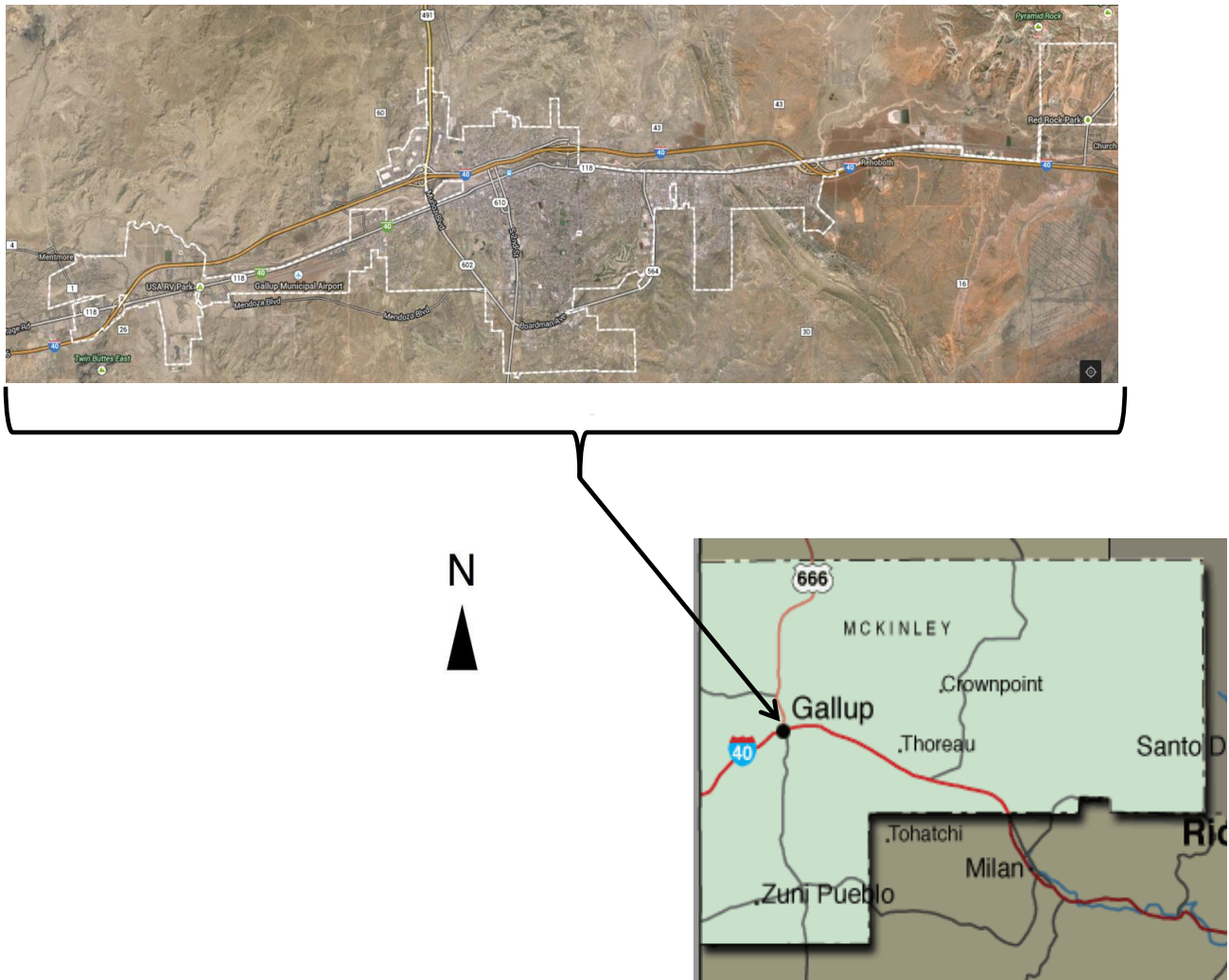
Tourism – Tourism is a major component in the County's economic base. Interstate 40 brings thousands of travelers through the County every day. The attractions of scenic beauty, authentic arts & crafts, experiential cultural opportunities, and outdoor enjoyment cause many to stop -- and spend -- in the County. The tourism challenge is to entice tourists not just to stop, but a destination -- and to extend the stay for meaningful vacationing experiences.



Overview – City of Gallup, New Mexico

Gallup is a city in McKinley County, New Mexico (Figure 8). The population was 21,678 at the 2010 census. It is the county seat of McKinley County and the most populous city between Flagstaff, Arizona and Albuquerque, New Mexico. Gallup was founded in 1881 as a railhead for the Atlantic and Pacific Railroad. The city was named after David Gallup, a paymaster for the Atlantic and Pacific Railroad. Gallup is known as the "Heart of Indian Country" because it is in the middle of large Native American reservations and home to many Native Americans.

Figure 8: City of Gallup, New Mexico



Source: Google Maps

Geography

Gallup is located at 35°31'25"N 108°44'3"W 35.52361°N 108.73417°W - According to the United States Census Bureau, the city has a total area of 13.4 square miles (35 km²), all land.

Demographics

As of the census of 2010, there were 21,678 people, 5,925 households, and 4,869 families residing in the city. The population density was 1,513.7 people per square mile (584.5/km²). There were 8,097 housing units at an average density of 550.5 per square mile (212.5/km²). The racial makeup of the city was 35.2% White, 43.8% Native American, 2.0% Asian, 1.2% African American, 0.1% Pacific Islander, 12.0% from other races, and 5.8% from two or more races. Hispanic or Latino of any race were 31.7% of the population.

There were 7,386 households out of which 30.5% had children under the age of 18 living with them, 45.3% were married couples living together, 19.8% had a female householder with no husband present, and 28.5% were non-nuclear families. 23.8% of all households were made up of individuals and 6.8% had someone living alone who was 65 years of age or older. The average household size was 2.85 and the average family size was 3.39.

In the city the population was spread out with 32.7% under the age of 18, 9.3% from 18 to 24, 28.8% from 25 to 44, 20.3% from 45 to 64, and 8.9% who were 65 years of age or older. The median age was 31 years. For every 100 females there were 91.0 males. For every 100 females age 18 and over, there were 86.2 males.

It has close proximity to Native American reservations, and historic lack of economic development in addition to many mine closures in the last century. As a result of these mine closures, Gallup has a large socioeconomic poor population. The median income for a household in the city was \$41,052, and the median income for a family was \$39,197. Males had a median income of \$33,380 versus \$24,441 for females. The per capita income for the city was 17,660. About 16.6% of families and 20.8% of the population were below the poverty line, including 26.8% of those under age 18 and 16.8% of those age 65 or over.

Population – As of the 2010 census, there were 21,678 people residing in Gallup (Table 7).

Table 7: City of Gallup, New Mexico Population by Decades

City of Gallup Population History											
Year	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Population	2,204	3,920	5,992	7,041	9,133	14,089	14,596	18,167	19,157	20,209	21,678
% + or -	-	78%	53%	18%	30%	54%	4%	24%	5%	5%	7%

Source: U.S. Bureau of Census



Summary of Changes – 2014 McKinley County Hazard Mitigation Plan

McKinley County HMP Changes

The McKinley County Hazard Mitigation Plan previously approved by FEMA in June 30 2005, must be updated every five years. This Plan Update will demonstrate the County, City of Gallup and those participating agency's commitment to reducing risk and serve as a guide for decision makers as they commit resources to minimize the effects of natural hazards

The planning process for the 2014 Mitigation Plan Update began in March 2013 when a working group was formed and for the next several months the group met to review and update the plan. Copies of the agenda and meeting summaries are located in Appendix A. The 2014 update builds on the June 30, 2005 Hazard Mitigation Plan and many areas, specifically, the 2014 update includes:

- Adding the Hazard Mitigation Plan Distribution List
- Adding a list of Acronyms and Definition and Terms sections at the beginning of the document
- Updated and enhanced Community Background providing a more extensive review in changes of population and development (Section 1)
- More extensive profiling of all hazards including the use of standardized subsections and updating of previous events/data through 2012 (Section 2)
- Analysis and roll-up risk assessment information (damage/loss information, hazard prioritization) (Section 2)
- Summary of Hazard Investigation (Section 2)
- Added Critical Facilities Inventory to include estimated values (Section 3)
- More extensive review of vulnerabilities to the County/City for each profiled hazard (Section 3)
- Included a table identifying those goals and objectives from the 2005 Hazard Mitigation Plan and the new goals and objectives for the updated plan as determined by the MPT (Section 4)
- Included a table of actions from the 2005 Hazard Mitigation Plan showing the status of those actions and which actions were carried over into the new plan, actions determined no longer a requirement and/or accomplished (Section 4)
- Enhanced the plan maintenance and review criteria (Section 5)

During the plan update it was determined that there have been minimal changes in community development and changes in the climate for both McKinley County and the City of Gallup. As data becomes available the MPT will incorporate the data accordingly in this Plan as outlined in Section 5 of this Plan. Hazard vulnerabilities for both McKinley County and the City of Gallup have been updated from the previous Plan and based on previous occurrences and provided in each hazard section.



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Plan Development Process

McKinley County Approach

McKinley County, New Mexico took a multi-agency/multi-jurisdictional approach to update this hazard mitigation plan. To undertake such an approach, each agency/jurisdiction needed to involve its senior leaders since they have the legal authority to enforce compliance with land use planning and development issues. Each agency, listed in Table 8, provided some type of resource (i.e., funding, data, Geographic Information System (GIS), etc.) to support the update of this hazard mitigation plan. At the beginning of the project, the County retained the services of a consultant (B-Sting Ventures, LLC) to guide the MPT through the process and author the plan.

Table 8: HMP Update Agency Participants

McKinley County Agency Participants	
McKinley County Office of Emergency Management	City of Gallup Geographic Information System
McKinley County Metro Dispatch Authority	New Mexico State Police
McKinley County Geographic Information System	New Mexico Motor Transportation Department
McKinley County Fire Department	New Mexico State Forestry
McKinley County Sheriff's Department	Gallup Indian Medical Center
City of Gallup Office of Emergency Management	University of New Mexico
City of Gallup Police Department	Conoco Phillips
City of Gallup Fire Department	B-Sting Ventures, LLC

Throughout the plan update process, the McKinley County Emergency Manager (EM) and staff worked to involve county/city agencies, private sector and local citizens. These agencies were not only invited to participate but were guided through the entire phased process. A letter of invitation was sent inviting county/city agencies/departments, private sector and citizens to participate in the mitigation update (Appendix A).

Mitigation Plan Funding

The Robert T. Stafford Act, Section 404, allows the Federal Emergency Management Agency (FEMA) to provide hazard mitigation assistance. The Disaster Mitigation Act of 2000 amended



the Stafford Act to require communities to have a Hazard Mitigation Plan approved in order to receive funding assistance from FEMA. To facilitate the development and/or update of Hazard Mitigation Plans, FEMA established the Hazard Mitigation Grant Program (HMGP). Funding for updating the McKinley County Hazard Mitigation Plan was provided by grant through the Federal Emergency Management Agency grant oversight was provided by New Mexico Department of Homeland Security and Emergency Management. This grant funding was provided to establish the County's long-term strategy for reducing its risks from natural hazards. The McKinley County Office of Emergency Management was the recipient of the funding for coordinating planning and update of the hazard mitigation plan.

Plan Preparation

The McKinley County Hazard Mitigation Plan is a collaborative effort of the work of many people who comprise the McKinley County Mitigation Planning Team (MPT). The MPT retained the services of B-Sting Ventures, LLC (the contractor) in March 2013 to support the planning process and produce the updated plan. The MPT addressed specific topics related to the development of the Hazard Mitigation Plan at scheduled meetings. Between meetings, members provided information to the McKinley County EM.

Upon formation of the MPT, a meeting was held to discuss the content of the plan. A letter of invitation was sent requesting participation from various County agencies, private sector, local citizens, tribal, state, and federal departments and agencies (Appendix A). The approach taken by McKinley County relied on sound planning concepts and a methodical process to identify County vulnerabilities and to propose the mitigation actions necessary to avoid or reduce those vulnerabilities. Each step in the planning process built upon the previous, providing a high level of assurance that the mitigation actions proposed by the participants and the priorities of implementation are valid. Specific steps in the process included the following:

Hazard Mitigation Plan Update Kickoff Meeting

A kickoff meeting occurred on April 4, 2013 at 2:00 p.m. at the County's Office of Emergency Management Emergency Operations Center (EOC). This meeting was attended by key county agency officials, who were essential in helping this project move forward, and other departments, agencies and private sector agencies. The County's EM introduced the contractor hired to assist in the update and meeting task requirements. The contractor provided an overview of what mitigation planning is and the required involvement of agencies at all levels. The contractor stressed the importance of data collection and allowing for the opportunity to bring in key stakeholders who have essential data elements for inclusion and allowing the public the opportunity to be involved throughout the process.

This meeting identified the purpose of mitigation planning, the importance of public input during plan development, how the plan will enable the city to seek federal funding for hazard mitigation projects and what is required from each jurisdiction to successfully develop the mitigation plan. At this meeting a series of additional meetings were established to begin the HMP update and



discuss those topics that are required review and updating the plan. Meetings times and locations included:

- April 3, 2013 at the McKinley County Office of Emergency Management (Kick Off meeting with OEM Staff from McKinley County and City of Gallup)
- April 4, 2013 at the McKinley County Courthouse (MPT Planning Meeting)
- May 23, 2013 at the McKinley County Courthouse (MPT Planning Meeting)
- September 19, 2013 at the McKinley County Courthouse (MPT Planning Meeting)
- November 13, 2013 at McKinley County Office of Emergency Management (Meeting with City and County OEM Staff to discuss Public Meeting and additional data for the HMP)
- November 13, 2013 at the McKinley County Courthouse (Public Meeting)
- February 25, 2014 at the McKinley County Office of Emergency Management (HMT Planning Meeting)
- April 24, 2014 at the McKinley County Office of Emergency Management (HMT Planning Meeting)
- June 16, 2014 in Albuquerque, New Mexico

At the April 4, 2013 meeting the MPT began working on updating the HMP. Meetings were held with the MPT and assignments were made to the members for gathering data, taking photos, constructing data on past hazards and conducting meetings with county agencies/departments. In an effort to include local citizens in the HMP update process, the McKinley County EM, with guidance from the contractor, developed a website where citizens could go to provide their feedback on natural hazards in their community. Appendix B provides an overview of the hazard assessment questionnaire that was made available to citizens. Additionally, the McKinley County EM advertised this hazard assessment and encouraged maximum participation from County/City agencies/departments and private sector agencies to review and fill out the assessment and provide input in the update process.

Appendix A contains copies of meeting minutes and attendees for each meeting scheduled. Appendix B provides an overview of responses to questionnaires and additional information from the MPT on determining which natural hazards rank highest in the County/City.

In addition to the schedule HMP meetings, discussions on the hazard mitigation processes were discussed at the schedule Local Emergency Planning Committee meetings during the following dates: May 29, 2012, July 20, 2012, September 25, 2012, January 22, 2013, March 26, 2013, May 28, 2013, July 23, 2013, September 24, 2013, December 3, 2013 and March 14, 2014. Agendas for these meetings are located in Appendix A of this document.

During plan development, the contractor sent sections of the HMP to the McKinley County EM, who disseminated the information to MPT members for review. All members of the MPT were kept informed by personal meetings, email or telephone. Their input was shared with the MPT



members through discussion at MPT meetings, email, telephone and through personal contact. The MPT members then submitted revisions or additional details. The McKinley County EM then presented the revisions to the contractor, who incorporated them into the plan.

The contractor assembled the final draft of the plan for distribution to MPT members for review on April 30, 2014 with comments due to the McKinley County EM and BSV no later than May 30, 2014. A complete “final” draft was sent to NMDHSEM for review in July 17, 2014. The plan was provided to FEMA for review on July 29, 2014. Once the plan is approved, the HMP will be adopted by the County. The Disaster Mitigation Act (DMA) of 2000 (DMA2K) stipulates the minimum content of all local hazard mitigation plans. The McKinley County Hazard Mitigation Plan meets or exceeds the required content for a “standard” local hazard mitigation plan. The MPT developed the content of the Plan using the following step-by-step process to collect information, compile the plan, and review.

Hazard Identification and Risk Assessment

The MPT reviewed hazards identified in their current plan and reevaluated hazards to determine if the threat still exists, changed in severity and risk and if any other hazards not identified warrant the need to be included in the HMP update. Where possible, specific geographic areas subject to the impacts of the identified hazards were mapped using GIS. The MPT considered the probability of a hazard occurring in an area and its impact on public health and safety, property, the economy, and the environment.

The MPT had access to information and resources regarding hazard identification and risk estimation, although the level of detail varied among the participating agencies. Planning team members representing agencies provided hazard specific maps, such as floodplain delineation maps, whenever possible and performed GIS-based analyses of hazard areas and the location of infrastructure, critical facilities, and other properties located within the County/City. The MPT also conducted a methodical, qualitative examination of the vulnerability of important facilities, systems, and neighborhoods to the impacts of future disasters. The GIS data was used to identify specific vulnerabilities that could be addressed by specific mitigation actions. The MPT also reviewed the history of disasters in the County/City and assessed the need for specific mitigation actions based on the type and location of damage caused by past events.

Finally, the assessment of community vulnerabilities included a review of existing codes, plans, policies, programs, and regulations used by county agencies to see if existing provisions and requirements adequately address the hazards that pose the greatest risk to the community. If needed, the participating agency can now revise existing codes or develop additional codes, plans, or policies that encourage development outside of hazard areas.

Goals, Objectives, and Alternative Mitigation Actions

Based on this understanding of the problems faced by the county, a series of goals and objectives were identified by the MPT to guide subsequent planning activities. In addition, a series of alternative mitigation actions were identified to address these goals and objectives.



Mitigation Plan and Implementation Strategy

The MPT met on September 19, 2013 to determine the priorities for actions from among the alternatives and develop a specific implementation strategy including details about the organizations responsible for carrying out the action, their estimated cost, possible funding sources, and timelines for implementation. Three additional areas are important to note regarding the planning process: Community Participation, Public Involvement, and Regulatory Compliance.

Community Participation

As noted, the McKinley County EM provided many opportunities for bringing the community into the HMP update process. All meeting agendas were posted on the County's website prior to a scheduled meeting. Minutes and the presentations from each meeting were posted on the website with a contact number for the McKinley County EM should the public have questions or wanted to provide any additional input from the meeting. Opportunities were also provided for interested parties and communities to review and comment on the work-in-progress for the Plan. The McKinley County website was official website that both the county and city would use during the plan update process.

Public Involvement

The MPT conducted a series of public involvement initiatives to educate stakeholders about their risks, involve them in identifying issues, and educate them about mitigation options available to them. The initiatives included:

- Public Response Questionnaires to develop lists of potential mitigation actions by soliciting community input regarding vulnerabilities and potential solutions. Citizens were invited to participate by prioritizing the hazards and suggesting possible solutions, which formed the basis for researching alternatives and developing evaluation criteria for selecting mitigation actions. Questionnaires were distributed to agency/department offices for distribution within each community.
- Press Releases to announce the availability of the updated Draft Hazard Mitigation Plan for public review and comment (see Appendix A for copies of public notices). Press releases were printed in the local newspaper.
- Presentations to the McKinley County Commissioners for the initial kickoff of the HMP project and for the Final versions of the Plan informing them of proposed mitigation actions and their implementation schedule, and seeking support for adopting the Plan.
- Presentations to the public to provide an overview on mitigation and the efforts undertaken to update the plan. This also provided an opportunity for the public to provide any additional comments or suggestions for the updated plan.



Regulatory Compliance

To qualify for certain forms of federal aid for pre- and post-disaster funding, local jurisdictions must comply with the federal Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations (44 CFR Section 201.6, published February 26, 2002). DMA 2000 intends for hazard mitigation plans to remain relevant and current. Therefore, it requires that State hazard mitigation plans are updated every three years and local plans, including McKinley County, every five years. This means that the Hazard Mitigation Plan for McKinley County, New Mexico uses a five year planning horizon that is designed to carry the County through the next five years, after which its assumptions, goals, objectives, etc. will be revisited and the plan resubmitted for approval

Mitigation Planning Participants

The members of the MPT and other subject matter experts who were consulted in the planning process brought to the table a wide variety of experience not necessarily related to their current jobs. Their institutional knowledge, along with the specific program experience of their current job positions, made all participants in the planning process uniquely qualified to assist the mitigation planning effort. These people, agencies, and interested groups participated by attending meetings, sharing information by email, and contributing general and specific information as needed. A list of the McKinley County MPT members is provided in Table 9. The McKinley County EM and contractor coordinated the formation of this plan.

Table 9: McKinley County/City of Gallup Mitigation Planning Team

Mitigation Planning Team				
Name	Organization	Phone	Email	Contribution
Anthony Dimas, Jr.	McKinley County OEM	505-722-4248	adimas@co.mckinley.nm.us	Project Manager - arranged for meetings, provided documents to stakeholders, provided background hazard history and updated mitigation website.
Susan Mahooty	McKinley County OEM	505-722-4248	smahooty@co.mckinley.nm.us	Provided hazard history, identified mitigation goals and actions for the plan.
Patricia Patterson	McKinley County OEM	505-722-4248	pattersonp@co.mckinley.nm.us	Provided hazard history, identified mitigation goals and actions for the plan.
Pearl Reed	McKinley County OEM	505-722-4248	reedp@co.mckinley.nm.us	Provided hazard history, identified mitigation goals and actions for the plan.
JM DeYoung	City of Gallup OEM	505-726-6102	jdeyoung@gallupnm.org	Provided hazard history, identified mitigation goals and actions for the plan.



SECTION 1 – INTRODUCTION

Mitigation Planning Team				
Name	Organization	Phone	Email	Contribution
Nic Aragon	New Mexico State Police	505-863-9352	Jose.aragon@state.nm.us	Provided information on past hazard disasters and input on goals and actions for the plan.
Brenda Graham	MCMDA	505-722-8819	bgraham@co.mckinley.nm.us	Provided information on past hazard disasters and input on goals and actions for the plan.
Richard Canning	Gallup Indian Medical Center	505-722-1408	Richard.canning@ihs.gov	Provided information on past hazard disasters and input on goals and actions for the plan.
Kerry Jones	National Weather Service – Albuquerque Field office	UnKnown	kerry.jones@noaa.gov	Provided information related to weather (retired NWS)
Glendora Orphey	MCMDA	505-863-7607	gorphey@co.mckinley.nm.us	Provided information on communications and identified mitigation goals and actions for the plan.
Todd Haines	New Mexico State Forestry	505-867-2334	Todd.haines@state.nm.us	Provided data related to past fire histories, identified critical facilities and identified mitigation goals and actions for the HMP update.
D.L. Stiger	University of New Mexico – Gallup Branch	505-8637607	dstiger@unm.edu	Provided information to past hazards experienced in the city from natural hazards. Identified goals and actions for the HMP update.
Larry Moore	Department of Public Safety Motor Transportation Division	505-905-2365	Larry.moore@state.nm.us	Identified goals and actions for the HMP update.
Kim Kamps	Conoco Phillips	505-863-1023	Kimberly.d.kamps@conocophillips.com	Provided data related to hazardous materials.

The McKinley County OEM kept agencies and subject matter experts, who did not participate with the MPT on a regular basis, informed of the status and content and an opportunity to review the plan. They will receive copies of the approved plan soon after it is approved in order for them to comment and correct errors and omissions for future updates. The County's Emergency Manager will continue to expand the list of interested parties as opportunities arise



and will send to them copies of the plan and invite their participation. In addition, the plan will be available on the county and city websites. During the plan review process a message was sent to those surrounding counties providing an opportunity to review and provide comment. A copy of this message is located in Appendix A of this document.

The McKinley County HMP endorses the efforts of other local, state, and federal, agencies in addressing mitigation issues for specific hazards in their own strategic and operational plans, procedures, and regulations. The McKinley County EM will continue to ask MPT members and other subject matter experts to provide input related to their specific agency plans, procedures, and regulations. Subsequent meetings of the MPT will discuss and possibly incorporate specific recommendations into future updates of the plan.



Section 2 – Hazard Identification / Risk Assessment

Overview

Section Two: Hazard Identification/Risk Assessment summarizes the results of the first fundamental task in the planning process wherein hazards that may affect McKinley County are identified, profiled, and their potential effects quantified. It describes previous occurrences, physical characteristics, the likelihood of future occurrence, and the potential severity of an occurrence. The steps in the process include:

- ✓ *Hazard Identification* - investigates the existence of certain types of natural and human caused conditions in and around the County. Hazards that have harmed the County in the past are likely to happen in the future. Consequently, the hazard identification process begins with determining whether or not the hazard has occurred previously. In addition, a variety of sources were used to determine the possibility of other hazards within McKinley County that may have occurred in recent history. Portions of McKinley County are in a 100-year floodplain and have been affected by flooding since the County has been populated.
- ✓ *Hazard Profiles* - determine the frequency or probability of future events, their severity, and factors that may exacerbate their severity. The Mitigation Planning Team and hazard mitigation planners used national maps available online from sources such as the U.S. Geological Survey (USGS) and GIS data from McKinley County and the City of Gallup to investigate the possible implications of a range of hazards. The data sets used to generate the assessment were sometimes out of date or lacked sufficient data. Consequentially, hazard probabilities and severities identified in this document are discussed in broad terms, reflecting the lack of available detailed information. These data limitations are discussed in the appropriate sections.
- ✓ *Vulnerability Assessment* - uses the information generated in the hazard identification and profiles to identify locations where residents could suffer the greatest injury or property damage in the event of a disaster. The vulnerability assessment process identified the effects of natural hazard events by estimating the relative exposure of people, buildings, and infrastructure to hazardous conditions. The assessment helped the County and its municipalities set mitigation priorities by allowing them to focus attention on areas most likely to be damaged or most likely to require early emergency response during a hazard event. The vulnerabilities identified in this section consist of an inventory of affected structures completed using GIS to overlay the hazard areas with the locations of individual structures and using population data from the 2010 Census.
- ✓ *Risk Assessment* - in hazard events requires a full range of information and accurate data. Several site-specific characteristics—first-floor elevations for flooding, the number of stories, construction type, foundation type, and the age and condition of the structure for multiple



hazards—determine a structure's ability to withstand hazards. In McKinley County, this type of detailed information is not yet available. Projected loss estimates used in this document are based on 2010 U.S. Census data. The percentage of potential damage to structures varies depending upon the specific hazard. For example, drought will have no impact on residential structures, while wildfires typically destroy the entire structure.

The Hazard Identification and Risk Assessment (HIRA) is the foundation upon which subsequent mitigation strategies are based. It is a fundamental requirement for the County Hazard Mitigation Plan to comply with the DMA 2000. This section identifies the natural hazards that can occur within the County/City and provides a systematic analysis of risk and vulnerability to which the County/City's population and critical infrastructure are subject. The Stafford Act provides funding for disaster response and recovery and the Hazard Mitigation Grant Program (HMGP). DMA 2000 stresses the importance of hazard mitigation planning through the HMGP and establishes new requirements for HMGP and the Public Assistance Program.

DMA 2000 is intended to facilitate cooperation between the state and local authorities. It encourages and rewards local HMP planning, and promotes sustainability as a strategy for disaster resistance. This enhanced planning network will better enable the county and those jurisdictions identified in this Plan to project their mitigation needs, resulting in faster allocation of funding and more effective risk reduction projects.

Hazard Analysis

The geographic area in which McKinley County is located contains a number of natural and manmade hazards of sufficient likelihood of occurrence to warrant discussion. Hazards the MPT identified as significant to include in this HMP plan include:

- Wildland fire
- Severe Weather (Includes Thunderstorm, Hail, Lightning, Extreme Heat, and High Wind)
- Flooding
- Drought
- Man Made hazards to include hazmat incidents

This section details the hazard identification and hazard profile steps taken in the risk assessment. It includes an identification of the natural hazards that could occur throughout the county, a description of those hazards, the damage they could cause, a historical review of hazard occurrences, and a discussion of the probability of future occurrences.



Hazard Identification

The first step in preparing a risk assessment for the multi-jurisdiction is to identify which natural hazards affect the county. Numerous documents were consulted to include:

- *New Mexico Natural Hazard Mitigation Plan*; October 2007 and updated plan as of September 2013;
- *McKinley County Natural Hazard Mitigation Plan 2005*;
- *McKinley County Community Wildfire Preparedness Plan, Update September 2013*;
- *New Mexico Drought Task Force, New Mexico Drought Plan, Update: December 2013*;
- *McKinley County Emergency Operations Plan 2013*;
- *FEMA Maps of the Communities*; February 2012;
- *McKinley County Comprehensive Plan and*,
- *Other documents and information provided by each jurisdiction identified in the HMP*

These Plans were reviewed and the information provided was used to identify and assess risk to the population and to structures located in areas defined by these plans. (i.e. structures located in the flood plain, in Wildland Urban Interface). The New Mexico Natural Hazard Mitigation Plan provided information to the MPT of other hazards that may occur in the State.

The McKinley County Hazard Mitigation Plan was reviewed and information provided from this document was used to provide the MPT with assessment of hazards known to the area.

The MPT began with the hazards identified in the previous HMP and added the hazards identified in the New Mexico Hazard Mitigation Plan, October 2007, September 2013 and the draft plan currently under development. A copy of the form used to evaluate hazards is located in Appendix B. The following criteria were used by the MPT to identify hazards (Figures 9, 10 and 11).

Figure 9: Hazard Probability Criteria

No	0	Has not occurred
Nuisance	1	Occurs less than once every 10 years or more
Medium	2	Occurs less than once every 5 to 10 years
High	3	Occurs once every year or up to once every five years

Figure 10: Hazard Risk Criteria

No	0	Has not occurred
Nuisance	1	Loss of critical facilities and services for up to one week
Medium	2	Loss of critical facilities and services from one week to three weeks
High	3	Loss of critical facilities and services for more than three weeks



SECTION 2 – Hazard Identification / Risk Assessment

Figure 11: Hazard Magnitude/Severity

No	0	<ul style="list-style-type: none"> Has not Occurred
Nuisance	1	<ul style="list-style-type: none"> Negligible property damages (less than 5% of all buildings and infrastructure) Negligible loss of quality of life Local emergency response capability is sufficient to manage the hazard
Medium	2	<ul style="list-style-type: none"> Moderate property damages (15% to 50% of all buildings and infrastructure) Some loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to involve one or more counties
High	3	<ul style="list-style-type: none"> Property damages to greater than 50% of all buildings and infrastructure Significant loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to require federal assistance

Table 10 presents the final hazard assessment. As noted, hazard identification involved a combination of input from concerned residents and preliminary research from several state and federal resources. Table 11 presents a description of the hazards that were identified as likely to occur, how they were identified, and why they were identified.

Table 10: McKinley County Hazard Assessment

Natural Hazards	Probability / Frequency	Magnitude / Severity	Risk
Wildland / Urban Interface Fires	High	High	Medium
Severe Weather (Thunderstorm, Hail, Lightning, Extreme Heat, and High Wind)	High	Medium	Medium
Floods / Flash Floods	High	Nuisance	Nuisance
Drought	High	Medium	Nuisance
Human-Caused Hazards (Hazard Materials Releases)	Medium	Medium	Nuisance
Land Subsidence	No	No	No
Landslide	No	No	No
Dam Failure	No	No	No
Volcanoes	No	No	No
Tornado	No	No	No
Earthquake	No	No	No
Expansive Soil	No	No	No



SECTION 2 – Hazard Identification / Risk Assessment

Table 11 Summary of Hazard Investigation

Hazard	How Identified	Why Identified
Wildland / Urban Interface Fires	<ul style="list-style-type: none"> ▪ NMDHSEM 2013 All Hazard Plan List ▪ McKinley County All Hazard Mitigation Plan 2008 ▪ MPT ▪ Outreach to community 	<ul style="list-style-type: none"> ▪ McKinley County has experienced wildfires in the past few decades
Severe Weather (Includes Thunderstorm, Hail, Lightning, Extreme Heat, and High Wind)	<ul style="list-style-type: none"> ▪ NMDHSEM 2013 All Hazard Plan List ▪ McKinley County All Hazard Mitigation Plan 2008 ▪ MPT ▪ Outreach to community 	<ul style="list-style-type: none"> ▪ There have been two recent extreme cold weather events in NM that have affected the citizens of McKinley County. These events were exacerbated by a natural gas shortage. ▪ NM experienced the hottest June 2013 on record
Floods / Flash Floods	<ul style="list-style-type: none"> ▪ NMDHSEM 2013 All Hazard Plan List ▪ McKinley County All Hazard Mitigation Plan 2008 ▪ MPT ▪ Outreach to community ▪ NFIP ▪ Local GIS 	<ul style="list-style-type: none"> ▪ There have been several previous flood disaster declarations. ▪ A portion of the County is in the floodplain
Drought	<ul style="list-style-type: none"> ▪ NMDHSEM 2013 All Hazard Plan List ▪ McKinley County All Hazard Mitigation Plan 2008 ▪ MPT ▪ Outreach to community ▪ NM Drought Index 	<ul style="list-style-type: none"> ▪ The County has had droughts in the past. ▪ Residents indicated that droughts have been a recurring problem. ▪ New Mexico, including McKinley County, is currently undergoing a dry weather phase.
Human-caused Hazards, including Hazardous Materials Releases	<ul style="list-style-type: none"> ▪ McKinley County All Hazard Mitigation Plan 2008 ▪ MPT ▪ Outreach to community ▪ NM SP Records 	<ul style="list-style-type: none"> ▪ McKinley County has several facilities that handle or process hazardous materials. ▪ There have been previous transportation accidents and hazardous materials spills.

FEMA Disaster Declarations

Disaster declarations, for the county or counties affected by a disaster, are declared by the President of the United States under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA then manages the entire process, including making federally-funded assistance available in declared areas; coordinates emergency rescue and response efforts; provides emergency resources; and provides other related activities/funding in the process of aiding citizens and local governments in a nationally-declared disaster. Tables 12, 13 and 14 provide a summary of disaster and emergency declarations for the State of New Mexico (based on review of the FEMA web site and the New Mexico State Hazard Mitigation Plan), with an indication as to whether McKinley County was part of the declared area.



SECTION 2 – Hazard Identification / Risk Assessment

Table 12: State of New Mexico Major Disaster Declarations: 1964 - 2013

Year	Date	Disaster Type	Disaster Number	McKinley County Declared?
2013	29 Oct	Severe Storms, Flooding and Mudslides	4152	Yes
2013	30 Sep	Severe Storms and Flooding	4148	No
2012	24 Aug	Flooding	4079	No
2011	23 Nov	Flooding	4047	No
2011	24 May	Severe Winter Storms	1962	No
2010	09/13	Severe Storms and Flooding	1936	Yes
2008	14 Aug	Severe Storms & Flooding	1783	No
2007	S Apr	Severe Storms & Tornadoes	1690	No
2006	30 Aug	Severe Storms & Flooding	1659	No
2004	29 Apr	Severe Storms & Flooding	1514	No
2000	13 May	New Mexico Wildfire	1329	No
1999	29 Sep	Severe Storms & Flooding	1301	No
1998	29 Jan	Severe Winter Storms	1202	Unknown
1993	7 Jun	Flooding, Severe Storm	992	Unknown
1992	18 Jun	Flooding, Hail, Thunderstorms	945	Unknown
1985	18 Jan	Severe Storms, Flooding	731	Unknown
1984	6 Sep	Severe Storms, Flooding	722	Unknown
1983	24 Oct	Severe Storms, Flooding	692	Unknown
1979	23 Jun	Severe Storms, Snowmelt, Flooding	589	Unknown
1979	29 Jan	Flooding	571	Unknown
1973	11 May	Severe Storms, Snow Melt, Flooding	380	Unknown
1972	20 Nov	Heavy Rains, Flooding	361	Unknown
1972	20 Sep	Heavy Rains, Flooding	353	Unknown
1972	1 Aug	Severe Storms, Flooding	346	Unknown
1965	1 Jul	Severe Storms, Flooding	202	Unknown
1955	15 Aug	Flood	38	Unknown
1954	31 Oct	Flood	27	Unknown

Source: FEMA online at <http://www.fema.gov/femaNews/disasterSearch.do>

Table 13: State of New Mexico Emergency Declarations: 1954 - 2012

Year	Date	Disaster Type	Disaster Number	McKinley County Declared?
2005	7 Sep	Hurricane Katrina Evacuation	3229	No
2000	10 May	New Mexico Fire	3154	No
1998	2 Jul	Extreme Fire Hazard	3128	Yes
1997	2 Mar	Drought	3034	yes

Source: FEMA online at <http://www.fema.gov/femaNews/disasterSearch.do>



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Table 14: State of New Mexico Fire Management Assistance Declarations: 1954 - 2013

Year	Date	Disaster Type	Disaster Number	McKinley County Declared?
2013	5/30/2013	Tres Lagunas Fire	5026	No
2012	6/20/2012	Romero Fire	2982	No
2012	6/18/2012	Blanco Fire	2981	No
2012	6/9/2012	Little Bear Fire	2979	No
2012	5/26/2012	Whitewater-Baldy Fire	2978	No
2011	6/30/2011	Donaldson Fire	2935	No
2011	6/29/2011	Little Lewis Fire	2933	No
2011	6/26/2011	Las Conchas Fire	2933	No
2011	6/12/2011	Track Fire	2918	No
2011	6/10/2011	Wallow Fire	2917	No
2011	4/17/2011	Tire Fire	2897	No
2011	4/3/2011	White Fire	2880	No
2011	3/8/2011	Quail Ridge Fire	2866	No
2010	06/02/2010	Rio Fire	2843	No
2010	05/24/2010	Cabazon Fire	2842	No
2009	05/07/2009	Buckwood Fire	2818	No
2008	06/25/2008	Big Springs Fire	2777	No
2008	04/21/2008	Trigo Fire	2762	No
2007	11/21/2007	Ojo Peak Fire	2741	No
2007	02/24/2007	Belen Fire	2682	No
2006	06/21/2006	Rivera Mesa Fire	2647	No
2006	06/16/2006	Malpais Fire	2644	No
2006	04/12/2006	Ojo Feliz Fire	2636	No
2006	03/01/2006	Casa Fire	2631	No
2006	01/02/2006	Southeast New Mexico Fire	2600	No
2004	06/18/2004	Bernardo Fire	2522	No
2004	05/25/2004	Peppin Fire	2518	No
2003	06/25/2003	Atrisco Fire (Formerly Bosque Fire)	2472	No
2003	05/10/2003	Walker Fire	2467	No
2002	08/26/2002	Lakes Fire Complex	2459	No
2002	06/13/2002	Roybal Fire Complex	2424	No
2002	06/06/2002	Ponil Fire	2416	No
2002	06/04/2002	Cerro Pelado Fire	2415	No
2002	06/04/2002	Turkey Fire	2414	No

Source: FEMA online at <http://www.fema.gov/femaNews/disasterSearch.do>



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Hazard Profiles and Vulnerability Assessment

The remainder of this section presents profiles and vulnerability assessment information for the hazards identified above. The order that these hazards are discussed in the remainder of this report reflects the order of priority by the majority of jurisdictions as determined by the Mitigation Planning Team. Table 15 summarizes the comparison of McKinley County's vulnerability to each identified hazard, according to the data presented in the remainder of Section Two. As discussed in the Introduction Section, the following table is a result of the MPT hazard vulnerability assessment. The MPT decided to combine the hazards for the County and the City since resources are limited and any disaster that occurs will affect both jurisdictions. Based on the assessment, the MPT identified hazards in order of priority. Appendix B provides an example of the assessment used for determining each jurisdiction's risk the identified natural hazards.

Table 15: McKinley County Risk Assessment

Natural Hazards	McKinley County/City of Gallup			
	Priority	Probability Frequency	Magnitude Severity	Risk
Wildland / Urban Interface Fires	1	High	High	Medium
Severe Weather (Includes Thunderstorm, Hail, Lightning, Extreme Heat and High Wind)	2	High	Medium	Medium
Floods / Flash Floods	3	High	Nuisance	Nuisance
Drought	4	High	Medium	Nuisance
Human-Caused Hazards (Hazard Materials Releases)	5	Medium	Medium	Nuisance

As identified in Table 15, only these 5 hazards are profiled in this plan. Other hazards certainly exist, although their occurrence is rare and/or their occurrence has been deemed of relatively little to no impact (nuisance) on McKinley County and the City of Gallup.

Future editions of this plan could include revision and re-ranking of hazards, as well as re-evaluation of potential loss estimation based upon evolution of data available for use in the HAZUS-MH application. Future impacts have the capability of changing this plan and may necessitate revision before that identified in Section 4 Plan Maintenance. Information about hazardous events was obtained by reviewing past state and federal declarations of disasters, conducting internet searches, and interviewing MPT members.



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Wildland / Urban Interface Fires

Overview – Wildfires in McKinley County and City of Gallup

Wildland fire is defined as any fire burning wildland vegetation-fuels; it includes prescribed fire, wildland fire use, and wildfire. Prescribed fires are planned fires ignited by land managers to accomplish specific natural resource improvement objectives. Fires that occur from natural causes, such as lightning, that are then used to achieve management purposes under carefully controlled conditions with minimal suppression costs are known as wildland fire use (WFU). Wildfires are unwanted and unplanned fires that result from natural ignition, unauthorized human-caused fire, escaped WFU, or escaped prescribed fire. A wildland-urban interface (WUI) fire is a wildfire occurring in areas where structures and other human developments meet or intermingle with wildland vegetation-fuels. WUI fires are a specific concern because they directly pose risks to human lives, property, structures, and critical infrastructure more so than the other types of wildland fires.

HAZARD CHARACTERISTICS

Wildfires are uncontrolled fires often occurring in wildland areas, which can consume houses or agricultural resources if not contained. Wildfires/urban interface is defined as the area where structures and other human development blend with undeveloped wildland.

Wildfires are part of the natural management of forest ecosystems, but may also be caused by human factors. Nationally, over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.

Forest and grassland fires can occur any day throughout the year. Most of the fires occur during the spring season. The length and severity of burning periods largely depend on the weather conditions. Low humidity, high winds, below-normal precipitation, and high temperatures that are frequently present during the spring result in extremely high fire danger. Drought conditions can also hamper efforts to suppress wildfires as decreased water supplies may not prove adequate to quickly contain the fire. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

As more people choose to build homes, operate businesses, and engage in recreational activities in areas where wild-lands border more urban areas, the threat to private property from wildland fire increases. Creating "defensible" or "survivable" space around structures can make the difference between returning to an intact home or a smoldering pile of ashes if a wildfire moves through the area.

The risk from a wildland fire also depends on the type of fire that occurs. Generally wildland fires involve ground/surface fires or crown fires. A surface fire normally uses debris and grasses on the forest floor for fuel. Types of debris vary, but generally include such things as



fallen leaves and needles, twigs, bark, and low to medium shrubs, as well as fallen branches and logs. Historically surface fires were less intense, and actually helped keep the forest floor clean, thereby reducing the risk of a major fire. Fire suppression, along with other changes in wildland management, has resulted in a higher fuel load on the forest surface and a denser overall forest area. Figure 12 shows a representation of forest structures and fire hazards in dry forests of western United States.

Figure 12: Forest Structures and Fire Hazard in Dry Forest of Western US

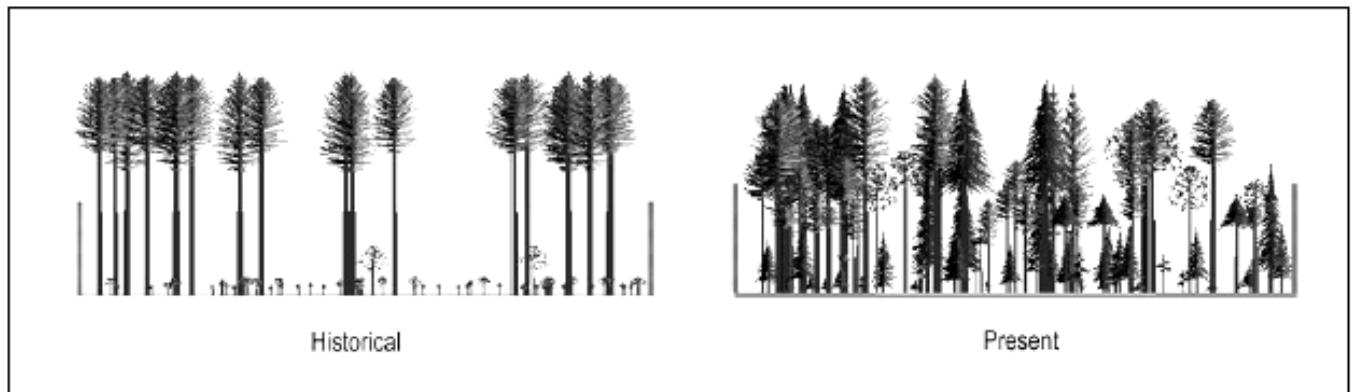


Figure 2—Representation of changes in vertical arrangement and horizontal continuity in forest stand structure. Today's forests tend to have more fuel strata, higher densities of fire-sensitive species and suppressed trees, and greater continuity between surface and crown fuel.

Source: Diagrams from USDA Publication "Forest Structure and Fire Hazard in Dry Forest of the Western United States," PNW-GTR-628.

As the surface fuel load has increased, ladder fuels have also increased. Ladder fuel includes small trees and under story shrubs that allow fire to burn into the forest canopy of the larger trees. As fires move into the forest canopy, there is a greater risk of crown fire. A crown fire is considered the most dangerous type of fire to both the forest and human life. Once a fire moves into the tree crowns, it spreads more quickly by wind and jumps from tree to tree. While surface fires can be effectively fought by firefighting efforts at ground level, a crown fire requires a more complicated approach.

The presence of a crown fire also increases the potential development of a fire storm. According to the U.S. Forest Service, a fire storm is "[v]iolent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface indrafts, near and beyond the perimeter and sometimes by tornado-like whirls." The occurrence of a fire storm increases the speed and destructive nature of a forest fire, thereby increasing the danger to structures in its path. Figure 13 shows a representation of the combustion environment of a forest.

Figure 13: Combustion Environment of a Forest

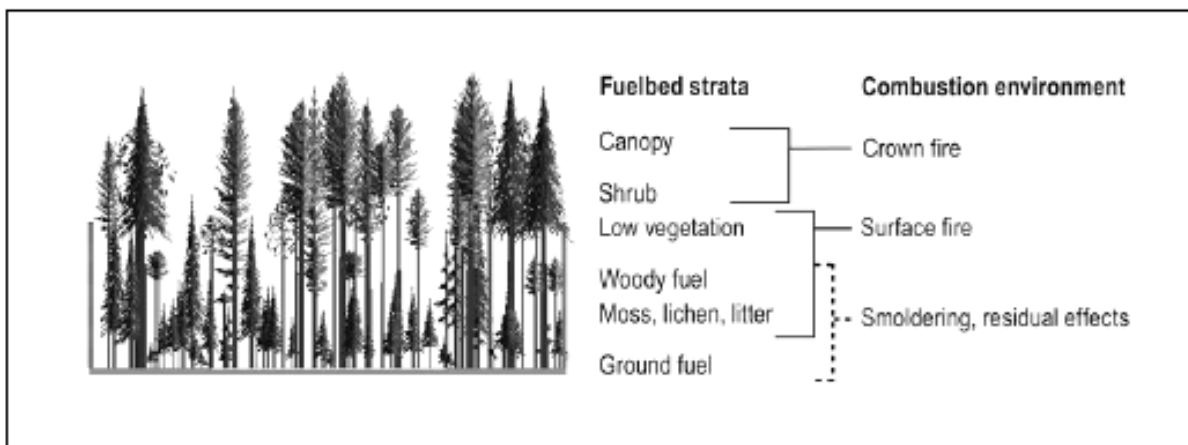


Figure 4—Fuelbed strata affect the combustion environment, fire propagation and spread, and fire effects. Note that woody surface fuel can also contribute to crown fires.

Source: Diagrams from USDA publication "Forest Structure and Fire Hazard in Dry Forest of the Western United States," PNW-GTR-628.

Hazard Characteristics

A wildfire is any fire occurring in a wildland area (e.g., grassland, forest, brush land) except for fire under prescription. Wildfires are part of the natural management of forest ecosystems, but may also be caused by human factors. Nationally, over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.

Severity of Occurrence

Topography, fuel, and weather are the three main factors that influence the behavior of a wildfire. Topography can direct the course of a fire. Depressions, such as canyons, funnel air and act as chimneys, intensifying the fire, causing a faster rate of spread. Saddles on ridge tops draw fires and steep slopes can double the rate of spread, due to the close proximity of fuel (vegetation). The rate of spread is generally stated in chains per hour, feet per minute, or meters per minute.

Fuel type, continuity of fuel, and the moisture content of the fuel all effect wildfire behavior. Continuity of fuel applies both horizontally across the landscape and vertically, from the ground surface up to tree crowns via the understory. Weather can have a profound influence on wildfires. Wind can direct the course of a fire and increase the rate of spread. High temperatures and low humidity can intensify fire, while low temperatures and high humidity can greatly limit the potential of a fire.

Many factors that determine the potential for fire include relative humidity, moisture content of the fuel, atmospheric stability, drought, available energy of the fuel, probability of ignition, rate of

spread, and the slope and fuel levels of the area. These factors are taken into account when determining the fire danger for a specific area.

Relative Humidity – Relative humidity is the ratio of the amount of moisture in the air to the amount of moisture necessary to saturate the air at the same temperature and pressure. Relative humidity (RH) is expressed in percent. RH is measured directly by automated weather stations or by taking wet and dry bulb readings with a psychrometer and then applying the National Weather Service psychrometric tables applicable to the elevations where the reading were taken.

Fuel Moisture – Fuel moistures in live herbaceous (annual and perennial), woody (shrubs, branches, and foliage) fuels, and dry (dead) fuels are calculated and represent approximate moisture content of the fuel. Fuel moisture levels are measured in 1-, 10-, 100-, and 100-hour increments.

The Lower Atmosphere Stability Index or Haines Index – This index is computed from the morning soundings from Radiosonde Observation (RAOB) stations across North America. The index is composed of a stability term and a moisture term. The stability term is derived from the temperature difference at two atmospheric levels. The moisture term is derived from the dew point depression at a single atmosphere level. This index has been shown to correlate with large fire growth on initiating and existing fires where surface winds do not dominate fire behavior. Haines Indexes range from 2 to 6 for indicating the potential for large fire growth:

- 2 = Very Low Potential (moist, stable lower atmosphere)
- 3 = Very Low Potential
- 4 = Low Potential
- 5 = Moderate Potential
- 6 = High Potential (dry, unstable lower atmosphere)

Keetch-Byram Drought Index (KBDI) – used to measure the affects of seasonal drought on fire potential. The actual numeric value of the index is an estimate of the amount of precipitation (in 100ths of inches) needed to bring soil back to saturation (a value of 0 being saturated). The index deals with the top 8 inches of soil profile so the maximum KBDI value is 800 (8 inches), the amount of precipitation needed to bring the soil back to saturation. The index's relationship to fire is that as the index values increase, the vegetation is subjected to greater stress because of moisture deficiency. At higher values, living plants die and become fuel, and the duff/litter layer becomes more susceptible to fire.

KBDI = 0–200: Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. This is typical of spring dormant season following winter precipitation.

KBDI = 200–400: Typical of late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity.



KBDI = 400–600: Typical of late summer, early fall. Lower litter and duff layers actively contribute to fire intensity and will burn actively.

KBDI = 600–800: Often associated with more severe drought with increased wildfire occurrence. Intense, deep burning fires with significant downwind spotting can be expected. Live fuels can also be expected to burn actively at these levels.

The Energy Release Component (ERC) – the estimated potential available energy released per unit area in the flaming front of a fire. The day-to-day variations of the ERC are caused by changes in the moisture contents of the various fuel classes, including the 1,000-hour time lag class. The ERC is derived from predictions of the rate of heat release per unit area during flaming combustion and the duration of flaming.

The Ignition Component – a number that relates the probability that a fire will result if a firebrand is introduced into a fine fuel complex. The ignition component can range from zero, when conditions are cool and damp, to 100 on days when the weather is dry and windy. Theoretically, on a day when the ignition component registers a 60 approximately 60% of all firebrands that encounter wildland fuels will require suppression action.

The Spread Component – a numerical value derived from a mathematical model that integrates the effects of wind and slope with fuel bed and fuel particle properties to compute the forward rate of spread at the head of the fire. Output is in units of feet per minute. A Spread Component of 31 indicates a worst-case, forward rate of spread of approximately 31 feet per minute. The inputs required in to calculate the SC are wind speed, slope, fine fuel moisture (including the effects of green herbaceous plants), and the moisture content of the foliage and twigs of living, woody plants. Since the characteristics through which the fire is burning are so basic in determining the forward rate of spread of the fire front, a unique SC table is required for each fuel type. (Indicators Source: http://www.nps.gov/nifc/public/pub_und_understandingfire.cfm)

The high risk conditions outlined above are found in the forests in McKinley County due to both the normal climate of the area and the current drought.

LOCATION

McKinley County – McKinley County has several WUI areas identified in the 2008 and 2013 McKinley County Community Wildfire Protection Plan (CWPP). A CWPP is a plan developed by a community in an area at-risk from wildfire. The Community Wildfire Protection Planning process is the collaboration between communities and agencies interested in reducing wildfire risk.

A valid CWPP has three minimum requirements. First, the plan must be collaboratively developed by local and state government representatives in consultation with federal agencies and other interested parties. Second, the plan must identify and prioritize areas for hazardous fuel reduction treatments, as well as recommending methods of treatments that will protect at-



SECTION 2 – Hazard Identification / Risk Assessment

risk communities and essential infrastructure. Third, the plan must recommend measures that homeowners and communities can take to reduce ignitability of structures throughout the area addressed by the plan

The statutory definition of a CWPP appears in Title I of the Healthy Forest Restoration Act of 2003 (HFRA). The HFRA decrees that communities, which have a CWPP in place, will be a priority for receiving hazardous fuels reduction funding administered by the USFS and BLM.

The CWPP was reviewed and information from this plan is the basis of the analysis of wildfire location and risk. In the CWPP a WUI was designated using a national dataset as a foundation. It was then modified based on local knowledge. McKinley County now has a locally designated WUI that was applied across all jurisdictions across the County. The wildfire risk was mapped across all jurisdictions within the counties using the 2010 NM Statewide Forest Resource Assessment but modified based on local knowledge and concerns. More discussion on risk levels and criteria can be found in the 2013 McKinley County CWPP (Appendix C, Figure 36 McKinley County Wildland Urban Interface Map). The 32 WUI areas identified and risk levels assessed within McKinley County are listed in Table 16.

Table 16: McKinley County WUI Risk Levels

McKinley County Community Risk Levels ¹⁰	
Community Name	Risk Rating
Crownpoint	Low
Gallup	Low
Mentmore Area	Area Low
Prewitt	Low
Rehoboth	Low
San Mateo	Low
Pueblo Pintado Area	Low
Chichiltah	Low/Medium
Continental Divide - Thoreau	Low/Medium
Fort Wingate	Low/Medium
Gamero - Twin Lakes Corridor	Low/Medium
Manuelito Area	Low/Medium
Nahodisgish	Low/Medium
Noble Acres-Skeets Road-Big Falls Road Corridor	Low/Medium
Pinedale - Mariano Lake	Low/Medium
Manuelito Area	Low/Medium

¹⁰ 2013 McKinley County CWPP



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McKinley County Community Risk Levels ¹⁰	
Community Name	Risk Rating
Tohatchi	Low/Medium
Bluewater Acres	Medium
Bluewater Village	Medium
Mexican Springs	Medium
Navajo Estates (Ya Ta Hey) - Tse Bonito Corridor	Medium
Pinehaven - Breadsprings	Medium
South Navajo - Highway 12 Corridor	Medium
Vanderwagon (Sagar Estates)	Medium
Zuni Pueblo - Highway 53 SW Corridor	Medium
Whispering Cedars	Medium
Black Rock - Vanderwagon Corridor	Medium/High
Navajo	Medium/High
Ramah	Medium/High
Ramah - Black Rock Corridor	Medium/High
Zuni Pueblo WUI - Black Rock	Medium/High
McGaffey Lake - Tampico Springs	High
Timberlake High	High

Source: McKinley County CWPP, 2013

The CWPP has identified two areas of high risk in an established WUI located in the Cibola National Forest to the southeast of Gallup. The McGaffey and Timberlake areas are primarily residential areas with no industrial or major commercial structures. The WUI in McGaffey and Timberlake includes forested areas existing in close proximity to residential structures.

Gallup – Due to limited fuel loads the areas in Gallup identified in the WUI have been assigned a low risk ranking. Appendix C, Table 37 provides a map of the WUI area for the McKinley County/City of Gallup.

PREVIOUS OCCURRENCES – WILDFIRE

Historically New Mexico's wildfire season runs from May through August. During this time period, the occurrence of two to three wild fires larger than 10 acres can be anticipated each year. However, the presence of drought conditions has spread the fire danger into February 2013, and it can last well into September 2013 which will increase the number of wildfire that can be expected each year. Table 17 provides the number of wildfires in McKinley County from 1986 through September 2013.



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Table 17: Wildfires in McKinley County from 1986 through September 2013

Fire Size Class (Acres)	Number of Fires	Fire Source		
		Lightening	Human	Unknown
A- 0-0.25	956	136	1525	3
B- 0.02-9.9	618			
C- 9.9-99.9	73			
D- 100-299.9	11			
E- 300.-999.9	4			
F- 1,000-4,999	1			
Total	1663			

Source: New Mexico EMNRD, State Forestry Division September 2013

Fire behavior is a description of the manner in which a fire reacts to the influences of fuel, weather, and topography. Fire behavior is observed and assessed at the flaming front of the fire and described most simply in terms of fire intensity (heat released) and rate of spread. The implications of observed or expected fire behavior are important components of suppression strategies and tactics, particularly in terms of the difficulty of control and effectiveness of various suppression resources. Fire risk is the probability that wildfire will start from natural or human-caused ignitions. Fire hazard is the presence of ignitable fuel coupled with the influences of topography and weather, and is directly related to fire behavior. Fire severity, on the other hand, refers to the immediate effect a fire has on vegetation and soils.

Frequency

According to the US Forestry Service, Wildfires can occur at any time of day and during any month of the year, but the peak fire season in New Mexico is normally from March through June. The length of the fire season and the peak months vary appreciably from year to year. Land use, vegetation, amount of combustible materials present, and weather conditions such as wind, low humidity, and lack of precipitation are the chief factors in determining the number of fires and acreage burned. Generally, fires are more likely when vegetation is dry from a winter with little snow and/or a spring and summer with sparse rainfall. Any small fire in a wooded area, if not quickly detected and suppressed, can spread out of control. Human carelessness, negligence, and ignorance cause most wildfires. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion.

Potential aftermath of wildfires in addition to damage to structures includes severe erosion, and the silting of streambeds and reservoirs, resulting in damage to the watershed, and flooding due to a loss of ground cover.

A Community Wildfire Protection Plan (CWPP) is a plan developed by a community in an area at-risk from wildfire. The Community Wildfire Protection Planning process is the collaboration between communities and agencies interested in reducing wildfire risk. A valid CWPP has three



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minimum requirements. First, the plan must be collaboratively developed by local and state government representatives in consultation with federal agencies and other interested parties. Second, the plan must identify and prioritize areas for hazardous fuel reduction treatments, as well as recommending methods of treatments that will protect at-risk communities and essential infrastructure. Third, the plan must recommend measures that homeowners and communities can take to reduce ignitability of structures throughout the area addressed by the plan.

The statutory definition of a CWPP appears in Title I of the Healthy Forest Restoration Act of 2003 (HFRA). The HFRA decrees that communities, which have a CWPP in place, will be a priority for receiving hazardous fuels reduction funding administered by the USFS and BLM. Figure 14 on the following page shows Community Wildfire Protection Plan (CWPP) coverage in New Mexico as of January 2013 identifies a current McKinley County (City of Gallup) CWPP.



Figure 14: New Mexico CWPP Coverage as of January 2013



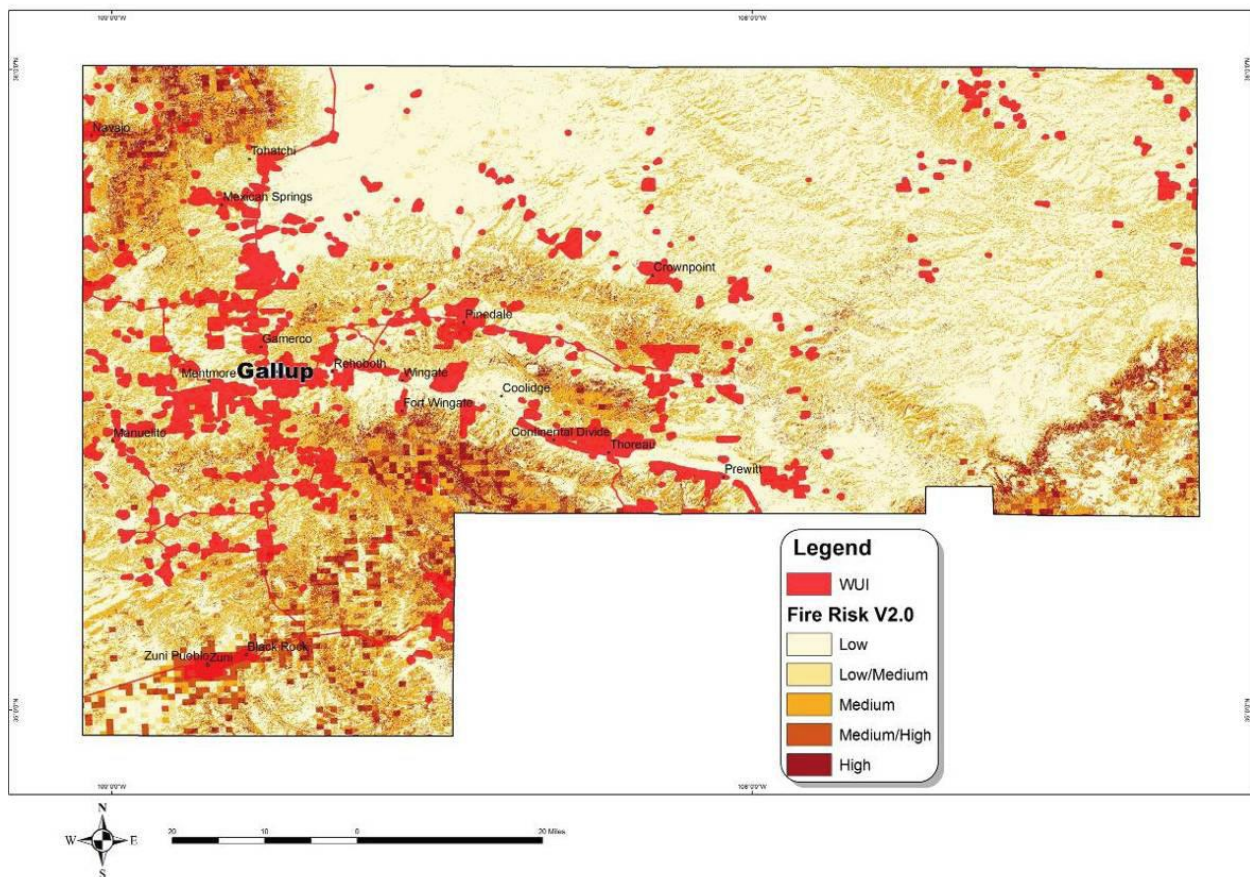
Source: New Mexico Fire Plan <http://www.emnrd.state.nm.us/SFD/FireMgt/Fire.html>; Coverage as of January 2013

Extent of Wildfires in McKinley County and the City of Gallup

McKinley County

The total area of McKinley County is 3.4 million acres or 5,455 square miles. The recent McKinley County CWPP updated in April of 2013 identified that roughly 70% of the WUI is mapped as having a low wildfire risk. 2.3% having a medium risk, .05% having a medium/high risk and roughly 0.2% having a high risk. Referencing Figure 15, the entire planning area of the county is at some type of risk from a wildfire and can expect to experience between a low to high wildfire risk. Table 16 outlines those communities in the county by their risk to a wildfire. Based on the CWPP over 70% of the county can expect to experience a wildfire or the affects of a wildfire.

Figure 15: McKinley County WUI Fire Risk



Source: McKinley County CWPP; April 2013

City of Gallup

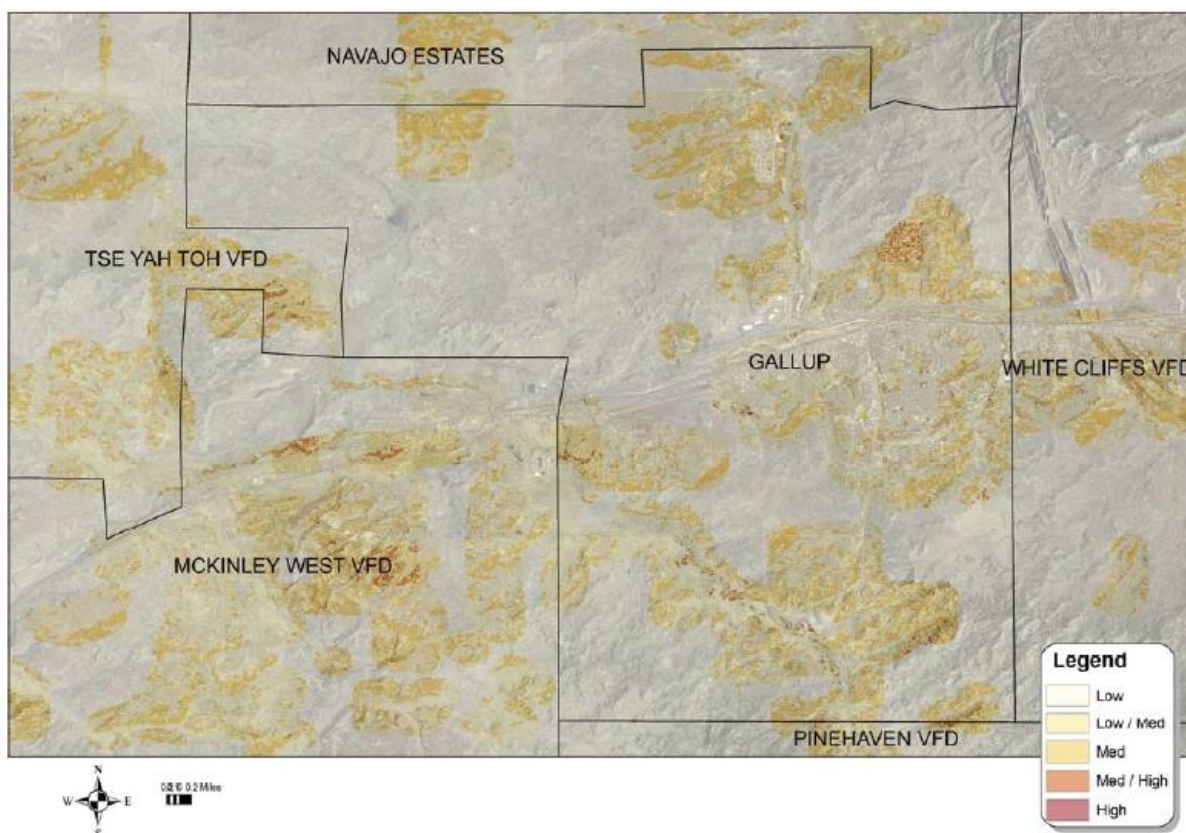
The wildland vegetation of the Gallup fire district is characterized by grassland, low density shrubland, piñon-juniper shrubland and limited pockets of piñon-juniper woodlands. The values at risk includes homes, businesses, communication towers, transportation, municipal,

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education, and agriculture and rangeland infrastructure. Land jurisdiction in this fire district is dominated by private and municipal lands with smaller amounts Navajo Nation, BLM, and state trust lands.

A wildfire event in the municipality of Gallup will likely be wind driven, consuming refuse, weeds, landscaping, and urban trees. A wildfire event in the residential WUI areas north and south of the municipality will likely be either spotty torching or given moisture and wind conditions, a crown fire in the piñon-juniper systems. Wildfire risk could be increased after a high moisture season that allows a meaningful understory response in either native or non-native plants that add to fuel load and continuity. Referencing Figures 15 and 16, the City of Gallup and area surrounding can expect to experience a low to medium risk of a wildfire or the effects from a wildfire. Though low to medium in risk, the entire planning area of the city can be affected by a wildfire.

Figure 16: City of Gallup WUI Areas



Source: McKinley County CWPP; April 2013

The impact of wildfires in McKinley County and City of Gallup should not be measured by the number of acres or structures burned or the actual cost of suppression only. A recent study, *The Full Cost of New Mexico Wildfires*, January 2013 sites less obvious costs:

- Alteration of wildlife habitat



- Damage to watershed and water supply
- Damage to public recreation facilities
- Evacuation of adjacent communities
- Tourism impact
- Damage to timber resources
- Destruction of cultural and archaeological sites
- Costs of rehabilitation and restoration
- Public health impacts
- Transpiration impacts.

These costs do not end when the wildfire is contained but can continue for years after an event. Additionally these impacts will affect neighboring communities with no regard to political boundaries.

PROBABILITY OF OCCURRENCES – WILDFIRE

To determine the probability of McKinley County and the City of Gallup experiencing future wildfire, the probability or chance of occurrence was calculated based on historical data provided by local authorities. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. Table 18 identifies the probability Of the McKinley County and the City of Gallup experiencing a wildfire event.

Table 18: Probability of Occurrence Wildfire

Probability of Occurrence in any Given Year	
Location	Wildfire
McKinley County	100%
City of Gallup	The City of Gallup is not located in the WUI, however, the City will be impacted by wildfires in the outlying areas of McKinley County

The present fuel load in the Cibola National Forest (McKinley County) has increased due both to the drought and the cessation of thinning that has been used in the past to reduce the available slash. In addition to the present drought conditions, McKinley County, like most of New Mexico, experienced a very moist period during the 1980s and 1990s. The result of this additional moisture was an increase in new growth and the invasion of wetter, higher altitude vegetation into the region's lower, normally drier areas. The present drought conditions are causing this newly-introduced vegetation to die off, which is adding to the fuel load up area.



The MPT did not provide data for wildfires in the City of Gallup. In the event of a wildfire near the city, the affects from a wildfire (i.e., smoke and falling debris) would affect the residents, especially the elderly.

CONCLUSIONS - WILDFIRES

Summary of Hazard Identification and Vulnerability Assessment

More than 30 WUI areas have been identified in McKinley County. Additionally in McKinley County, the forests and woodlands represent the upper portions of watersheds and important social and economic resources. A large-scale wildfire in the forests would have devastating effects on personal fuelwood collection, recreation, eco-tourism (hunting, fishing, hiking, cycling, etc.), ecological values, and long-term watershed integrity and sustainability for the County.

What Can Be Mitigated?

WUI studies suggest that the intense radiant heat of a wildfire is unlikely to ignite a structure that is more than 30 feet away as long as there is no direct flame impingement. Studies of home survivability indicate that homes with noncombustible roofs and a minimum of 30 feet of defensible space have an 85-percent survival rate.¹¹ Conversely, homes with wood shake roofs and less than 30 feet of defensible space have a 15 percent survival rate. During a wildfire, structures will burn, wildlife will die or be injured due to burns or smoke inhalation, and death/injury to humans may occur. Wildfires may also create mudslides, landslides by removing the vegetative covering along slopes, and floods and flashfloods due to heat damaged soils that can resist water penetration.

A WUI involves areas where communities and wildland fuel intermix. Every fire season, catastrophic losses occur as a result of wildfire in WUI areas throughout the western United States. Homes are lost, businesses are destroyed, community infrastructure is damaged, and most tragically, lives are lost. Precautionary action taken before a wildfire strikes often makes the difference between saving and losing a structure. Creating a defensible space around homes, businesses, and other structures is an important component in wildfire hazard reduction. Providing an effective defensible space can be as basic as pruning trees, planting low-flammable vegetation, and cleaning up surface vegetation-fuels and other hazards near a home. These efforts are typically concentrated at a minimum of 30 feet from a building to increase the chance for structure survival and to create an area for firefighters to safely work

Data Limitations

No information on housing units in the WUI was found for McKinley County. Digital rural addressing in McKinley County is sporadic in the outlying areas. The CWPP is often the source of housing and other structures at risk in the WUI, however, the McKinley County CWPP did not provide this information.

¹¹ Cohen, Jack; Saveland, Jim. 1997. Structure ignition assessment can help reduce fire damages in the WUI



Severe Weather

McKinley County can anticipate some form of severe weather activity based upon seasonal meteorological patterns and local topographical conditions every year. It is susceptible to a full range of severe weather conditions, including high winds, substantial rainfall, thunderstorms, dangerous lightning, dust storms, hail, and periodic temperature extremes.

HAZARD CHARACTERISTICS - THUNDERSTORMS

Thunderstorms are produced when warm moist air is overrun by dry cool air. As the warm air rises, thunderheads form and cause strong winds, lightning, hail, and heavy rains. Atmospheric instability can be caused by surface heating or by upper tropospheric (>50,000 feet) divergence. Rising air parcels also can result from airflows over mountainous areas. Generally, air mass thunderstorms form on warm-season afternoons and are not severe. The latter, dynamically-driven thunderstorms, which generally form in association with a cold front or other regional atmospheric disturbance, can become severe, thereby producing strong winds, frequent lightning, hail, downburst winds, heavy rain, and occasional tornadoes.

All areas of the state have thunderstorms. According to the National Weather Service (NWS), the thunderstorm season in New Mexico begins over the high plains in the eastern part of the state in mid- to late April, peaks in May and June, declines in July and August, and then drops sharply in September and October. In the western part of the state, thunderstorms are infrequent during April, May, and June, increase in early July and August, and then decrease rapidly in September. Over the central mountain chain, thunderstorms occur almost daily during July and August, especially over the northwest and north central mountains.

Thunderstorms may have different characteristics in different regions of the state. Across the eastern plains, thunderstorms tend to be more organized, long-lived, and occasionally severe, producing large hail, high winds, and tornadoes. Thunderstorms in the western part of the state tend to be less severe on average, occasionally producing life-threatening flash floods and small hail accumulations. Most of the storms in central and western New Mexico are associated with the southwest monsoons, which mainly produce flash floods (see – Floods/Flash Floods subsection of this Plan for more information about flooding in McKinley County).

Lightning is defined as a sudden and violent discharge of electricity, usually from within a thunderstorm, due to a difference in electrical charges. Lightning is a flow of electrical current from cloud to cloud or cloud to ground. Nationwide, lightning causes extensive damage to buildings and structures, kills or injures people and livestock, starts forest and wildfires, and disrupts electromagnetic transmissions. Lightning is extremely dangerous during dry lightning storms because people often remain outside rather than taking shelter. To the general public, lightning is often perceived as a minor hazard. However, lightning-caused damage, injuries, and deaths establish lightning as a significant hazard associated with any thunderstorm. Damage from lightning occurs four ways:

1. Electrocution or severe shock of humans and animals,



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2. Vaporization of materials along the path of the lightning strike,
3. Fire caused by the high temperatures (10,000-60,000°F); and
4. A sudden power surge that can damage electronic equipment.

Large outdoor gatherings (e.g., sporting events, concerts) are particularly vulnerable to lightning strikes. New Mexico ranks sixth in the nation in lightning fatalities with 0.55 deaths per million people annually. Lightning usually occurs as a result of thunderstorms that move through New Mexico during the summer months, with peak lightning strikes occurring in July and August. Lightning does not normally cause significant damage to property; however, it is responsible for numerous power outages and is the leading cause of weather-related injuries and fatalities in New Mexico.

According to National Centers for Health Statistics (NCHS 2010) multiple-cause-of-death tapes and the Census of Fatal Occupational Injuries (CFOI 2010), New Mexico had 374 lightning related fatalities between 1995 and 2000. As published in the NM DHSEM Hazard Mitigation Plan (2013), New Mexico has a 100 percent probability of a lightning event and a fatality every year somewhere within the State.

The Lightning Activity Level (LAL) is a scale from 1 to 6, which describes frequency and character of cloud-to-ground (cg) lightning (Table 19). The lightning activity level is a number developed in order to help land management and fire protection agencies prepare for the possibility of lightning-caused wildland fires. It is designed to indicate both the amount of lightning associated with thunderstorms, if there are any, as well as whether or not there will be wetting rains accompanying the storms.

Table 19: Lightning Activity Level Scale

Lightning Activity Level				
	Cloud and Storm Development	Counts cg / 5 min	Counts cg / 15 min	Average cg / min
1	No thunderstorms	-	-	-
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	-	-	-

Source: <http://www.crh.noaa.gov/bis/?n=lalinfo>



Hail is occasional weather event in the entire planning area of McKinley County area to include the City of Gallup. A hailstorm is a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches (3/4- inch) in diameter fall with rain. Hail size and hailstorm intensity is measured on the TORRO Scale (Table 20). The size of the hail is directly related to the size and severity of the storm. As a hail storm develops, ice crystals form in a low-pressure front due to rapidly rising warm air into the upper atmosphere and subsequent cooling of that air mass. Water droplets freeze to the surface of the ice crystal, gradually increasing their size and weight. When the ice crystals become too heavy to remain aloft, they fall as precipitation.

Severity and Probability of Occurrence

The NWS definition of a severe thunderstorm is a thunderstorm that produces any of the following: downbursts with winds of 58 miles per hour (mph) (50 knots) or greater (often with gusts of 74 mph or greater), hail 0.75 of an inch in diameter or greater, or a tornado. Typical thunderstorms can be three miles wide at the base, rise to 40,000-60,000 feet into the troposphere, and contain half a million tons of condensed water. Severe thunderstorms are reported each year in McKinley County and the City of Gallup.

Table 20: TORRO Hailstorm Intensity Scale

Intensity Code	Intensity Category	Maximum Diameter – Inches (mm)	Description	Typical Damage Impacts
H0	Hard Hail	1/8" – 3/8" (5-9)	Pea	No damage.
H1	Potentially Damaging	3/8" – 1/2" (10-15)	Mothball	Slight damage to plants, crops.
H2	Potentially Damaging	5/8" – 3/4" (16-20)	Grape	Significant damage to fruit, crops, vegetation.
H3	Severe	3/4" – 1 1/8" (21-30)	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	Severe	1 1/4" – 1 1/2" (31-40)	Robin's Egg	Widespread glass damage, vehicle bodywork damage.
H5	Destructive	1 5/8" – 2" (41-50)	Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	Destructive	2" – 2 3/8" (51-60)	Chicken Egg	Aircraft bodywork dented, brick walls pitted.
H7	Very Destructive	2 3/8" – 3" (61-75)	Tennis Ball	Severe roof damage, risk of serious injuries.
H8	Very Destructive	3" – 3 1/2" (76-90)	Softball	Severe damage to aircraft bodywork.
H9	Super Hailstorm	3 1/2" – 4" (91-100)	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.
H10	Super Hailstorm	>4" (>100)	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

Source: <http://www.torro.org.uk/site/hscale.php>



High Wind

Wind is defined as the motion of air relative to the earth's surface. In the mainland U.S., the mean annual wind speed is reported to be 8 to 12 mph, with frequent speeds of 50 mph and occasional wind speeds greater than 70 mph. Large-scale extreme wind phenomena are experienced over every region of the United States and its territories. High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds (high or low-pressure systems) moving across a region. High winds are defined as speeds reaching 50 mph or greater, either sustained (continuous) or gusting.

While scales exist to measure the effects of wind, they can be conflicting or leave gaps in the information. For the purposes of this plan, we use the Beaufort Wind Scale (Table 21) because it is specifically adapted to wind effects on land.

Table 21: Beaufort Wind Scale

Beaufort Wind Scale			
Beaufort Number	Wind Speed mph	Description	Land Conditions
0	0	Calm	Calm. Smoke rises vertically.
1	1-3	Light air	Wind motion visible in smoke.
2	4-7	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	Moderate breeze	Dust and loose paper rises. Small branches begin to move.
5	19-24	Fresh breeze	Smaller trees sway.
6	25-31	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	Near gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	Strong gale	Light structure damage.
10	55-63	Storm	Trees uprooted. Considerable structural damage.
11	64-73	Violent storm	Widespread structural damage.
12	73-95	Hurricane	Considerable and widespread damage to structures.



PREVIOUS OCCURRENCES – HIGH WIND

McKinley County and the City of Gallup

The entire planning area of McKinley County and the City of Gallup experiences some form of high wind activity annually, based on seasonal meteorological patterns and local topographical conditions. The county and city are susceptible to high wind events as identified on Table 22. All areas of the county/city are susceptible to high wind conditions, although local topography, such as elevation and land contours, plays a significant part in how high winds affect a specific area. Referencing Beaufort Wind Scale, Table 21, McKinley County and the City of Gallup could experience 0-10 on the chart. For the purpose of this report, all areas of McKinley County and the City of Gallup are considered equally vulnerable to high wind events.

Table 22: Previous High Wind Events in McKinley County and City of Gallup

Location	Date	Type	Mag	Dth	Inj	PrD	CrD
McKinley County	10/10/2013	High Wind	61 kts.	0	0	48.00K	0.00K
McKinley County	12/4/2013	High Wind	51 kts.	0	0	0.00K	0.00K
McKinley County	2/19/2014	High Wind	51 kts.	0	0	0.00K	0.00K
McKinley County	2/27/2014	High Wind	53 kts.	0	0	0.00K	0.00K
McKinley County	3/26/2014	High Wind	54 kts.	0	0	10.00K	0.00K
McKinley County	3/26/2014	High Wind	51 kts.	0	0	0.00K	0.00K
McKinley County	3/30/2014	High Wind	51 kts.	0	0	0.00K	0.00K
McKinley County	3/30/2014	High Wind	53 kts.	0	0	0.00K	0.00K
McKinley County	4/1/2014	High Wind	37 kts.	0	0	0.00K	0.00K
Gallup Airport	4/13/2014	Thunderstorm Wind	58 kts.	0	0	0.00K	0.00K
McKinley County	6/14/2014	High Wind	50 kts.	0	0	0.00K	0.00K
McKinley County	6/16/2014	High Wind	50 kts.	0	0	0.00K	0.00K
Totals:				0	0	58.00K	0.00K

Source: NCDC Data Base

High wind is a fact of life for McKinley County and City of Gallup residents, especially in the spring. High winds can result in downed power lines, roof damage, trees being blown down, and difficulty in controlling high profile vehicles on the highways. Microburst wind damage is more common, since it is often associated with powerful downdrafts originating from thunderstorms. These winds are of relatively short duration. Localized dust storms can arise unexpectedly when high winds pick up dust and debris from construction sites.

The effects of high wind storms can topple manufactured homes, destroy buildings, lift cars, snap trees (which create roadblocks), topple power lines (can cause an electrocution hazard and cripple local infrastructure), and cause injury and death.



The MPT did not have available a data base of previous high wind events but the NCDC events table did provide some reported previous events (Table 22). The MPT will update this section accordingly to account for those high wind events in the future and during required plan maintenance.

Location of High Wind Events

The entire planning area of McKinley County and the City of Gallup experience some form of high wind activity annually, based on seasonal meteorological patterns and local topographical conditions. The county and city are susceptible to high wind events. All areas of the county and city are susceptible to high wind conditions, although local topography, such as elevation and land contours, plays a significant part in how high winds affect a specific area. For the purpose of this report, all areas of the county and city are considered equally vulnerable to high wind events.

High Wind Extent for McKinley County and the City of Gallup

McKinley County

McKinley County experiences some form of high wind activity annually, based on seasonal meteorological patterns and local topographical conditions. The County is susceptible to high wind events. All areas of McKinley County are susceptible to high wind conditions, although local topography, such as elevation and land contours, plays a significant part in how high winds affect a specific area. For the purpose of this report, all areas of the County are considered equally vulnerable to high wind events.

McKinley County expects to experience between 0 and 10 Beaufort categories (Table 21). As used in this section, windstorms are both high velocity straight-line winds and violent wind gusts that may be associated with thunderstorms. Dust storms are strong windstorms that fill the air with thick dust, sometimes reducing visibility to resemble a dense fog. Other wind events include wet or dry microbursts that may produce damaging convective winds and dust devils even on a clear and otherwise calm day.

City of Gallup

Like McKinley County, the City of Gallup experiences some form of high wind activity annually, based on seasonal meteorological patterns and local topographical conditions. The City is susceptible to high wind events. Like the County, the City of Gallup expects to experience between 0 and 10 Beaufort categories (Table 21). The effects of high wind storms can topple manufactured homes, destroy buildings, lift cars, snap trees (which create roadblocks), topple power lines (can cause an electrocution hazard and cripple local infrastructure), and cause injury and death.

What Can Be Mitigated?

One important part of mitigating high wind hazards is forecasting and warning so that people can prepare. Communities can prepare for disruptions of utilities and transportation due to high



wind events by advising people to stay home or to use caution if they must go out, and by recommending that people stock up on food, water, batteries, and other supplies. The National Weather Service, combined with local television stations, have an effective strategy for notifying residents about impending wind events. Consistently enforcing building codes provides the greatest benefit for new construction to mitigate damages due to wind events. For existing structures and critical facilities, follow-up inspections and retrofits provide effective mitigation.

Data Limitations

Manufactured homes that are not adequately anchored are the most vulnerable structures for damage from high wind events. The information necessary to determine the location and condition of manufactured homes and aged or dilapidated structures was not available during the update of this mitigation plan. Consequently, the Mitigation Planning Team could not quantify vulnerability of individual structures to damage from high winds. In addition, accurate methods to quantify potential future damages are not readily available. The amount of business lost due to high wind events has not been calculated due to the difficulty of attaining this information. The Mitigation Planning Team could also not specify which critical facilities were vulnerable to high wind events. Subsequent versions of this Plan will need to incorporate and respond to these data deficiencies.

PREVIOUS OCCURRENCES – THUNDERSTORMS

McKinley County

There were 29 significant thunderstorm related events recorded by NOAA's NCDC database in McKinley County from January 1997 to June 2013. These events have resulted in over \$600,000 dollars in damages, six deaths and 2 injuries. Table 23 provides an overview of those events that were reported in the unincorporated County. This list may include some areas located on the Navajo Reservation located within the County boundaries.

Table 23: Significant Severe Weather Events (Thunderstorm, Hail and Lightning) from June 1997 to December 2013

Date	Location in the County	Event	Damage	Death or Injury
8/23/10	Mentmore	Thunderstorm causes Flash flood	40,000	
8/02/10	Rehobeth	Thunderstorm causes Flash flood	120,000	
8/02/10	Iyanbito	Thunderstorm causes Flash flood	20,000	
8/02/10	South Chaves	Thunderstorm causes Flash flood	50,000	
8/01/10	Prewitt	Thunderstorm causes Flash flood	8,000	



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Date	Location in the County	Event	Damage	Death or Injury
8/01/10	Manuelito	Thunderstorm causes Flash flood	87,000	
7/31/10	South Chaves	Thunderstorm causes Flash flood	50,000	
7/31/10	Church Rock	Thunderstorm causes Flash flood	120,000	
7/31/10	Iyanbito	Thunderstorm causes Flash flood	20,000	
9/05/09	Pinehaven Church	Hail	None reported	
9/05/09	Upper Nutria	Thunderstorm causes Flash flood	25,000	
9/05/09	Ramah	Thunderstorm causes Flash flood	5,000	
9/05/09	Pinedale	Thunderstorm causes Flash flood	5,000	
8/6/08	Mexican Springs	Thunderstorm causes Flash flood	5,000	
8/6/08	Ramah	Thunderstorm causes Flash flood	500	
8/24/07	Zuni	Thunderstorm causes Flash flood	\$28,000	
9/2/06	Zuni	Thunderstorm causes Flash flood	None reported	
9/2/06	Tohatchi	Thunderstorm causes Flash flood	None reported	
8/24/06	Church Rock	Thunderstorm causes Flash flood	Non reported	
9/8/05	Church Rock	Thunder Storm causes Flash flood	None reported	2 deaths
9/9/03	Tohatchi	Thunderstorm causes Flash flood	None reported	
7/11/08	Gamerco	Thunderstorm causes Flash flood	40,000	3 deaths
6/7/99	Crownpoint	Hail	None reported	
9/29/98	Vanderwagon	Hail	None reported	
9/20/98	Zuni	Hail	None reported	
12/27/97	Gamerco	Cold/wind/chill	None reported	1 death



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Date	Location in the County	Event	Damage	Death or Injury
9/20/97	Thoreau	Thunderstorm causes Flash flood	Non reported	
8/23/97	Whitewater	Lightning	None reported	2 injuries
Total			\$623,500	Thunder Storm causes Flash flood

Source: www.ncdc.noaa.cgi-win, October 2013

City of Gallup

There were 12 significant thunderstorm related events recorded by NOAA's NCDC database in Gallup from January 1997 to June 2013. These events have resulted in over \$161,000 dollars in damages, two deaths and 1 injury. Table 24 provides an overview of those events that were reported in the City of Gallup.

Table 24: Significant Severe Weather Events (Thunderstorm, Hail and Lightning) from June 1997 to December 2013

Date	Event	Damage	Death or Injury
8/13/11	Thunderstorm causes Flash flood	5,000	
10/20/10	Hail	None reported	
6/23/08	Thunderstorm wind	None reported	
8/11/05	Heavy rain	15,000	
7/12/03	Thunderstorm wind	15,000	
7/22/02	Thunderstorm causes Flash flood	100,000	
7/19/98	Thunderstorm wind	25,000	
6/07/98	Thunderstorm wind	\$1,000	
9/21/97	Thunderstorm causes Flash flood	None reported	1 death 1 injury
9/21/97	Hail	None reported	
9/13/97	Thunderstorm causes Flash flood	None reported	1 death
9/08/97	Heavy rain	None reported	
Total		\$161,000	1 injury 2 deaths

Source: www.ncdc.noaa.cgi-win, October 2013



VULNERABILITY ASSESSMENT—THUNDERSTORMS

Existing Community Assets

Vulnerability to the effects of severe thunder storms, lightning and hail on buildings is dependent on the age of the building (and what building codes were in effect at the time it was built), type of construction, and condition of the structure (i.e., how well the structure has been maintained).

EXTENT OF THUNDERSTORMS IN MCKINLEY COUNTY AND CITY OF GALLUP

A thunderstorm is measured in terms of intensity based on the strength of the wind speeds or significant winds associated with the thunderstorm event. Table 21 depicts intensity for thunderstorms according to wind magnitude published by the World Meteorological Organization (WMO).

A thunderstorm event is typically defined by the National Climatic Data Center (NCDC) based on the intensity and magnitude of wind events associated with the thunderstorm, which can affect the planning area randomly. On average, an intense wind event to be mitigated for each of the jurisdictions could have wind speeds over 50 miles per hour, a Force 9 from the Beaufort Wind Scale. Since the greatest wind speed recorded for the McKinley County is 61 knots and 58 knots for the preparation for a thunderstorm, the extent to be mitigated is a Force 10.

All areas of McKinley County and the City of Gallup are susceptible to thunderstorms, although local topography, such as elevation and land contours, plays a significant role in how weather affects a particular area. Thunderstorms can be either localized or widespread so their impact can vary depending on the size, strength and speed of the storm. At the time of storm occurrence, one neighborhood may experience severe damage while another, located nearby, escapes with minimal impact. Large-scale thunderstorms with multiple lightning strikes, hail and high wind would create the most impact over a wide area.

As reported in Tables 23 and 24, the county and city has experienced all types of thunderstorm characteristics as mentioned in the hazard characteristics. For planning purposes a large thunderstorm (lightening/wind/hail) will affect all planning areas of McKinley County and the City of Gallup. Lightening and wind have accumulated damage throughout the county and city. Referencing TORRO Hail Storm Intensity Scale, Table 20, the county and city have had hail storm events that can be classified as far as H5 intensity code.

Referencing lightening, NCDC database shows previous occurrences for McKinley County but none for the City of Gallup. During mitigation meetings, the MPT did state there have been previous occurrences in the city but records were not kept on impact and severity of those strikes. As future updates occur those significant hail storm events will be included. For purposes of mitigation planning, the entire planning area of the county and city are vulnerable to the affects of lightening during a thunderstorm event.



The entire planning area of McKinley County to include the City of Gallup expects to experience a thunderstorm event.

EXTENT OF HAIL IN MCKINLEY COUNTY AND CITY OF GALLUP

Most hailstorms occur during the spring (March, April and May) and in the fall during the month of September. Warning time for a hailstorm is generally minimal or there is no warning. The National Weather Service classifies a storm as severe if hail of three-quarters of an inch in diameter (approximately the size of a penny) or greater is imminent based on radar intensity or seen by observers. Hail can be produced from many different types of storms. Typically, hail occurs with thunderstorm events. The size of hail is estimated by comparing it to a known object. Most hail storms are made up of a variety of sizes, and only the very largest hail stones pose serious risk to people, if exposed.

The severity of hail events range based on the size of hail, winds, and structures in the path of a hailstorm. Storms that produce high winds in addition to hail are most damaging and can result in numerous broken windows and damaged siding. Hailstorms can cause extensive property damage affecting both urban and rural landscapes. Fortunately, most hailstorms produce marble-size or smaller hailstones. These can cause damage to crops, but they normally do not damage buildings or automobiles. Larger hailstones can destroy crops, livestock and wildlife and can cause extensive damage to buildings, including roofs, windows and outside walls. Vehicles can be total losses. When hail breaks windows, water damage from accompanying rains can also be significant. A major hailstorm can easily cause damage amounting into the millions of dollars. Nationwide hail is responsible for over one billion dollars in property and crop damages per year. Table 20, TORRO Hailstorm intensity scale, shows the different types of hail and the comparison to real-world objects.

The range of intensity for a hailstorm event for McKinley County and the City of Gallup is expected anywhere from an H0 to an H5 on the Hail Intensity Scale (Table 20). Based on the previous occurrences and discussion provided by the MPT, the area has experienced an H5 event; hailstorms in the region have produced hail at least 2.0 inches in diameter. Hailstorms are not limited to any particular geographic area of the County and or City, and neither the duration of the storm nor the extent of area affected by such an occurrence can be predicted. All communities in the planning area are equally susceptible to hail events and should mitigate to an extent of an H5 hail event as many jurisdictions have experienced hail at least 2.0 inches in diameter.

EXTENT OF LIGHTNING IN MCKINLEY COUNTY AND CITY OF GALLUP

McKinley County and the City of Gallup have experienced lightning events based data from the NCDC and comments provided by the MPT and the wildfire in McKinley County Chart (Table 17). Specific records are not kept at the local level. Though difficult to predict the location of a strike and the extent, previous occurrences documented in the wildfire section and by MPT eyewitnesses, the probability is high for this area. Officials of each participating jurisdiction



consider all thunderstorm events which contain lightning to be severe events and warrant evasive actions.

McKinley County and the City of Gallup experience lightning on a fairly regular basis. The New Mexico Hazard Mitigation Plan 2013 reports that New Mexico ranks sixth in the nation in lightning fatalities with 0.55 deaths per million people annually. The State ranks 22 in lightning frequency overall. While typical thunderstorms can be expected 100% annually, thunderstorms that are capable of producing lightning and hail severe enough to threaten safety and property is considered high. McKinley County and the City of Gallup expect to experience lightning strikes and thunderstorms annually.

Critical Facilities

Critical facilities are typically vulnerable to wind damage, lightning and hail due to age of construction and possible poor condition. No specific critical facilities were identified as vulnerable to strong winds, lightning or hail; however, emergency communications capabilities, which use unreliable electric and telephone services, may be vulnerable to disruption.

Most critical facilities in the county and city are vulnerable to the effects of severe storms, due to potential disruption of services and transportation systems as well as possible structural failure due to high winds, lightning or hail.

Summary of Hazard Identification and Vulnerability Assessment

McKinley County and the City of Gallup experience a range of severe weather hazards, including thunderstorms, lightning, hail storms, and high winds. Features like lightning, heavy rain, and high winds can damage utility infrastructure, aged or dilapidated structures, and other assets in the county and city.

What Can Be Mitigated?

Because severe weather can affect the entire county and city, effective mitigation efforts should have widespread benefits. Such far-reaching efforts would include public information capabilities, warning systems, and regulations guiding new development. Upgrading and consistently enforcing building codes and addressing structural issues provide the greatest benefit for new construction. Inspections and retrofits for existing critical facilities provide effective mitigation in a developing area. Because of time and budget realities, structure-by-structure mitigation projects would not be feasible on a broad scale; upgrading vulnerable critical facilities for specific hazards is more feasible.

Data Limitations

The county and city have not developed a detailed property database with the information necessary to determine the location and condition of manufactured homes and aged or dilapidated structures. Consequently, the Mitigation Planning Team could not determine vulnerability to high winds and other severe weather features.



HAZARD PROFILE – EXTREME HEAT

Hazard Characteristics – Extreme Heat or Heat Wave

According to NOAA, the decade from 2000 to 2010 was the warmest on record, and 2010 was tied with 2005 as the warmest year on record. Warmer temperatures are accompanied by other changes in weather and climate. Many places have experienced changes in rainfall resulting in more intense rain, as well as more frequent and severe heat waves (EPA.gov, 2013).

Heat waves are long periods of abnormally high temperatures. There is generally no universal definition of a heat wave because of the variation within temperatures are different in geographic locations. Along with the excessive heat, they are can be accompanied by high levels of humidity. These two characteristics increase the relative temperature or heat index to dangerous levels.

Because heat waves are not visible as other forms of severe weather are, like tornadoes, and thunderstorms, they are one of the less known forms of extreme weather. This severe weather phenomenon can effect populations due to potential dehydration or hyperthermia. Heat cramps, heat expansion, heat stroke, and dehydration can result in human populations. The dried soils are more susceptible to erosion, decreasing lands available for agriculture. Outbreaks of wildfires can increase in frequency as dry vegetation has increased likeliness of igniting. The evaporation of bodies of water can be devastating to livestock and other animal populations may decline as well. Power outages can also occur within areas experiencing heat waves due to the increased demand for electricity to cool.

Extreme Heat

Extreme heat, or heat wave, is defined by the NWS as a temperature of ten degrees or more above the average high temperature for the region, lasting for several weeks. This condition is definitely a public health concern. During extended periods of very high temperatures or high temperatures with high humidity, individuals can suffer a variety of ailments, including heatstroke, heat exhaustion, heat syncope, and heat cramps.

- **Heatstroke** is a life threatening condition that requires immediate medical attention. It exists when the body's core temperature rises above 105° F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death-to-care ratio in reported cases in the U.S. averages about 15%.
- **Heat exhaustion** is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness, or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.
- **Heat syncope** is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns



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promptly when the person lies down. The cause is primarily associated with circulatory instability because of heat. The condition typically causes little or no harm to the individual.

- **Heat cramps** are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion, it is thought to be a result of a mild imbalance of fluids and electrolytes.

In an average year, extreme heat kills 175 people (*FEMA Extreme Heat Backgrounder*). Young children, the elderly, outdoor laborers, and sick people are the most likely to suffer the effects of extreme heat. The heat index measures the severity of hot weather by estimating the apparent temperature: how hot it feels (Table 25). Skin resistance to heat and moisture transfer is directly related to skin temperature, therefore the ambient temperature can be quantified by examining the relation between relative humidity versus skin temperature. If the relative humidity is higher/lower than the base value, the apparent temperature is higher/lower than the ambient temperature. In New Mexico at elevations below 5,000 feet, individual day-time temperatures often exceed 100°F during the summer months. However, during July, the warmest month, temperatures range from slightly above 90°F in the lower elevations to 70°F in the higher elevations (*Western Region Climate Center, www.wrcc.dri.edu/narratives/NEWMEXICO.htm*).

Table 25: Heat Index/Heat Disorders

Danger Category	Heat Disorders	Apparent Temperature (°F)
I Caution	Fatigue possible with prolonged exposure and physical activity.	80-90
II Extreme Caution	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and physical activity.	90-105
III Danger	Sunstroke, heat cramps and heat exhaustion likely; heatstroke possible with prolonged exposure and physical activity.	105-130
IV Extreme Danger	Heatstroke or sunstroke imminent.	>130

Source: Occupational Health and Safety Administration;
http://www.osha.gov/SLTC/heatillness/heat_index/pdfs/all_in_one.pdf

New Mexico is partially an arid desert state, and summer temperatures often exceed the 100-degree mark under normal conditions. Nighttime temperatures are typically cool due to low humidity, and even though daytime temperatures may be high, people experience relief at night. Heat waves in which daily high temperatures exceed 110° F for many days in a row are rare. Such a heat wave in the higher altitudes would probably have a more damaging effect because people would not be expecting such hot conditions. However, anywhere in the state that experienced the humidity/temperature combination could suffer ill effects from the event. A heat wave would also have a drying effect on vegetation, facilitating the ignition of wildfires. If a heat wave were coupled with a power failure, the effect on the population would be much more



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severe due to a lack of air conditioning. In general, it is safe to say that there is no area of the state that is immune from the hazard of heat wave.

A unique aspect to extreme heat in New Mexico is the fact that UVB radiation also increases with increasing altitude, or distance above the surface of the earth. For every 1,000 feet of altitude, the UV radiation increases by about 4 percent. This means that approximately 20 percent more UV radiation reaches the earth's surface in McKinley County or the City of Gallup, than in a city that is at similar latitude but at sea level. This can exacerbate heat effects at high altitude. In 1979, meteorologist R.G. Steadman developed a heat index (Table 26) to illustrate the risks associated with extreme summer heat. NOAA's heat alert procedures are based mainly on Heat Index Values. The Heat Index, sometimes referred to as the apparent temperature is given in degrees Fahrenheit. The Heat Index is a measure of how hot it really feels when relative humidity is factored with the actual air temperature.

Table 26: Heat Index as of December 2014

NOAA's National Weather Service
Heat Index
Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Source: NOAA; <http://www.nws.noaa.gov/os/heat/index.shtml#heatindex>

PREVIOUS OCCURRENCES – EXTERME HEAT

The State of New Mexico experiences extreme heat events annually, which affects McKinley County and the City of Gallup. The NCDC online database list no recorded significant events for McKinley County or City of Gallup. Additionally, the MPT was unable to provide any past

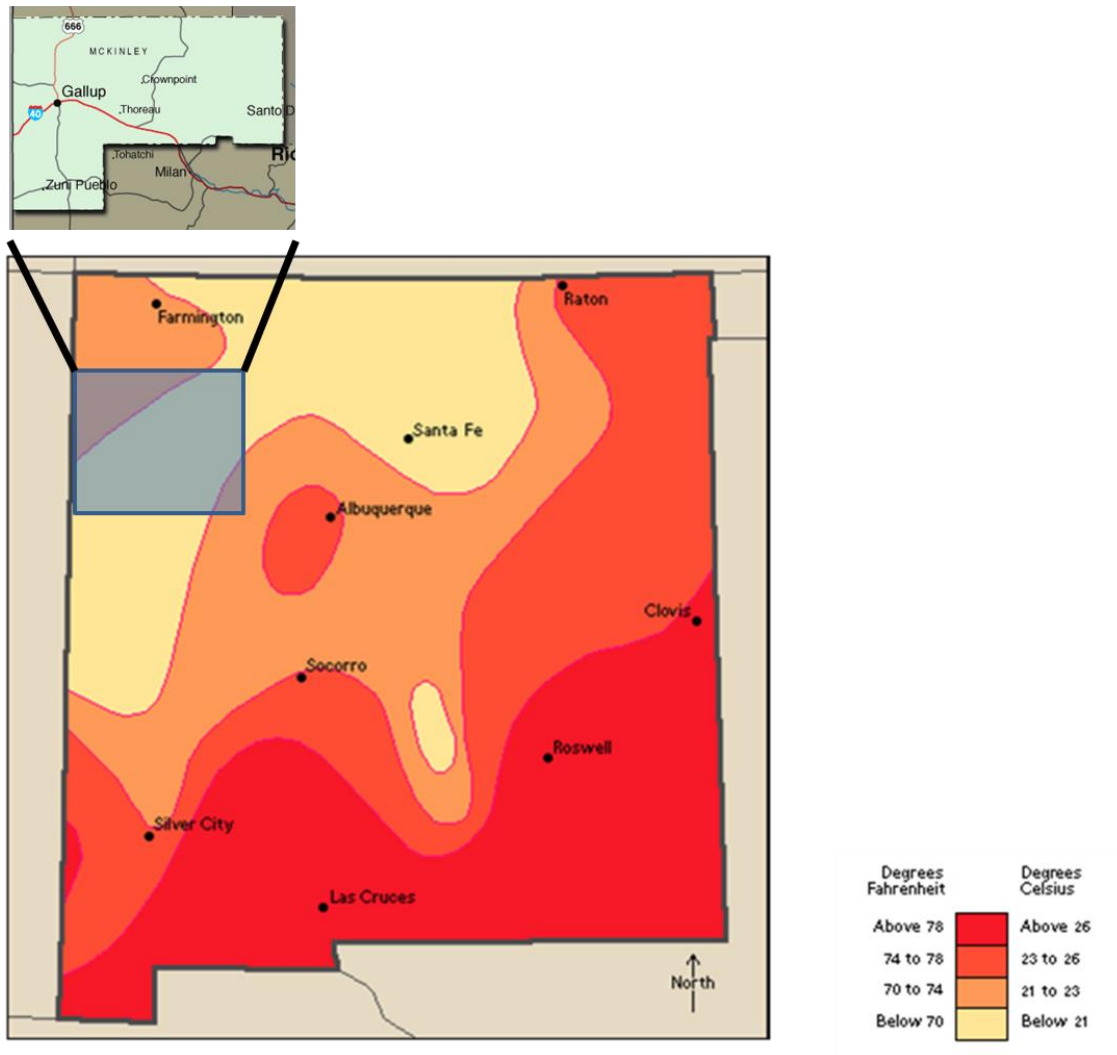


significant events for McKinley County and the City of Gallup but have stated in years past temperatures were will in the mid 90's for weeks at a time. There have been recorded events for locations close to McKinley County. Those events were identified as human negligence which could occur anywhere in the state to include McKinley County, New Mexico and the City of Gallup.

LOCATION – EXTREME HEAT

Extreme heat events are difficult to predict precisely in pattern, frequency, and degree of severity. The entire planning area would be affected by extreme heat events. Referencing the map in Figure 17, the state can experience average summer temperatures from 70 to well over 78 degrees with temperatures in the summer reaching up to 100 degrees plus. In temperatures exceeding 90°F, young children, the elderly, outdoor laborers, and sick people are the most likely to suffer from sunstroke, heat cramps, heat exhaustion, and possibly heatstroke.

Figure 17: Temperature Map of New Mexico



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Source: Map shows the average temperatures for New Mexico with McKinley County and the City of Gallup. Information provided by World Book at www.worldbook.com

The National Weather Service – Albuquerque reported above average temperatures, month to month, for 2012 will go down as the warmest year on record. Meteorologists stated that 2012 was yet another year that supported the upward trend in temperature.

EXTENT OF EXTREME HEAT IN MCKINLEY COUNTY AND CITY OF GALLUP

In researching previous occurrences of extreme heat for McKinley County and the City of Gallup, the NCDC data base did not produce any data. MPT did state there have been previous occurrences of extreme heat but could not produce data related to their experiences. In referencing the State Hazard Mitigation Plan; 2013, data was available but relative to the entire state. Based on the state plan data, the extent of extreme heat in July 2003 was reported as 14 days of highs of 100 degrees or more. The same events were recorded in May 24, 2000 and June 1998. Based on this data extreme heat the county and city could reach temperatures above 100 degrees for extend periods of time. Though limited data, the MPT determined this is a high vulnerability and determined this hazard should be profiled. Figure 17 shows the average temperatures for the McKinley County/City of Gallup area. Average temperatures in the area can range from 70 degrees and above. The MPT identified during discussions that temperatures can reach well above 90s and into the 100s for periods of time. For purposes of profiling this hazard, the entire McKinley County and City of Gallup area can experience extreme heat temperatures.

VULNERABILITY ASSESSMENT – EXTREME HEAT

Existing Community Assets

The elderly, disabled, and debilitated are especially susceptible to heat stroke. Large and highly urbanized cities can create an island of heat that can raise the area's temperature by 3 to 5° F. Therefore, urban communities with substantial populations of elderly, disabled, and debilitated people could face a significant medical emergency during an extended period of excessive heat. The highest temperature recorded in New Mexico is 122°F on June 27, 1994 at the Waste Isolation Pilot Plant (WIPP) site in Eddy County.

Critical Facilities

Critical facilities are susceptible to power failures and brown outs as energy supplies become stressed during an extended period of high heat.

What Can Be Mitigated?

The best practices include early assessment, public education and providing cooling stations for the length of the event.

Probability of Occurrences – Severe Weather (Thunderstorm, Hail, Lightning, High Winds and Extreme Heat)



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To determine the probability of each McKinley County and the City of Gallup experiencing future severe weather events (thunderstorm, Hail, lightning, high winds and extreme heat), the probability or chance of occurrence was calculated based on historical data provided by local authorities. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. Lightning and high winds are under reported however, based on local knowledge it can be assumed that there will be some events each year. For extreme heat, no recorded figures were available to the MPT stated there could be a 30% to 50% chance of an extreme heat event in both the county and city. For purposes of this Plan it was decided that 30% would be a probability of occurrence in both the county and city. In addition, no data was available for high winds so the MPT determined the same chance for high winds as being 30%. Table 27 identifies the probability of McKinley County and the City of Gallup experiencing a severe weather event.

Table 27: Probability of Occurrence of Severe Weather Events

Probability of Occurrence					
Location	Thunderstorm	Damaging Hail	Lightning	Extreme Heat	High Winds
McKinley County	100%	15%	100%	30%	100%
City of Gallup	100%	30%	100%	30%	100%

Conclusion

Summary of Hazard Identification and Vulnerability Assessment

Vulnerability to the effects of severe weather events on buildings is dependent on the age of the building (and what building codes were in effect at the time it was built), type of construction, and condition of the structure (i.e., how well the structure has been maintained).

Critical facilities are typically vulnerable to wind damage, lightning and hail due to age of construction and possible poor condition. No specific critical facilities were identified as vulnerable to strong winds, lightning or hail; however, emergency communications capabilities, which use unreliable electric and telephone services, may be vulnerable to disruption.

Most critical facilities in the County/ City are vulnerable to the effects of severe storms, due to potential disruption of services and transportation systems as well as possible structural failure due to high winds, lightning or hail.

McKinley County and the City of Gallup may experience the range of severe weather hazards, including high winds, hail storms, lightning and thunderstorms. Features like lightning, heavy rain, and high winds can damage utility infrastructure, aged or dilapidated structures, and other assets in the McKinley County.



Extreme heat is felt most by the elderly, disabled, and debilitated are especially susceptible to heat stroke. The City of Gallup is not large and highly urbanized city but extreme heat can create an island of heat that can raise the area's temperature by 3 to 5° F. Therefore, the City of Gallup though not a large urban community it does have a substantial population of elderly, disabled, and debilitated people who could face a significant medical emergency during an extended period of excessive heat.

What Can Be Mitigated?

One important part of mitigating severe weather is forecasting and warning so that people can prepare. Communities can prepare for severe weather by stockpiling sand and salt to improve road conditions, advising people to stay home or to use caution if they must go out, and recommending that people stock up on food, water, batteries, and other supplies.

Severe storm activity poses a significant threat to unprotected or exposed lifeline systems. Generally, commercial power networks are very susceptible to interruption from lightning strikes, high winds, ice conditions and hail. Other utilities, including underground pipelines, may be impacted if not protected from exposure. The greatest potential benefit for effective mitigation is upgrading and consistently enforcing building codes for new construction, and inspections and retrofits for existing critical facilities.

Data Limitations

The McKinley County Tax Assessor's office has not developed a detailed property database with the information necessary to determine the location and condition of manufactured homes and aged or dilapidated structures. Consequently, the Mitigation Planning Team could not determine vulnerability to high winds, snow loads, and other severe weather features.



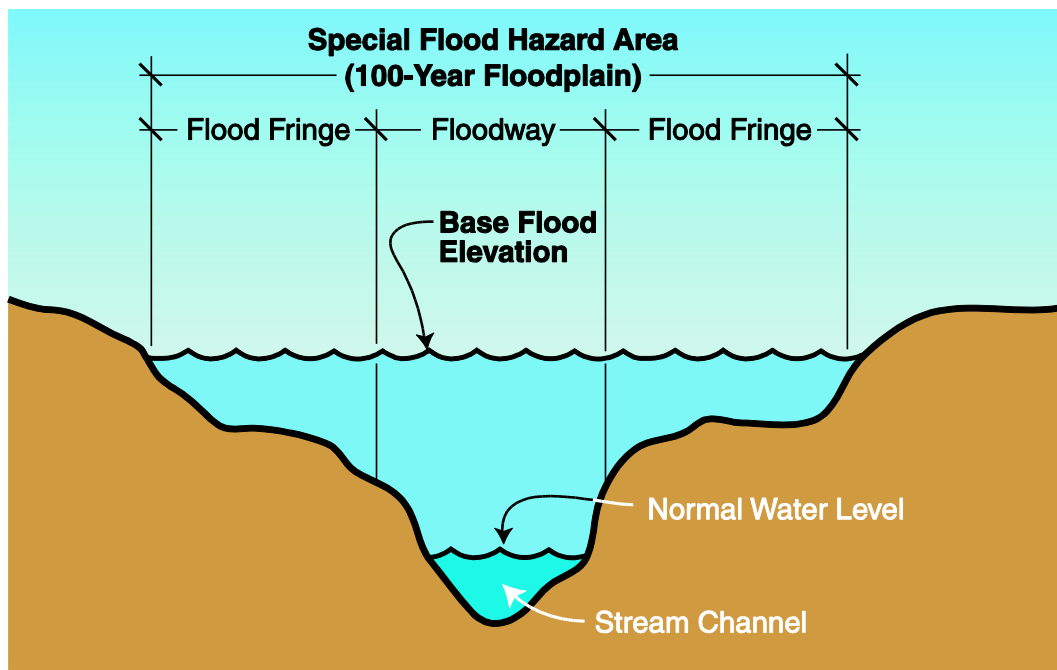
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Floods / Flash Flooding

Nationwide, hundreds of floods occur each year; making flooding one of the most common hazards in all 50 states and U.S. territories. Most injuries and deaths from flooding happen when people are swept away by flood currents and most property damage results from inundation by sediment-filled water. The majority of flood events in the U.S. involve inundation of floodplains (see Figure 18) associated with rivers and streams and shoreline inundation along lakes and coastlines.

Figure 18: Definition Sketch for Floodplains



Source: *Understanding Your Risks* – FEMA Publication 386-2, page 2-12.

This type of flooding typically results from large-scale weather systems generating prolonged rainfall or from locally intense storms or from snowmelt. For the purposes of this report, this type of flooding is referred to as “riverine flooding” and is characterized by a gradual and predictable rise in a river or stream due to persistent precipitation. After the stream or river overflows its banks, the land nearby remains under water for an extended period of time. Although the State of New Mexico and Santa Fe may experience riverine flooding, flash flooding is a more common and more damaging type of flooding. Flash floods are aptly named: they occur suddenly after a brief but intense downpour; they move quickly and end abruptly. Although the duration of these events is usually brief, the damages can be quite severe. People are often surprised at how quickly a normally dry arroyo can become a raging torrent. Flash floods are the primary weather-related killer with around 140 deaths recorded in the U.S. each year. Flash floods are common and frequent in New Mexico, and, as a result, New Mexico has the tenth highest flash flood fatality rate in the nation.

Flash flooding also produces erosion and mud and debris flows that damage homes and infrastructure. Flash floods result as a secondary effect from other types of disasters, including large wildfires and dam breaks. Wildfires remove vegetative cover and alter soil characteristics, increasing the quantity and velocity of stormwater runoff. Banks and soils previously stabilized by vegetation are quickly eroded by rainwater on unprotected soils.

HAZARD PROFILE—FLASH FLOODS

Hazard Characteristics

Flash floods occur in developed areas from intense rainfall flowing into overburdened dry riverbeds, arroyos and man-made stormwater structures. Flash flooding in undeveloped areas is likely to occur when heavy rains fall on impervious desert soils or previously saturated soils. Summer thunderstorms that deposited large quantities of rainfall over a short period of time have also produced flash flooding. Flash floods peak during the Southwest monsoon season of July and August.

Flash floods are more likely to occur in places with steep slopes and narrow stream valleys, and along small tributary streams. In urban areas, parking lots and other impervious surfaces that shed water rapidly contribute to flash floods. In rugged, hilly, and steep terrain, the high-velocity flows and short warning time make flash floods hazardous and very destructive.

McKinley County and the City of Gallup has several conditions that may contribute to flash floods and exacerbate their effects:

- ✓ Steep Slopes: Santa Fe County has a moderate to steeply sloping terrain that can contribute to flash flooding since runoff reaches the receiving arroyos and rivers more rapidly over steeper terrain. Flood studies conducted by FEMA indicate that flood velocities along the Santa Fe River can reach 22 feet/second. Flows of 5 feet/second are considered high velocity.
- ✓ Obstructions: During floods, obstructions can block flood flow and trap debris, damming floodwaters and potentially causing increased flooding uphill from the obstructions.

Soils: Soils throughout much of McKinley County are derived from unconsolidated sands, silts and clay of the underlying Tesuque Formation. As a result, soils are typically fine-grained, and have low infiltration rates and high runoff potential. Sparse vegetative cover combines with high runoff soil potential to result in significant flooding hazards in ephemeral washes (not continuously containing water) and adjacent areas. Accelerated soil erosion has created problems ranging from loss of productive agricultural soil to displacement of human structures to sediment buildup in water reservoirs. Water erosion is one of the most common geologic phenomena. The detachment and transportation of soil particles by water can cause sheet erosion, rill erosion or gully erosion. Sheet erosion occurs with soil being removed in a uniform manner across the surface but is often accompanied by tiny channels cut into the surface creating rill erosion. Where the volume of runoff water is further concentrated the formation of larger channels or gullies may occur within the landscape creating gully erosion. Rill and gully erosion can cause serious land use problems. Storm events in New Mexico can result in flashfloods and can create serious rill and gully erosion. Erosion damage from flash flooding



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includes access disruption, road closures, driving hazards, drainage facility damage and blockage, sedimentation, etc. Erosion can occur rapidly during a storm event or can occur over time due to minor storms or breaks in water lines.

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed as the percentage chance that a flood of a specific extent will occur in any given year.

Table 28 shows a range of flood recurrence intervals and their probabilities of occurrence. Every year, a 10-year flood has a greater likelihood of occurring (10% chance) than a 100-year flood (one-percent chance).

Table 28: Flood Probability Terms

Flood Probability Terms	
Flood Recurrence Intervals	Chance of occurrence in any given year
10 year	10%
50 year	2%
100 year	1%
500 year	0.2%

Source: Floods – Recurrence intervals and 100-year floods; USGS <http://ga.water.usgs.gov/edu/100yearflood.html>

The extent of flooding associated with a one percent annual probability of occurrence—the base flood—is used as the regulatory boundary by a number of federal, state, and local agencies. Also referred to as the Special Flood Hazard Area, this boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities since many communities have maps that show the extent of the base flood and the likely depths that will be experienced. The base flood is often referred to as the 100-year flood. Since its one-percent probability of occurring in any one year implies a recurrence interval of 100 years, this is often mistaken to have a literal meaning of “once every 100 years.” Experiencing a 100-year flood does not mean a similar flood cannot happen for the next 99 years; rather, it reflects the probability that over a long period of time, a flood of that magnitude should occur in only one-percent of all years. Smaller floods occur more often than larger (deeper and more widespread) floods.

National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Insurance and Mitigation Administration (FIMA) manage



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the National Flood Insurance Program (NFIP) and implement a variety of programs authorized by Congress to reduce losses that may result from natural disasters. FIMA is a component of the FEMA manages the NFIP, and oversees the floodplain management and mapping components of the Program.

Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities.

The NFIP Community Rating System (CRS) was implemented in 1990 as a program to recognize and encourage community floodplain management activities that exceed minimum NFIP standards. The National Flood Insurance Reform Act of 1994 codified the CRS in the NFIP. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

Flood damage is reduced by nearly \$1 billion a year through partnerships with NFIP and CRS communities, the insurance industry, and the lending industry. Buildings constructed in compliance with NFIP building standards also suffer approximately 80% less damage annually than those not built in compliance. Further, every \$3 paid in flood insurance claims saves \$1 in disaster assistance payments.

The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid for by the taxpayer, but through premiums collected for flood insurance policies. The program has borrowing authority from the U.S. Treasury for times when losses were heavy; however, these loans are usually paid back with interest. To obtain secured financing to buy, build, or improve structures in Special Flood Hazard Areas (SFHAs), flood insurance must be purchased. Lending institutions that are federally regulated or federally insured must determine if the structure is located in a SFHA and must provide written notice requiring flood insurance. Flood insurance is available to any property owner located in a community participating in the NFIP. All areas are susceptible to flooding, although to varying degrees. In fact, 25% of all flood claims occur in low-to-moderate risk areas.

Three (3) NFIP policies were in force in the McKinley County and 100 policies in the City of Gallup as of October 2013, for a total flood insurance coverage of more than \$200 million (Table 29 and 30). Over \$13,000 has been paid out in the City of Gallup for flood damage since the establishment of the NFIP in 1978. At present, there are no repetitive-loss properties in the McKinley County identified in the NFIP database.



McKinley County:

Table 29: National Flood Insurance Statistics for McKinley County

NFIP Flood Insurance Statistics for McKinley County	
Policies In-force	3
Premiums Paid	\$81,962
Insurance In-force	\$18,659,300
Total Losses	12
Total Payments	13,284
Repetitive Loss	0

Source: FEMA October 2013

City of Gallup:

Table 30: National Flood Insurance Statistics for Gallup

NFIP Flood Insurance Statistics for Gallup	
Policies In-force	100
Premiums Paid	\$3,590
Insurance In-force	\$1,550,000
Total Losses	None reported
Total Payments	0
Repetitive Loss	0

Source: FEMA October 2013

Previous Occurrences – Flood/Flash Flooding

McKinley County Mexico has a long history of flash flooding problems. Many minor flash flood events occur each year during the summer monsoon season. Due to the small scale and localized nature of these events, no consistent records are available. The most recent flooding occurrence caused considerable damage to State Route 61. The flash floods caused the road to be partially washed out and caused damage to homes in the local area (Figure 19 and 20).



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Figure 19: State Route 61 Washed Out by Flash Flooding



Source: McKinley County Office of Emergency Management – Susan Mahooty

Figure 20: State Route 61 Washed Out by Flash Flooding



Source: McKinley County Office of Emergency Management – Susan Mahooty

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Table 31 and 32 list some of the significant flash flood events in McKinley County and the City of Gallup since 1997.

McKinley County

Table 31: Significant Flash Flood Events in McKinley County, New Mexico 1997 - 2013

Date	Location	Estimated Damages
11/01/2013	McKinley County	Unknown
9/23/2013	McKinley County	Unknown
9/13/2013	McKinley County	None Reported
9/13/2013	McKinley County	None Reported
9/13/2013	McKinley County	50,000
9/10/2013	McKinley County	5,000
8/22/2013	McKinley County	None Reported
8/22/2013	McKinley County	50,000
8/05/2012	Thoreau	150,000
7/1/2012	McKinley County	Unknown
8/23/2010	Mentmore	40,000
8/02/2010	Rehobeth	120,000
8/02/2010	Iyanbito	20,000
8/02/2010	South Chaves	50,000
8/01/2010	Prewitt	8,000
8/01/2010	Manuelito	87,000
7/31/2010	South Chaves	50,000
7/31/2010	Church Rock	120,000
7/31/2010	Iyanbito	20,000
9//05/2009	Upper Nutria	25,000
9/05/2009	Ramah	5,000
9/05/2009	Ramah	None reported
9/05/2009	Pinedale	5,000
8/06/2008	Mexican Springs	5,000
8/06/2008	Ramah	500
7/11/2008	Gamerco	40,000
8/04/2007	Zuni	\$28,000
9/02/2006	Zuni	None reported



Date	Location	Estimated Damages
9/02/2006	Tohatchi	None reported
8/24/2006	Church Rock	None reported
9/08/2005	Church Rock	None reported
9/09/2003	Tohatchi	None reported
9/20/1997	Thoreau	None reported
Total		\$878,000

Source: www.ncdc.noaa.cgi-win, October 2013

City of Gallup

Table 32: Significant Flash Flood Events in Gallup, New Mexico 1997 - 2013

Date	Estimated Damages
9/10/2013	5,000
8/22/2013	50,000
8/13/2011	5,000
9/05/2009	None reported
7/22/2002	100,000
9/21/1997	None reported
9/13/1997	None reported
Total	\$160,000

Source: www.ncdc.noaa.cgi-win, October 2013

Location – McKinley County and City of Gallup

McKinley County – McKinley County presently remains vulnerable to flooding throughout its unincorporated areas where arroyos, draws, and washes either cross or run parallel to roadways. The potential for flooding in these areas has been further exacerbated by the presence of a prolonged drought throughout the southwest. This severe drought has caused vegetation to die off, which leads to bank instability along many of the waterways, thereby increasing the possibility of heavier erosion damage when storm waters flow through the area. Due to the sparse population in the unincorporated areas of the county, the economic losses due to flooding are difficult to predict. However, there is no doubt that these conditions present a danger to the single residences and small family groups located here.

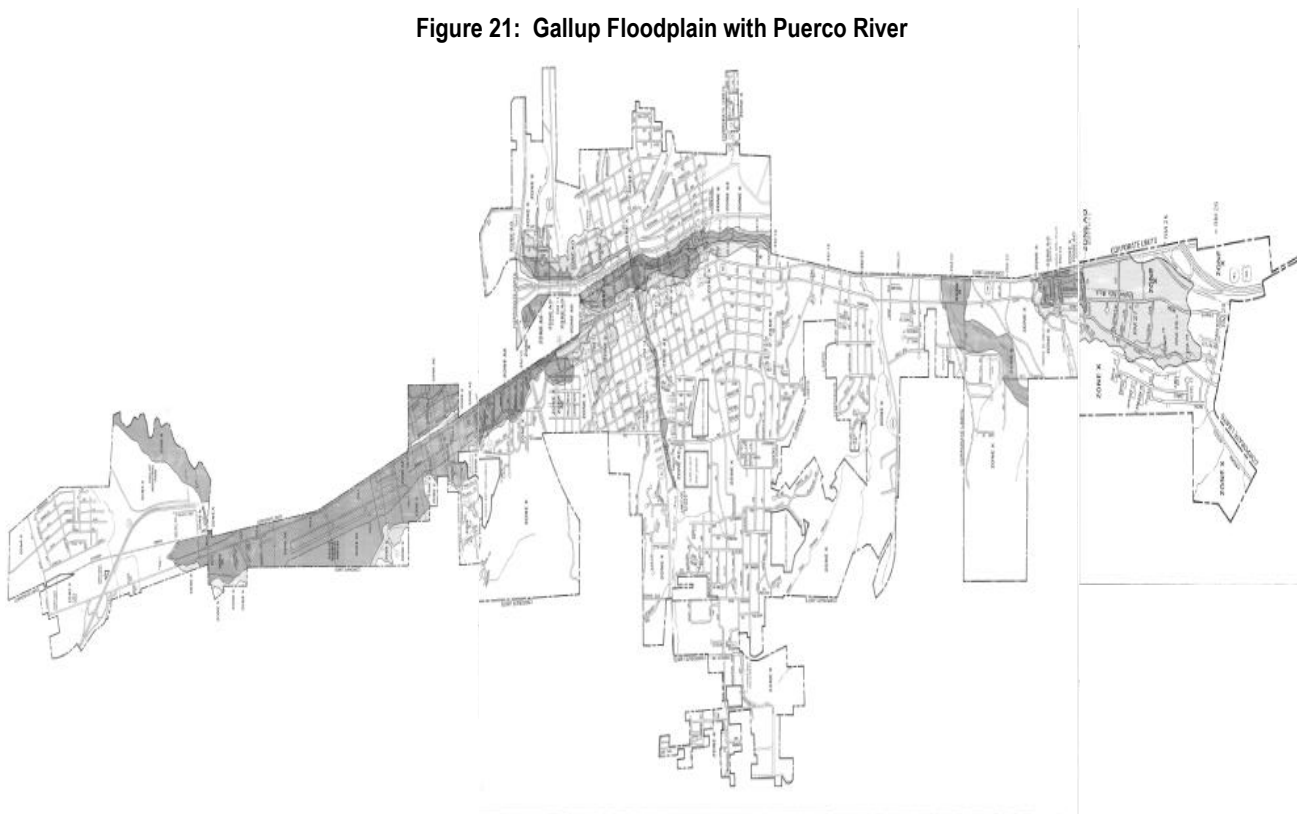
Gallup – Gallup lies within the known floodplain of the Puerco River. (See Figure 21, 22 and 23) Much of the city's flooding has been due to severe storms that cause sheet flooding and water ponding in natural basins that lack adequate storm drainage systems. The flooding in Gallup during the summer of 2003 occurred as the result of a high volume of water falling in the



SECTION 2 – Hazard Identification / Risk Assessment

area in the form of sleet and hail, which blocked up the existing storm drainage system. Once the blockage occurred, a sheet flood was created through Gallup's downtown area, causing water damage to local businesses and business closures. In addition, water in the form of runoff from I-40 and the surrounding area has a tendency to pond in several areas of the city. Such ponding has been known to reach a depth of 3 to 4 feet. Much of this flooding is due to storm water drainage that runs north along the Little Puerco Wash, flows along Second Street under I-40, and ponds in the area of Malone Avenue. In more severe conditions the ponding can extend farther south under the highway and through the rail yards and Railroad Avenue. In addition to the storm water runoff from the Little Puerco Wash, drainage from I-40 itself runs into the same general area. Presently there is a pumping system located on Malone Avenue near Seventh Street. However, this pump requires manual activation, and apparently the key operator for this system resides in Albuquerque, which is approximately a three-hour drive from Gallup. By the time the key operator arrives, the pump is already underwater and cannot be turned on due to the high risk of electrocution.

Figure 21: Gallup Floodplain with Puerco River



Source: FEMA FIRM Panels # 3500420005D, 3500420010D, and 3500420015D

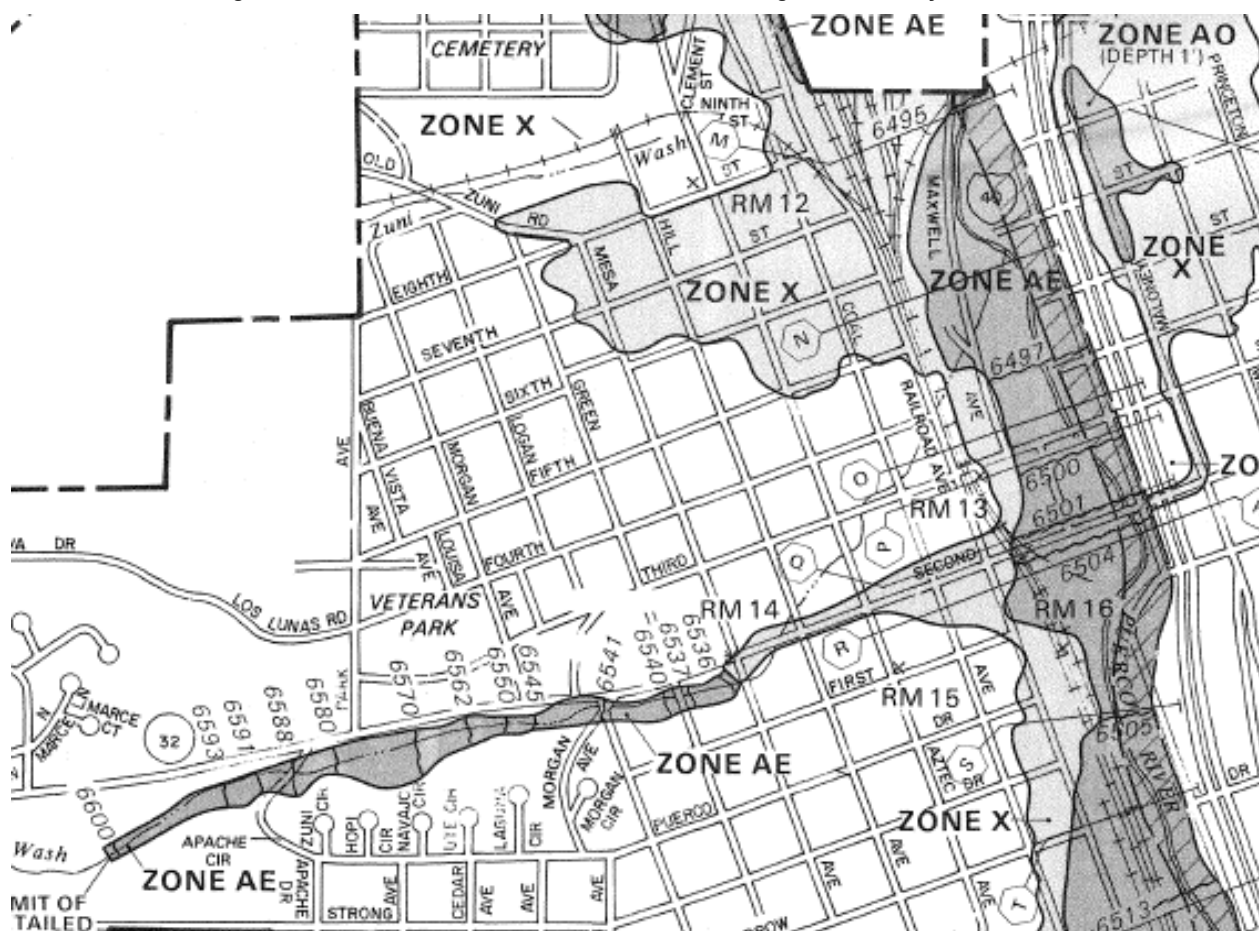
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Figure 22: Little Puerco Wash in the City of Gallup



Source: U.S. Army Corps of Engineers – Photographs depicting the upper end of the Little Puerco Wash in the Gallup City Limits. This area is to be developed by the U.S. Army Corps of Engineers as a retention pond in an attempt to eliminate or reduce the flooding caused by this drainage area.

Figure 23: Detail of Little Puerco Wash and the Drainage into Maloney Street



Source: Map FEMA FIRM Panel 3500420010D.

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The Gallup/McKinley County Airport, on the west side of Gallup, also lies within the floodplain, and would be completely underwater during a 100-year flood. Much of this flooding would occur in the form of sheet flooding and low basin ponding. The east side of Gallup will flood under similar circumstances, due to the Indian Hills Wash, which runs into the area along Church Rock Street.

The city's vulnerability and the dangers to Gallup's citizens due to flooding remain very high. The dangers are compounded by the related health issues caused by the interruption of public utility service, and the fact that if the rail yards flood, the HAZMAT risk can be extremely high, depending on what cargos the trains are carrying at the time.

Along with the risk to the general public, such a flood could have far-reaching economic effects throughout the region. If a major flood shut down the rail lines, all east-west rail traffic would have to be diverted to alternate routes, and traffic along I-40 could face similar detours. The flooding that could occur in Gallup's downtown area would shut down a large portion of the businesses between the eastern exit from I-40 into Gallup to the area of Turquoise along Route 66; the area of Route 66 and the Perelli Canyon Wash; and from the area of McKinley along Route 66 through the rest of Gallup to the west.

VULNERABILITIES ASSESSMENT FLOODING

Flood vulnerability is described in terms of the community assets that lie in the path of floods. There are over four thousand structures and 12 thousand people in the County and the City of Gallup in an identified Flood Zone (Table 33). The flood hazard vulnerability assessment for McKinley County focused on the base flood elevation, though floods of both greater and lesser flood depths are possible (Figure 32 McKinley County / City of Gallup 100-Year Floodplain Map). Vulnerability to flash floods is difficult to determine because local terrain, soil conditions, and construction play a role in how much storm water is able to run off, percolate into the soil, or cause flash flooding.

Table 33: Structures identified in the 100 Year Floodplain in McKinley County, New Mexico

Community	Population	Housing Units	Value of Housing per unit US Census	Value of Housing Units Located in the 100 year Floodplain
City of Gallup	4,719	1,764	136,400	\$240,609,600
McKinley County	7,853	2,521	81,300	\$204,957,300
Total	12,572	4,285	217,700	\$445,466,900
*Estimated using 2010 U.S. Census data and McKinley County GIS data				



EXTENT OF FLOODING IN MCKINLEY COUNTY AND CITY OF GALLUP

McKinley County

McKinley County presently remains vulnerable to flooding throughout its unincorporated areas where arroyos, draws, and washes either cross or run parallel to roadways. Though there is a lack of data on previous floods throughout the county, there have been recent floods that have caused roads to wash out and damages as identified in figures 16 and 17. The potential for flooding in these areas has been further exacerbated by the presence of a prolonged drought throughout the southwest. This severe drought has caused vegetation to die off, which leads to bank instability along many of the waterways, thereby increasing the possibility of heavier erosion damage when storm waters flow through the area. Due to the sparse population in the unincorporated areas of the county, the economic losses due to flooding are difficult to predict. However, there is no doubt that these conditions present a danger to the single residences and small family groups located here. The exact extent of the flooding threat within McKinley County is presently unknown. For purposes of this mitigation plan, the entire planning area is vulnerable to flooding. Continued research and analysis by the county Floodplain manager is required to further determine the exact extent the county is affected by flooding and flash floods.

City of Gallup

The most pressing problem concerning flooding in Gallup is the fact that a large part of the city lies within the known floodplain of the Puerco River. (Figure 19 and 20) Much of the city's flooding has been due to severe storms that cause sheet flooding and water ponding in natural basins that lack adequate storm drainage systems. The most recent flooding in Gallup during the summer of 2003 occurred as the result of a high volume of water falling in the area in the form of sleet and hail, which blocked up the existing storm drainage system. Once the blockage occurred, a sheet flood was created through Gallup's downtown area, causing water damage to local businesses and business closures. In addition, water in the form of runoff from I-40 and the surrounding area has a tendency to pond in several areas of the city. Such ponding has been known to reach a depth of 3 to 4 feet. Much of this flooding is due to storm water drainage that runs north along the Little Puerco Wash, flows along Second Street under I-40, and ponds in the area of Malone Avenue. In more severe conditions the ponding can extend farther south under the highway and through the rail yards and Railroad Avenue. In addition to the storm water runoff from the Little Puerco Wash, drainage from I-40 itself runs into the same general area. Presently there is a pumping system located on Malone Avenue near Seventh Street. However, this pump requires manual activation, and apparently the key operator for this system resides in Albuquerque, which is approximately a three-hour drive from Gallup. By the time the key operator arrives, the pump is already underwater and cannot be turned on due to the high risk of electrocution.

The Gallup/McKinley County Airport, on the west side of Gallup, also lies within the floodplain, and would be completely underwater during a 100-year flood. Much of this flooding would occur in the form of sheet flooding and low basin ponding. The east side of Gallup will flood under similar circumstances, due to the Indian Hills Wash, which runs into the area along Church Rock Street.



The city's vulnerability and the dangers to Gallup's citizens due to flooding remain very high. The dangers are compounded by the related health issues caused by the interruption of public utility service, and the fact that if the rail yards flood, the HAZMAT risk can be extremely high, depending on what cargos the trains are carrying at the time.

Along with the risk to the general public, such a flood could have far-reaching economic effects throughout the region. If a major flood shut down the rail lines, all east-west rail traffic would have to be diverted to alternate routes, and traffic along I-40 could face similar detours. The flooding that could occur in Gallup's downtown area would shut down a large portion of the businesses between the eastern exit from I-40 into Gallup to the area of Turquoise along Route 66; the area of Route 66 and the Perelli Canyon Wash; and from the area of McKinley along Route 66 through the rest of Gallup to the west.

For the purposes of profiling this hazard, the entire area of the City of Gallup can be affected by some type of flood/flash flood.

PROBABILITY OF OCCURRENCE – FLOOD/FLASH FLOODS

In addition, the National Weather Service (NWS) reports an average of four flash flood warnings per year in McKinley County. However, due to terrain blockage in the area, the NWS estimates that at least eight flash floods will occur in the county annually, with an additional four weather patterns going undetected by their present observation capability, which is blocked from covering the entire area because of the mountains. Flash flooding in McKinley County is generally expected to occur from July through September, which is considered the rainy season in New Mexico.

To determine the probability of McKinley County and the City of Gallup experiencing future Floods/Flash Floods, the probability or chance of occurrence was calculated based on historical data provided by local authorities. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. Table 34 identifies the probability Of the McKinley County and the City of Gallup experiencing a Flood/Flash Flood event.

Table 34: Probability of Occurrence for Flood/Flash Floods in McKinley County and City of Gallup

Probability of Occurrence	
Location	Floods/Flash Floods
McKinley County	100%
City of Gallup	100%

The exact extent of the flooding threat within McKinley County is presently unknown. This is due in part to the fact that the county is not a participant in the National Flood Insurance Program (NFIP). As a part of the mitigation process, participation in this program will assist in determining the actual threat as it exists today.



CONCLUSIONS – FLOOD/FLASH FLOODING

Flooding in McKinley County mainly occurs as riverine flooding, flash flooding, and basin ponding. A large percentage of McKinley County is very sparsely populated, and therefore the danger of flooding to the general population is not high. However, there are numerous draws, washes, and creeks that cross both improved and unimproved roads, which can cause travel disruption. In addition, although the Puerco River is dry for much of the year, it can be a problem during the wettest season. Generally McKinley County experiences the most rainfall during what is commonly called the New Mexico monsoon season, which lasts approximately July through September. There are also numerous small lakes throughout the county that have the potential of overflowing their banks. In addition to rainstorms, spring weather and the resulting snowmelt have also been known to cause flooding in some areas.

Flooding has historically occurred in both McKinley County and Gallup. In 2003, a severe storm caused flooding in Gallup, damaging numerous downtown businesses. In addition, the frequency of flash floods and their unpredictability continue to occur in McKinley County. The determination to consider flooding as a concern for McKinley County and Gallup was made during meetings of the McKinley County working group and public meetings, as well as reference to National Flood Insurance Program maps, historical data, questionnaires, and the New Mexico All Hazard Emergency Operation Plan. Flash floods have been and will continue to be a significant threat to the economic and social well-being of selected areas of the County. McKinley County has a significant population and economic assets that are vulnerable to flood damages. Exacerbating the effects of flooding in the County are unstable desert soils and inadequate infrastructure, and obstructions in the floodplain.

Due to the vulnerability of the County and City to flood/flash flood events, the Hazard Mitigation Team has identified flash flood hazard mitigation as one of its priorities.

Summary of Hazard Identification and Vulnerability Assessment

By far the most dangerous flooding that occurs in the unincorporated areas of McKinley County comes in the form of flash flooding. Due to the unpredictability of where flash flooding will occur, there is generally little or no warning before it moves through a given area. The likelihood of a person being caught in a flash flood is high, since many of the unimproved roads in the county cross arroyos, draws, or washes. Even when an actual flash flood is not involved, people have been killed while attempting to cross low-lying areas filled with running water. It is difficult to tell the depth of the water or recognize how much force that even a two-foot-deep level of running water can create. Arroyos, draws, and washes run parallel to many of these roads, creating a further risk of eroding the waterway's banks during a flash flood. This erosion can in turn cause the roadways to collapse and undercut the foundations of nearby structures.

McKinley County's Comprehensive Growth Plan and Land Use Ordinances prohibit construction in the floodways, arroyos and other natural drainage ways. However, lots that were platted prior to the adoption of the Comprehensive Plan may be developed with the requirement that the building be either elevated above the floodplain level or dry-flood proofed



What Can Be Mitigated?

Most flash flood events result in direct damage to structures, infrastructure and erosion in developed areas. As a result, available alternatives for mitigation actions should focus on property protection, corrective measures for drainage and erosion in developed areas and future development in the municipalities.

Data Limitations

A lack of data exists in the county and more information needs to be collected. The Flood Plain Manager needs to be more visible and proactive in the collection of previous occurrences and collection of projects. As information becomes available the MPT will update this section accordingly.



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HAZARD CHARACTERISTICS

In New Mexico, drought is a regular event. It visits the state in recurring cycles. Experts predict that drought conditions are likely to continue for the foreseeable future. Drought increases the probability and severity of wildfire. Drought also increases the severity of flash flooding due to soils becoming hydrophobic, repelling or incapable of dissolving in water, resulting in increased runoff and erosion. The State of New Mexico has recorded periods of drought for the past few years. In every drought, agriculture is adversely impacted, especially in non-irrigated areas such as dry land farms and rangelands. Droughts impact individuals (farm owners, tenants, and farm laborers), the agricultural industry, other agriculture related sectors, and other industries such as tourism and recreation. There is increased danger of forest and wildland fires. Loss of forests and trees increases erosion, causing serious damage to aquatic life, irrigation, and power development by heavy silting of streams, reservoirs, and rivers.

Drought is nature's way of reminding us that we live in a desert. New Mexico is entering the ninth year of a drought, which magnifies the challenge of balancing our limited water supplies with growing demand. A drought is caused by a variety of factors. Scientists who study climate changes believe that conditions in the North Atlantic Ocean and the Eastern Pacific Ocean play a significant role in determining the amount of precipitation that New Mexico and the rest of the country receive. Studies show current conditions in those two oceans are similar to conditions that existed during the severe drought of the late 1940s and 1950s in New Mexico.

Drought is a condition of climatic dryness that reduces soil moisture, water or snow levels below the minimum necessary for sustaining plant, animal, and economic systems. Drought conditions are usually not uniform over the entire state. Local and regional differences in weather, soil condition, geology, vegetation, and human influence need to be considered when assessing the impact of drought on any particular location. The most commonly used drought definitions are based on meteorological, agricultural, hydrological, and socio-economic effects.

- **Meteorological** drought is defined by a period of substantially diminished precipitation duration and/or intensity. The commonly used definition of meteorological drought is an interval of time, generally on the order of months or years, during which the actual moisture supply at a given place consistently falls below the climatically appropriate moisture supply
- **Agricultural** drought occurs when there is inadequate soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought usually occurs after or during meteorological drought, but before hydrological drought and can affect livestock and other dry-land agricultural operations
- **Hydrological** drought refers to deficiencies in surface and subsurface water supplies. It is measured as stream flow, snow pack, and as lake, reservoir, and groundwater levels. There is usually a delay between lack of rain or snow and less measurable water in streams, lakes, and reservoirs. Therefore, hydrological measurements tend to lag behind other drought indicators

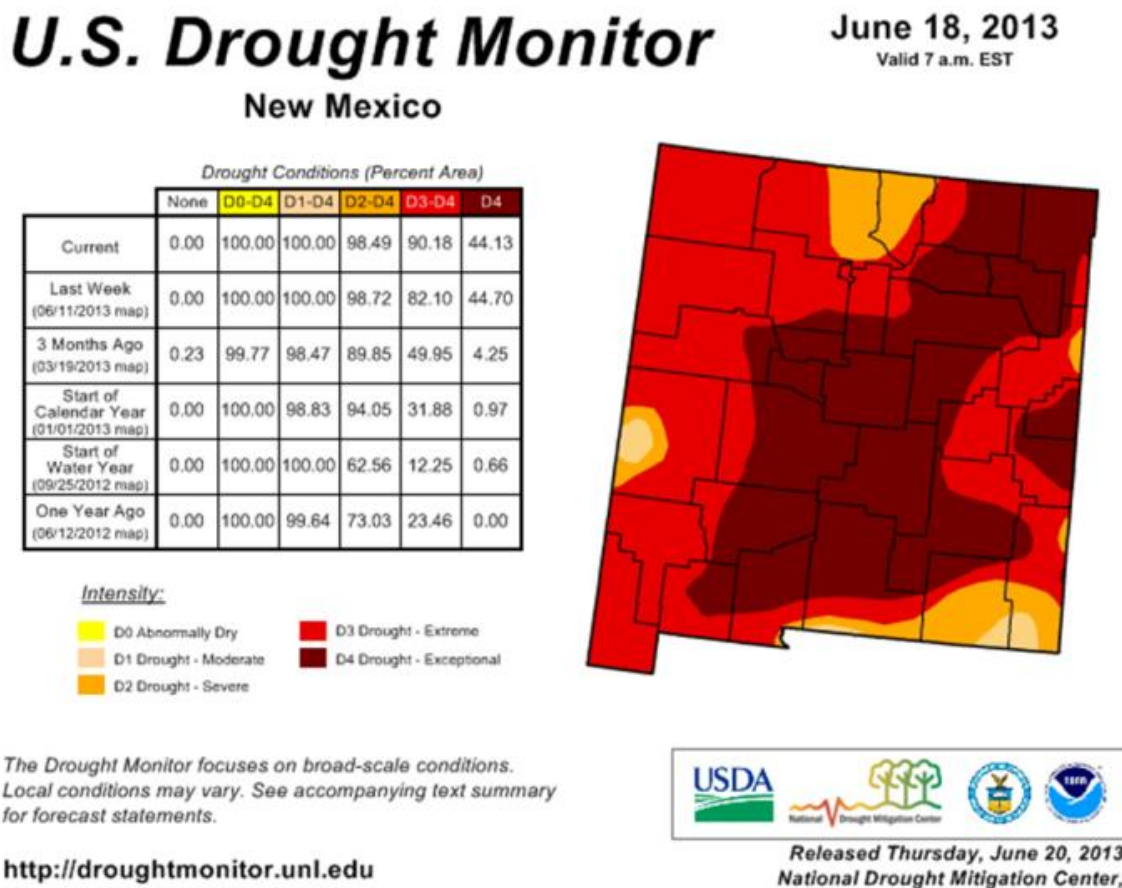


- **Socio-economic** drought occurs when physical water shortages start to affect the health, well-being, and quality of life of the people, or when the drought starts to affect the supply and demand of an economic product

Although different types of drought may occur at the same time, they can also occur independently of one another. Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

A drought is a period of prolonged dryness that depletes both ground and surface water. Droughts are common in New Mexico. The climate in McKinley County and the City of Gallup is arid with average annual precipitation ranges from less than 12 inches for the majority of the County. Figure 24 provides the current state of the drought in the county and city. The county/city is currently in an extreme situation.

Figure 24: New Mexico Average Annual Precipitation



Source: droughtmonitor.unl.edu/DM_state.htm?NM, June 2103



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Drought status is calculated using several indices that measure how much precipitation for a given period of time has deviated from historically established norms. The Palmer drought severity index (PDSI) is used by the U.S. Department of Agriculture (USDA) to determine allocations of grant funds for emergency drought assistance (Table 35). The Palmer index is based on the supply-and-demand concept of the water balance equation, taking into account more than the precipitation deficit at specific locations. The PDSI provides a measurement of moisture conditions that are “standardized” so that comparisons using the index can be made between locations and months.

Table 35: Palmer Drought Severity Index

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC [*] Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

Source: Information provided by NOAA at <http://www.drought.noaa.gov/>

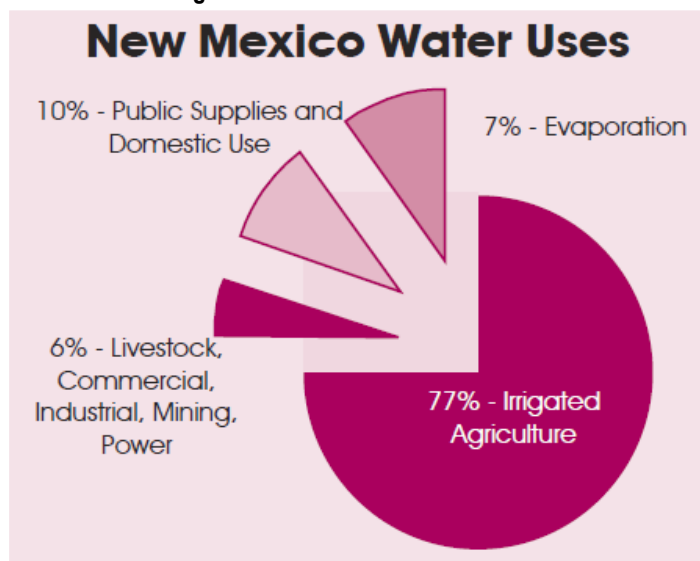
New Mexico precipitation for the first ten months of 2012 was 60 percent of average and ranked as the 6th driest start to any year on record. This makes 2012 the second consecutive year with a very dry start to the calendar year for New Mexico, as 2011 began as the 2nd driest January to October period. The past 24 months (2011-2013) have been the second driest 24 month period on record ending in October for New Mexico, just behind the period that ended in October 1956.

Water in New Mexico is distributed among a variety of users, as the following pie chart indicates (Figure 25). About 6% goes to livestock, commercial, industrial, mining, and power companies; about 10% goes to public supplies and domestic use; about 7% is lost to evaporation; and about 77% goes to irrigated agriculture. Drought is a regular event in all areas of New Mexico and



includes McKinley County and the City of Gallup. It visits the state in recurring cycles. Experts predict that drought conditions are likely to continue for the foreseeable future. When drought begins, agriculture is usually first to be affected because of its heavy dependence on stored moisture in the soil. Soil moisture can be rapidly depleted during extended dry periods. Dry land farming and ranching are most at risk from drought. Impact on these activities can be seen during a short-term drought.

Figure 25: New Mexico Water Uses



Source: Information provided by the Office of the State Engineer in the annual report for the period of 2009-2011. The PDF file is available at http://www.ose.state.nm.us/publications_index.html

Drought increases the probability and severity of wildfire. Drought also increases the severity of flash flooding due to soils becoming hydrophobic, repelling or incapable of dissolving in water, resulting in increased runoff and erosion. Although no drought events for McKinley County and the City of Gallup have been recorded by the NCDC, the State of New Mexico has recorded periods of drought for the past few years. In every drought, agriculture is adversely impacted, especially in non-irrigated areas such as dry land farms and rangelands. Droughts impact individuals (farm owners, tenants, and farm laborers), the agricultural industry, other agriculture related sectors, and other industries such as tourism and recreation. There is increased danger of forest and wildland fires. Loss of forests and trees increases erosion, causing serious damage to aquatic life, irrigation, and power development by heavy silting of streams, reservoirs, and rivers.

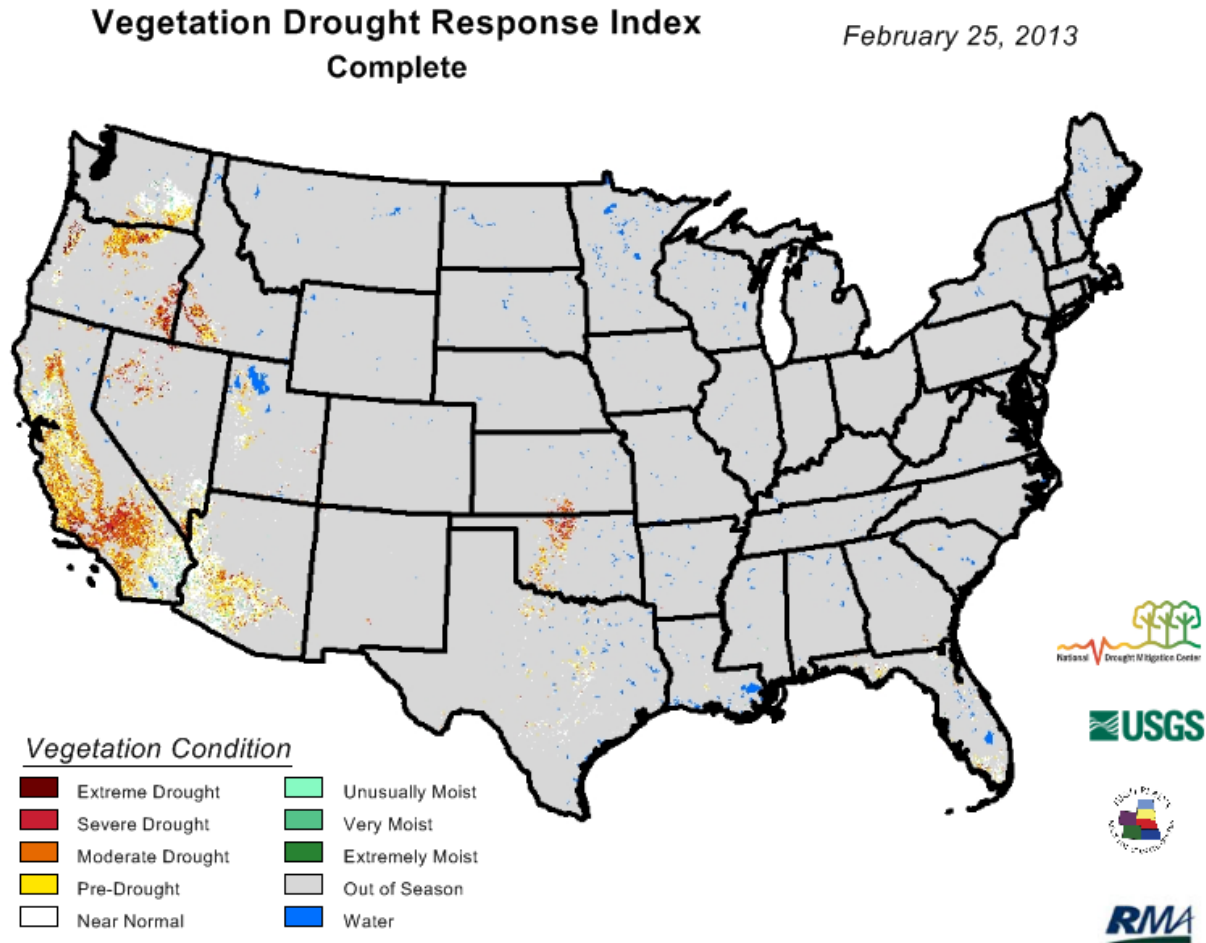
Drought status is calculated using several indices that measure how much precipitation for a given period of time has deviated from historically established norms. The Palmer drought severity index (PDSI) is used by the U.S. Department of Agriculture (USDA) to determine allocations of grant funds for emergency drought assistance (Table 35). The Palmer index is based on the supply-and-demand concept of the water balance equation, taking into account more than the precipitation deficit at specific locations. The PDSI provides a measurement of



moisture conditions that are “standardized” so that comparisons using the index can be made between locations and months.

According to the New Mexico Drought Plan, the latest predictions call for a deepening of the drought in the next few years, even though 2006 was one of the wettest years on record. One final measurement of drought, though highly temporal, is the Vegetation Drought Response Index (VegDRI) which is available for two-week intervals (Figure 26).

Figure 26: Vegetation Drought Response Index (VegDRI)



Source: <http://www.drought.unl.edu/monitor/monitor.htm>

The Vegetation Drought Response Index, or VegDRI, is a computer modeling and monitoring method that provides continuous drought information over large regions and supplies finer spatial detail than other commonly used drought indicators. The index is available at two-week intervals across the conterminous 48 states of the United States.

This resource can be used by anyone monitoring agricultural conditions, particularly ranching, or with interests in natural resource management. Data provides a regional overview with enough definition to know how specific rangelands and crops are doing. VegDRI integrates time-series observations of vegetation with climate, land cover-land use type, ecological setting, and soil characteristics to show drought's effect on vegetation at a 1-kilometer resolution. The massive remote sensing archives at the U.S. Geological Survey Earth Resources Observation and Science Center (USGS-EROS) supply historical satellite data from the last 20 years that are critical in establishing a sound comparison of normal conditions over a longer historical period.

PREVIOUS OCCURRENCE – DROUGHT

New Mexico has always known drought. Archeological records indicate that drought has led to the collapse of early civilizations in New Mexico, most notably the abandonment of Chaco Canyon by the Anasazi around 1300 A.D. (Annenberg/CPB Learner.Org). In the last 100 years, New Mexico has suffered from four devastating periods of drought; 1900-1910, 1931-1941, 1942-1956, and 1974-1979. The last short duration drought was in 1996 (New Mexico Drought Task Force, May 2002). Due to the cyclical nature of droughts New Mexico will enter into another period of drought. The U.S. Geological Survey (USGS) has established gauging at many waterway locations to gather data on annual stream flows. Three locations around Santa Fe County were examined for times of low stream flows, indicating a drought period. The gauging station data vary between the locations but generally show drought periods during the approximate periods of 1930–1936, 1946–1956, and 1969–1977. One station along the Rio Grande contained data back to 1896 and a low stream flow period is indicated at the station from approximately 1898-1902. See gauging station data at the following website link <http://waterdata.usgs.gov/nm/nwis/annual>.

Concerns for drought conditions in McKinley County and the City of Gallup has been established through meetings of the McKinley County working group, public meetings, questionnaires, the National Oceanic and Atmospheric Administration, the National Weather Service, the U.S. Geological Survey, the New Mexico Drought Task Force, and New Mexico State University. Drought, as defined by the National Oceanic and Atmospheric Administration (NOAA), is a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance. The severity of the drought depends upon the degree of moisture deficiency, the duration, and the size of the affected area. Drought status is determined through use of the Palmer Drought Severity Index, the Standardized Precipitation Index, and the Surface Water Supply Index. In New Mexico, drought is known to occur every ten years on average. Drought will always be a concern in McKinley County and the City of Gallup. As recently as June 4, 2013, McKinley County signed a proclamation declaring extreme or severe drought conditions existed within the unincorporated portions of McKinley County.

EXTENT OF DROUGHT IN MCKINLEY COUNTY AND CITY OF GALLUP

The entire State of New Mexico is in some sort of drought situation and for the entire McKinley County and the City of Gallup this is reality. Referencing Figure 24, the entire area of McKinley County, to include the City of Gallup, is in an extreme drought situation. Though the monsoon



season of 2014 provided much rain for the area, the long term effects of the drought will take many years of continuous rains to bring the jurisdiction out of a extreme drought situation. Based on the historical occurrences for drought, the entire planning area can anticipate a range of drought from severe drought to extreme or D2 to D3 based on the Palmer Drought Category (Table 35). Data from the NDMC gathered from previous occurrences indicates that McKinley County and the City of Gallup experiences drought uniformly, with the planning area experiencing a D2 or Severe Drought on average. Therefore, the communities in the planning area are equally susceptible to drought events and should mitigate to an extent of severe drought. The Entire County (and City of Gallup) is at risk from drought events. As the drought continues monitoring of water usage is extremely important for all residents, businesses, government, etc. The MPT realizes the importance of the drought has caused and the current condition the county and city falls into and determined this is a high hazard to profile and monitor.

LOCATION – MCKINLEY COUNTY AND CITY OF GALLUP

McKinley County – McKinley County is an agricultural area, and is therefore extremely susceptible to the effects of drought. According to the NOAA, McKinley County is currently experiencing extreme drought conditions. This drought has had agricultural and hydrological impacts throughout the county. At present the Northwest Plateau area of New Mexico was at minus 1.4 inches as of mid-July 2003, and the long-term deficit is estimated to be minus three to four inches.

The impact of drought falls into several danger areas: fire, agricultural, and hydrological. The fire danger in New Mexico's wildland areas remains very high. Although this danger decreases with July and August thunderstorms, the overall precipitation deficit remains. In the area of agriculture, the soil is suffering from multi-year deficits, and according to the United States Department of Agriculture, 61% of New Mexico range and pasture land is in poor to very poor condition. From the hydrological standpoint, all river basins within New Mexico remain in a moderate (warning status) to severe (emergency status) drought condition, and most reservoir storage is well below normal. Although the July and August rains will continue to ease the fire danger and provide some benefit to range and pasture lands, their effect will be minimal on reservoir storage. As the county population continues to grow, demands for water will increase. With the present drought conditions causing water availability to shrink, resource conservation is needed to ensure a sustainable future. The duration of the present drought conditions in McKinley County is very difficult to predict. At present it is reported that weather patterns are similar to those that occurred in the 1950's. The "Great Drought" was considered to be a disastrous time in New Mexico. However, there are indications that the current drought may be even more severe than that. Although it is not possible to predict the long-term severity of this drought, it is safe to say that McKinley County is presently suffering from the effects of extreme drought conditions.

McKinley County's economy is primarily based on agriculture. The extent and duration of the current drought will have a large effect on this market. The continuation of drought in McKinley County has resulted in a reduction in the county's overall agricultural activities. In 1999



McKinley County had 39,000 head of cattle, with 16,000 head being beef cows. In 2003 the number of cattle has been reduced to 24,000 head, with 14,000 being beef cows. The reduction in cattle reflects the lack of available water for livestock, the lack of available natural feed which has been reduced due to lack of rain, and the increase in cost to ranchers in providing their cattle with supplemental feed. In addition, as water resources are reduced or become limited, the extent of sustainable growth within McKinley County will also become limited. The continuation of drought conditions within McKinley County is considered to be an issue that needs mitigation consideration. Although it is not possible to provide a mitigation plan that can eliminate the causes of drought, actions are available to reduce its effects on the community.

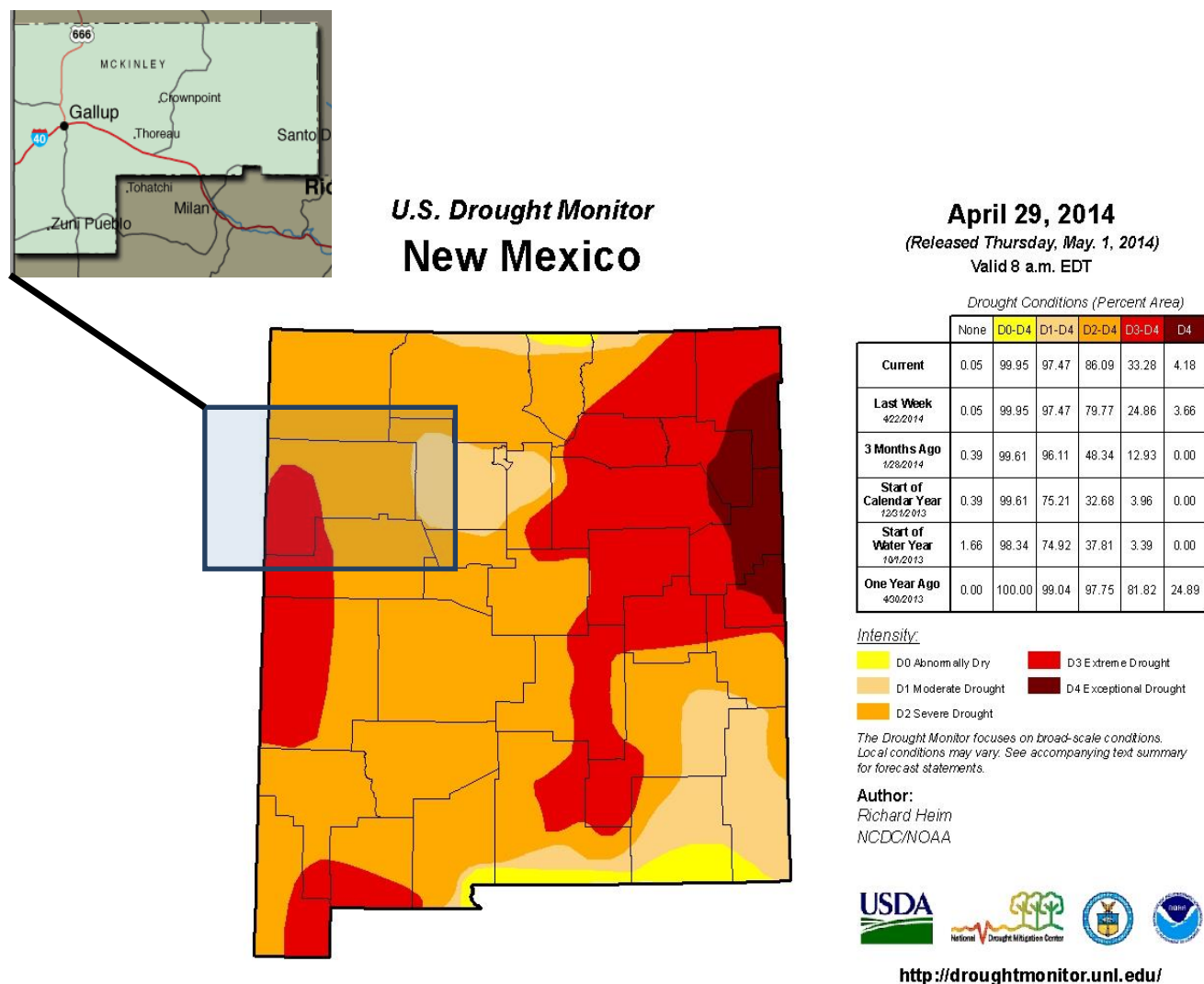
Gallup – Gallup's water supply comes from two aquifers: the Gallup Sandstone and the Dakota-Westwater. The city presently has thirteen wells with a minimum depth of 900 feet. The drought reduces these aquifers' ability to recharge, which will result in the need for deeper wells in the future. In addition, as the drought continues, the demand on the city's water system will continue to rise as people attempt to maintain their residential landscapes and use their evaporative air conditioners in the summer months. Further demands on the water system will be caused by the predicted growth of the community. As the demand for water increases, Gallup's ability to grow will become limited. To insure Gallup's continued growth, the city will either need to obtain additional water rights or implement a more conservative approach to water use.

PROBABILITY OF OCCURRENCE – DROUGHT

New Mexico has always known drought. Archeological records indicate that drought has led to the collapse of early civilizations in New Mexico, most notably the abandonment of Chaco Canyon by the Anasazi around 1300 A.D. (Annenberg/CPB Learner.Org). In the last 100 years, New Mexico has suffered from four devastating periods of drought; 1900-1910, 1931-1941, 1942-1956, and 1974-1979. The last short duration drought was in 1996 (New Mexico Drought Task Force, May 2002). Due to the cyclical nature of droughts New Mexico will enter into another period of drought. Figures 27, 27and 29 illustrate the most recent drought status of New Mexico and McKinley County/City of Gallup.



Figure 27: New Mexico Drought Monitor



Source: <http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?NM>

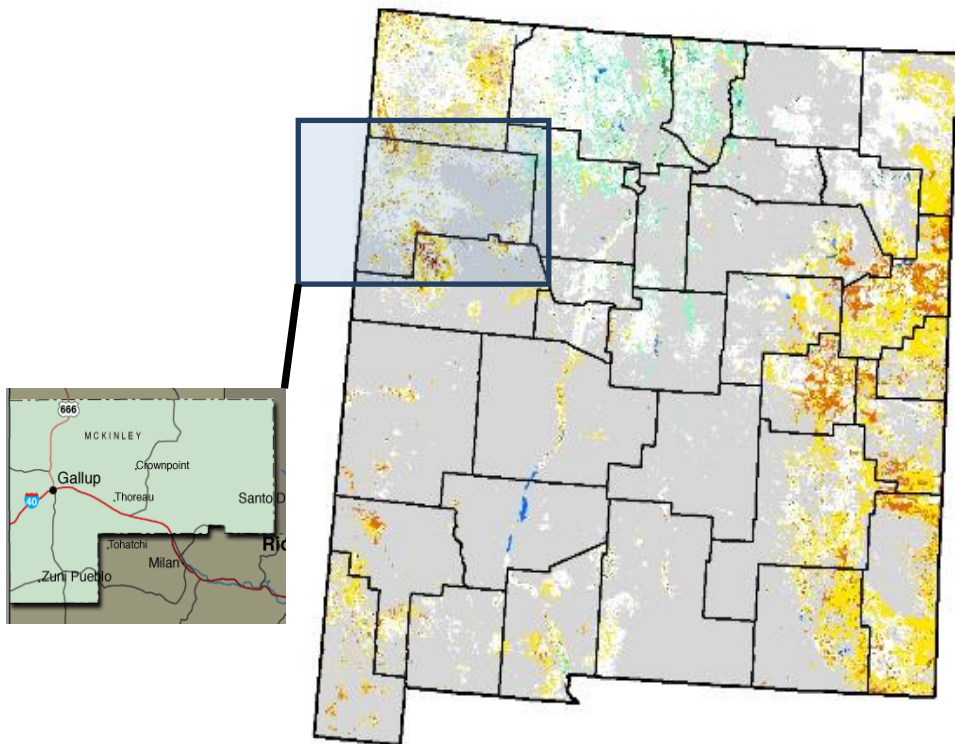
Figure 28: Vegetation Index

**Vegetation Drought Response Index
Complete: New Mexico**

April 21, 2014

Vegetation Condition

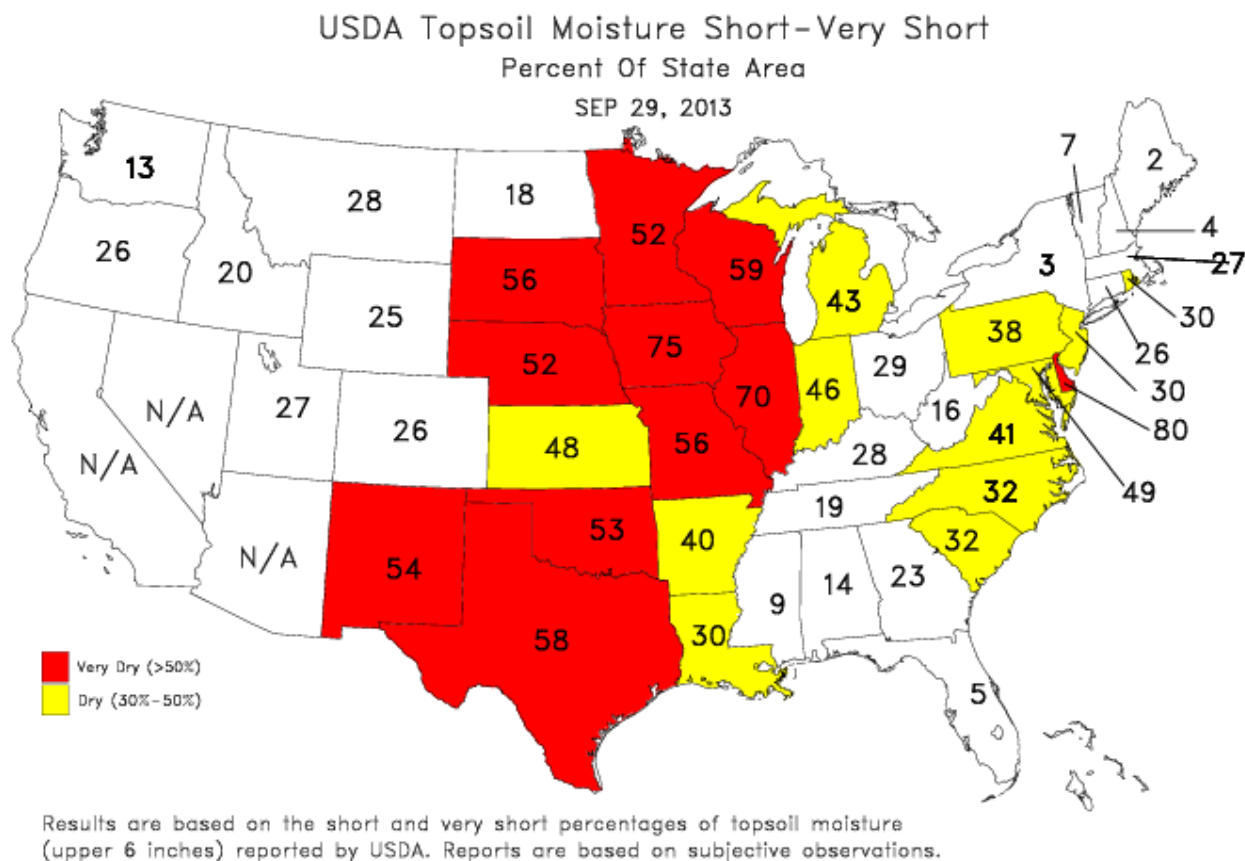
- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water



Source: <http://vegdrv.unl.edu/Home/StateVegDRI.aspx?NM>



Figure 29: Topsoil Conditions across the United States



Source: <http://droughtmonitor.unl.edu/CurrentConditions.aspx>

To determine the probability of McKinley County and the City of Gallup experiencing future drought events, the probability or chance of occurrence was calculated based on historical data provided by local authorities. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. Table 36 identifies the probability Of the McKinley County and the City of Gallup experiencing a drought event.

Table 36: Probability of Occurrence for Drought in McKinley County and City of Gallup

Probability of Occurrence	
Location	Drought
McKinley County	100%
City of Gallup	100%

Vulnerability Assessment Drought

Existing Community Assets

When droughts occur, they can have significant consequences for public and rural water supplies, human and livestock consumption, water quality, natural soil water or irrigation water for agriculture, forests, wild land fire fighting, and navigation and recreation. Those who rely on surface water (reservoirs and lakes) and subsurface water (ground water), for example, are usually the last to be affected. A short-term drought that persists for three to six months may have little impact on these sectors, depending on the characteristics of the hydrologic system and water use requirements. For droughts of longer duration, impacts may disappear quickly in the agricultural sector, because rain quickly replenishes soil moisture, but linger for months or even years in other sectors dependent on stored surface or subsurface supplies. Ground water users, often the last to be affected by drought during its onset, may also be last to experience a return to normal water levels. The length of the recovery period is a function of the intensity of the drought, its length, and the quantity of precipitation received as the drought ends.

Critical Facilities

Critical facilities, in particular fire-fighting facilities, must have reliable access to water for fire suppression. Droughts can impact their access to sufficient quantities of surface water and ground water. Other critical facilities such as schools and hospitals may experience restrictions on potable water consumption during periods of severe drought.

Future Development Trends

As business and population growth continues in McKinley County and the City of Gallup, the potential impacts of prolonged drought grow significantly. Continued residential housing and commercial development in the county and city will be difficult to sustain with the limited water resources currently available and may require additional water rights and drilling new production wells. A continuation of the current drought and lower water tables will require deeper wells for existing production. Deeper groundwater also requires more intensive treatment to filter out arsenic and minerals. With or without a prolonged drought, agricultural users of water in the County will come under increasing pressure to sell or lease water rights to developing urban areas.



CONCLUSIONS - DROUGHT

Summary of Hazard Identification and Vulnerability Assessment

Although heavy rains in September 2013 occurred in New Mexico including McKinley County and the City of Gallup the state, to include McKinley County and the City of Gallup remain in a moderate to severe drought situation. The consequences of a drought on the arid climate of New Mexico are immediately felt. Agriculture and ranching dependent on rainfall are affected within weeks of reduced precipitation. A moderate to severe drought threatens groundwater supplies that most of the County's residents rely upon for potable water.

A prolonged drought also increases the probability of other hazards. Forests become more susceptible to wildfires and native vegetation dies, leaving exposed soils susceptible to erosion, flash flooding, and dust storms. The Mitigation Planning Team has identified drought as a priority hazard in McKinley County.

What Can Be Mitigated?

The best practices include early assessment, public education and water conservation programs. Identifying the first phases of the drought and reacting with water conservation at the earliest time will help to mitigate drought later in the disaster. In the future, there is also the potential for limiting population growth and development dependent on groundwater. Mitigation management for drought is a proactive process.



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Human Caused Hazards (Hazardous Materials Release)

The production and safe transportation of hazardous materials is of great concern in most parts of the United States. Hazardous materials are substances that are harmful to life and the environment. The materials are generally man-made and some are extremely toxic. Hazardous materials and incidents dealing with their release are referred to as HAZMAT incidents.

HAZARD CHARACTERISTICS

The United States Department of Transportation (USDOT) has identified 308 specific chemicals from 20 chemical categories as HAZMAT under the Emergency Planning and Right to Know Act of 1986. These chemicals cover a wide range of toxicities, and in small doses many have minimal or no effect on humans.

Various U.S. and international organizations, including the United States Environmental Protection Agency (USEPA), the USDOT, the National Fire Protection Agency (NFPA), the United States Coast Guard (USCG), and the International Maritime Organization (IMO) have defined, for regulatory purposes, the following list of HAZMAT classes:

- Toxic agents – irritants, asphyxiates, anesthetics and narcotics, sensitizers, hepatotoxic and nephrotoxic agents, carcinogens and mutagens
- Hazardous wastes
- Hazardous substances
- Toxic pollutants
- Extremely hazardous substances

In New Mexico, transportation routes and facilities including pipelines, airports, highways, railroad routes, storage facilities, and other related facilities may become involved in the release of hazardous materials. For transportation purposes, the New Mexico Department of Transportation (NMDOT) classifies HAZMAT in one or more of the following categories:

- Explosive
- Blasting agent
- Flammable liquid
- Flammable solid
- Oxidizer
- Organic peroxide
- Corrosive material
- Compressed gas
- Flammable compressed gas
- Poison – A and B
- Irritating materials
- Inhalation hazard
- Etiological agent
- Radioactive materials
- Other regulated material

The 1986 Act requires that companies report releases of designated hazardous chemicals to the USEPA, even if the release does not result in human exposure. The different types of releases can range from air emissions of gases or particles from a pressure relief valve, smokestack, ruptured reaction vessel, broken pipe, broken, loose-fitting or punctured



equipment, containers or cylinders on transportation vehicles and from solid or liquid discharges onto the ground or into water; discharges into bodies of water from damaged ships, barges, underwater pipelines and trucks or railroad cars that fall into the water; outflows from sewer or drain outfalls, runoff from spills on land, runoff of water used to control fires or contaminated groundwater; discharges onto land; solid waste disposal in onsite landfills; injection of wastes into underground wells; transfers of wastewater to public sewage plants; and transfers of offsite facilities for treatment or storage.

Highway transportation of HAZMAT involves tanker trucks or trailers and specialized bulk-cargo vehicles. Railroad releases consist of two main types: (1) collisions and derailments that result in large spills or discharges, and (2) HAZMAT releases from leaks in fittings, seals or relief valves, and improper closures or defective equipment. Natural hazards that increase transportation-related accidents are heavy rain or snowfall, causing slippery road conditions.

In addition to the transportation of hazardous materials through McKinley County, there are numerous fixed sites that maintain significant amounts of hazardous materials. Among the larger facilities are the Phillips/Conoco fractionator and Giant gasoline facilities to the east of Gallup. A major incident at either of these facilities has the potential of causing a major disruption in traffic flow along both I-40 and the railroads.

PREVIOUS OCCURRENCES – HUMAN CAUSED HAZARDS (HAZARDOUS MATERIALS RELEASE)

McKinley County – McKinley County is traversed by U.S. Interstate 40 (I-40) and the Burlington Northern and Santa Fe Railroad. These two transportation routes parallel each other while entering McKinley County from Cibola County to the south, and exiting to the west into Arizona. Two major populated areas lie along this route: Thoreau (an unincorporated area) and Gallup. In addition to these transportation routes, U.S. 491 (formerly U.S. 666) enters McKinley County from San Juan County to the north, and ends in Gallup. I-40, the railroad lines, and U.S. 491 are all used as transportation routes for hazardous materials. I-40 is also part of the transportation route for low-level radioactive waste that traverses the county en route to the Waste Isolation Pilot Plant (WIPP) in Carlsbad.

According to the New Mexico Traffic Safety Bureau, the majority of fatal and injury accidents in McKinley County occur along I-40, and secondarily on U.S. 491. McKinley County has had the highest rate of alcohol-related accidents in New Mexico. The county started an aggressive program in 1993 that has reduced the number of alcohol-related accidents. As in most other counties in New Mexico, the single most common cause for traffic accidents are those involving other vehicles. Passenger cars and pickups have been the two most common vehicle types involved in accidents and account for 71 percent of the total accidents in McKinley County during 2001.

The danger of a possible HAZMAT incident along I-40 and the rail lines remains high within McKinley County. At present, the areas around I-40 and the rail lines are sparsely populated, with the exception of the incorporated city of Gallup and the unincorporated area of Thoreau.



SECTION 2 – Hazard Identification / Risk Assessment

Due to the low population density in much of the county, the danger to the county's general population may not be high during a HAZMAT occurrence. However, the danger to the traveling public can be extremely high, depending on the materials involved in a HAZMAT incident. In addition, the occurrence of a HAZMAT incident on I-40 could cause far-reaching economic considerations throughout the county and possibly beyond if it were necessary to shut down a major east/west interstate highway. The major vulnerability within the unincorporated area of McKinley County is along the I-40 corridor and in the areas of fixed sites such as the Giant refinery and the Conoco fractionator plant.

Gallup – Gallup is traversed along the east/west axis by both I-40 and the rail lines. In addition, U.S. 491 enters Gallup from the north and intersects with I-40. According to the New Mexico Transportation Safety Bureau, most accidents that occur in Gallup involve another motor vehicle. Passenger cars and pickups are involved in 78 percent of all accidents in Gallup. The two most common causes for accidents are following too closely and failure to yield. Additionally, of the seven most dangerous intersections in the city, six involve Munoz Drive/U.S. 491. There are five schools along these routes that could be affected by a HAZMAT incident with an isolation distance of 800 meters. The rail lines that run through the center of town also have the potential of causing a grave risk to Gallup's population and economy, and could result in the temporary closure of I-40.

Probability of Occurrence – Human Caused Hazards (Hazardous Materials Release)

The New Mexico State Police has records of thirteen (13) hazardous materials incidents in McKinley County from 2008 to 2013. No records of costs were included in the data.

To determine the probability of McKinley County and the City of Gallup experiencing Hazardous Materials Release event, the probability or chance of occurrence was calculated based on historical data provided by local authorities. Probability was determined by dividing the number of events observed by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. Table 37 identifies the probability Of the McKinley County and the City of Gallup experiencing a hazardous materials release event.

Table 37: Probability of Occurrences for Human Caused Hazards in McKinley County and City of Gallup

Probability of Occurrence	
Location	Human Caused Hazards (Hazardous Materials Incident)
McKinley County	100%
City of Gallup	100%

Though the records were not available on where these incidents occurred, It was decided by the MPT that the City of Gallup would possibly have the same percentage of probability. As future



incidents occur the planning team will obtain information that will better support the probability of future occurrences in both the county and city.

CONCLUSIONS – HUMAN CAUSED HAZARDS

Summary of Hazard Identification and Vulnerability Assessment

The danger of a potential HAZMAT incident in Gallup must be considered high, if for no other reason than the fact that both I-40 and the rail lines run through the center of town. At least four schools lie within the possible evacuation zone that could be created by such an event. Additionally, the downtown/commercial center of Gallup lies along Route 66, which parallels I-40 through much of the town. Due to the natural geography of the area, Gallup is located in a basin that runs along the Puerco River which has higher elevations to the north and south. This terrain creates a natural passage for traffic along the town's long axis. This terrain increases the potential danger to Gallup's residents in the event of a HAZMAT occurrence because many hazardous materials are heavier than air. The lower elevation of this terrain could cause hazardous materials to pool and spread through the length of town as a result, greatly increasing the affected area. A further dangerous factor is that when severe weather strikes this area, the highway is sometimes shut down. A highway shutdown due to bad weather concentrates the semi tractor-trailer trucks carrying hazardous materials in Gallup until such time as the highways are reopened. The factor of severe weather increasing the potential for traffic accidents in town as well as on the highway, when occurring simultaneously with a highway shutdown, the presence of hazardous material transports, and added concentration of traffic in town, greatly increase the risk potential for a HAZMAT event .

What Can Be Mitigated?

Understanding where and what HAZMAT events are likely to occur and provide information for both responders and the public to enable the most appropriate response. Studies of HAZMAT locations where the potential for a transportation-related HAZMAT event may take place can provide this information. An examination of this data may identify specific actions that can be taken to reduce the danger of future HAZMAT events. Knowing where hazardous material transportation accidents are most likely to occur will allow detailed analysis of the dynamics causing collisions. Such information may lead to appropriate redesign of the transportation route at those locations.



Conclusion – Hazard Identification/Risk Assessment

The hazard identification and risk assessment presented in this section were developed using best available data and result in what may be considered principally a qualitative assessment as recommended by FEMA in its “How-to” guidance document titled *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA Publication 386-2). It relies heavily on historical and anecdotal data, stakeholder input, and professional and experienced judgment regarding observed and/or anticipated hazard impacts. It also carefully considers the findings in other relevant plans, studies and technical reports.

This hazard analysis and risk assessment is based on the best and most up-to-date available data from local, state, federal and private sector sources. It presents a reasonable range of hazards that have affected the county and in some cases the state in the past. By extrapolation, those same hazards can be expected to affect the county in the future. Nevertheless, there are a number of conclusions that we can make from the hazard analysis and risk assessment:

- County and State-owned and critical facilities are no more exposed to natural hazards than are other structures in the same general vicinity. In many ways, these structures are less exposed to natural hazards than other structures due to existing understanding of commonly occurring events, such as floods, and the deliberate consideration of these hazards in the situation (locating) of these structures
- Critical facilities deserve additional mitigation attention because of the higher potential life and property loss or environmental harm in the unlikely event that they suffer significant damage
- As with other counties in the state, McKinley County has within its borders a sovereign native government that places additional challenges in the furtherance of hazard mitigation planning and actions. McKinley County requires support in the coordination of these activities with both State of New Mexico and the Navajo Nation and Zuni Pueblo.
- Improving our understanding of the risk associated with the natural hazards in McKinley County through better understanding of the complexities and dynamics of risk, how levels of risk can be measured and compared, and the myriad of factors that influence risk. An understanding of these relationships is critical in making balanced and informed decisions on managing the risk
- Comparing the risk among the natural hazards addressed. The ability to quantify the risk to all these hazards relative to one another helps in a balanced, multi-hazard approach to risk management at each level of governing authority. This ranking provides a systematic framework to compare and prioritize the very disparate natural hazards that are present in McKinley County. This final step in the risk assessment provides the necessary information for local officials to craft a mitigation strategy to focus resources on only those hazards that pose the most threat to the county.



SECTION 2 – Hazard Identification / Risk Assessment

It is important to note that, although some hazards are classified as low or moderate in probability of occurrence, it does not mean that they cannot affect McKinley County in any significant way, only that such an occurrence is relatively less likely. The hazard analysis in this document provides helpful insights for planning purposes and determination of priorities, but it cannot offer guarantees.



Section 3 – McKinley County/City of Gallup Vulnerabilities

Critical Facilities

Along with identifying the hazards that exist within McKinley County and the City of Gallup, it is also necessary to consider these hazards and their relationship to the area's existing infrastructure.

Infrastructure: Infrastructure is basic physical and organizational structures needed for the operation of a community to function. Infrastructure consists of the large-scale public systems, services, and facilities of a community that are necessary for economic activity, including power and water supplies, public transportation, telecommunications, roads, and schools.

The most vital factor in identifying any area's infrastructure is consideration of what facilities and functions create an improvement in public health, both physically and mentally. Other critical services include hospitals, medical centers, public safety organizations, and other government divisions that assist in the community's response and recovery during a hazardous event.

Vulnerability: Any location's or structure's vulnerability to a hazard must be evaluated for exposure to the hazard, frequency of occurrence, and damaging effects. Any area's existing hazards will expose population and structures to their effects. However, if the frequency of occurrence is low, mitigation of any particular hazard may not be necessary. Another factor in determining whether mitigation strategies are appropriate is cost-effectiveness: if the cost of mitigation is higher than the cost of repairing potential damages, mitigation may not be worthwhile.

McKinley County's and the City of Gallup identified infrastructure, locations, and hazard or risk exposure are noted in Table 38 and 39. The hazard/risk exposure notations have the following meanings: "No specific vulnerability" indicates that the structure is not located in a potential hazard area; "Potential HAZMAT area" indicates that the structure is located within 800 meters of a HAZMAT route; "Potential flooding" indicates that the structure is located in the floodplain. It should be noted that all facilities may be affected by some type of severe weather as profiled in this plan. It is however an unknown where and when the affects of severe weather may actually occur and/or if critical infrastructure may be affected. The facility costs are estimates and provided by the MPT.

Table 38: McKinley County/ Critical Infrastructure

Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
Law Enforcement Institutions			
New Mexico State Police	4200 East Historic Hwy. 66, Gallup	\$1,200,000	HAZMAT
McKinley Co. Sheriff's Dept.	2105 E. Aztec Ave., Gallup	\$500,000	HAZMAT



SECTION 3 – MCKINLEY COUNTY/CITY OF GALLUP VULNERABILITIES

Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
McKinley SO substation	1 st St., Thoreau	\$500,000	No specific vulnerability
FBI	102 West Coal Ave, Gallup	\$200,000	HAZMAT
UNM Police	200 College Ave, Gallup	\$200,000	Potential flooding
McKinley County/Metro Dispatch	Boyd Ave., Gallup	\$1,500,000	No specific vulnerability
Ramah Navajo Police*	BIA Route 125, Mountain View	\$500,000	HAZMAT
Crown Point Navajo Police*	Route 9, Crown Point	\$500,000	No specific vulnerability
Zuni Police Dept.*	1300 State Rd. 53, Zuni	\$500,000	No specific vulnerability
Fire Stations			
Whispering Cedars Fire Dept.	40 Whispering Cedars Rd.	\$600,000	HAZMAT, Potential flooding
Thoreau Fire Dept.	#65 1 st Ave., Thoreau	\$600,000	HAZMAT
Ft Wingate VFD	290 McGaffey Lake Rd., Ft Wingate	\$600,000	HAZMAT
Pine Hill VFD	#44 State Hwy 264, Yah-Ta-hey	\$600,000	Wildland Fire
San Mateo VFD	#1669 State Hwy 122, Prewitt	\$600,000	No specific vulnerability
Cebollrta VFB	02 Pine Garden Rd, Pine Haven	\$600,000	No specific vulnerability
Navajo Estates VFD*	#08 Cousins Rd., Vanderwagen	\$600,000	No specific vulnerability
Prewitt VFD	Location not provided	\$600,000	No specific vulnerability
Pine Haven VFD	Location not provided	\$600,000	No specific vulnerability
Vanderwagen VFD	Mariano Lakes	\$600,000	HAZMAT
Navajo Pine VFD	#14 White Cliffs Rd., White Cliffs	\$600,000	Wildland Fire
Mariano Lakes VFD	Location not provided	\$600,000	Wildland Fire
White Cliffs VFD	Location not provided	\$600,000	No specific vulnerability
Chichitah VFD	Location not provided	\$600,000	HAZMAT



SECTION 3 – MCKINLEY COUNTY/CITY OF GALLUP VULNERABILITIES

Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
BluewaterVFD	Location not provided	\$600,000	No specific vulnerability
Zuni VFD	Location not provided	\$600,000	No specific vulnerability
Tsa Ya Tah VFD	Location not provided	\$600,000	No specific vulnerability
Bluewater Acres VFD	Location not provided	\$600,000	No specific vulnerability
Timber Lake Fire Dept.	#745 Timberlake Rd. Ramah	\$600,000	Wildland Fire
Ramah Fire Dept.	4 S. Tiejen Av. Ramah	\$600,000	Wildland Fire
Crown Point VFD	Route 9 Chaco Blvd. Crown Point	\$600,000	No specific vulnerability
Government Buildings			
McKinley Co. Magistrate Court	285 S. Boardman, Gallup	\$4,000,000	HAZMAT
McKinley Co. Offices & District Court	207 W. Hill Ave., Gallup	\$4,000,000	HAZMAT
McKinley County Jail	285 S. Boardman, Gallup	\$2,000,000	HAZMAT
McKinley County OEM	222 Boyd Ave, Gallup	1,500,000	No specific vulnerability
Ramah Navajo Chapter* Tribal Center*	Ramah	Not provided	No specific vulnerability
Zuni Tribal Offices*	1300 SR 53, Zuni	Not provided	No specific vulnerability
Navajo Tribal Offices*	SR 371 Crown Point	Not provided	No specific vulnerability
McKinley County IT	285 S. Boardman, Gallup	\$1,200,000	HAZMAT
Healthcare Facilities			
Zuni IHS	Location not provided	\$3,500,000	No specific vulnerability
Crown Point HIS	Location not provided	\$3,500,000	No specific vulnerability



SECTION 3 – MCKINLEY COUNTY/CITY OF GALLUP VULNERABILITIES

Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
Utility – Water Treatment Plans			
Pueblo of Zuni*	Location not provided	\$500,000	HAZMAT
Navajo Nation*	Location not provided	\$500,000	HAZMAT
Thoreau Water & Sanitation	Location not provided	\$500,000	HAZMAT
Utility – Electrical Supply			
Williams Energy	Star Lake SR 197	\$200,000	No specific vulnerability
Tri State Generation	Prewitt	\$200,000	No specific vulnerability
Schools			
Ramah Elem. School*	Ramah	\$700,000	No specific vulnerability
Thoreau Elem. School	64 AV., Thoreau	\$700,000	HAZMAT
Thoreau Middle School	8 Hawk Circle, Thoreau	\$700,000	HAZMAT
Thoreau High School	4 Hawk Circle, Thoreau	\$700,000	HAZMAT



SECTION 3 – MCKINLEY COUNTY/CITY OF GALLUP VULNERABILITIES

Table 39: City of Gallup Critical Infrastructure

Asset ID on Map in Appendix C	Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
Government				
1	City Hall	110 W Aztec Ave	\$1,500,000	No specific vulnerability
2	Construction Dept	1830 Warehouse Ln	\$500,000	Potential flooding
10	Solidwaste Dept	1820 Warehouse Ln	\$500,000	Potential flooding
11	Warehouse	1900 Warehouse Ln	\$700,000	Potential flooding
12	Vehicle Shop	1940 Warehouse Ln	\$500,000	Potential flooding
Law Enforcement Institutions				
8	Police Department	451 Boardman Dr	\$500,000	No specific vulnerability
9	Metro Dispatch	2215 Boyd Ave	\$500,000	No specific vulnerability
Fire Stations				
3	Fire Station 1	1800 S 2nd St	\$500,000	No specific vulnerability
4	Fire Station 4	707 Rico St	\$500,000	No specific vulnerability
5	Airport Fire Station	2139 W Historic Highway 66	\$1,300,000	Potential flooding
6	Fire Station 2	911 N W Lincoln Ave	\$1,400,000	No specific vulnerability
7	Fire Station 3	3700 Churchrock St	\$1,400,000	Potential flooding
Utility				
14	Santa Fe Pump Station	1011 Roundhouse Rd	\$300,000	Potential flooding
15	East Pump Station	1492 Hasler Valley Rd	\$300,000	No specific vulnerability
16	East Pump Station Reservoir	1492 Hasler Valley Rd	\$300,000	No specific vulnerability



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Asset ID on Map in Appendix C	Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
17	Indian Hills Reservoir	660 Vandenbosch Pwky	\$300,000	No specific vulnerability
18	Cresto Sr. Reservoir	2298 Mariyanna St	\$300,000	Potential flooding
19	Cresto Jr. Reservoir	2298 Mariyanna St	\$300,000	No specific vulnerability
20	Cresto Pump Station	2298 Mariyanna St	\$300,000	No specific vulnerability
21	Grandview Sr. Reservoir	1400 S Grandview Dr	\$300,000	No specific vulnerability
22	Grandview Jr. Reservoir	1400 S Grandview Dr	\$300,000	Potential flooding
23	Grandview Jr 2 Reservoir	1400 S Grandview Dr	\$300,000	No specific vulnerability
24	Country Club Booster Station	1400 S Grandview Dr	\$300,000	No specific vulnerability
25	Well #15	1312 Hamilton Rd	\$300,000	No specific vulnerability
26	Coal Basin Rd Prv	1217 N 9th St	\$300,000	Potential flooding
27	Allan No. 1 Well	941 B Us Highway 491	\$300,000	No specific vulnerability
28	Pena Well	941 B Us Highway 491	\$300,000	No specific vulnerability
29	Indian Hills Lift Station	3204 E Historic Highway 66	\$200,000	Potential flooding
30	Mentmore Lift Station	3845 Chee Dodge Blvd	\$300,000	No specific vulnerability
31	Santa Fe 17 Well	200 Allison Rd	\$200,000	Potential flooding
32	Galanis Well	674 Us Highway 491	\$200,000	No specific vulnerability
33	Munoz 1a Well	768 Us Highway 491	\$200,000	No specific vulnerability
34	Lewis #1 Well	875a Us Highway 491	\$200,000	No specific vulnerability



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Asset ID on Map in Appendix C	Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
35	Colaiani Well	5 Fransisco Pond Rd	\$200,000	No specific vulnerability
36	Well #12	195 B Allison Rd	\$200,000	Potential flooding
37	Atsf Well #4	1011 Roundhouse Rd	\$200,000	Potential flooding
38	Atsf Well #3	1011 Roundhouse Rd	\$200,000	Potential flooding
39	Atsf Well #1	1011 Roundhouse Rd	\$200,000	Potential flooding
40	Well #8	2100 Hasler Valley Rd	\$200,000	No specific vulnerability
41	Wastewater Treatment Plant	800 Sweetwater Pl	\$1,000,000	No specific vulnerability
42	Mendoza Prv	2101 Mendoza Rd	\$300,000	Potential flooding
43	Erwin Well	767 B Us Highway 491	\$200,000	No specific vulnerability
44	Ray #1 Well	60 B Nm 264	\$200,000	No specific vulnerability
45	Southwest Reservoir	1398 Elva Dr	\$1,000,000	Potential flooding
46	Park Pump Station	300 Park Ave	\$200,000	No specific vulnerability
47	Trademart Reservoir	221 Debra Dr	\$1,000,000	No specific vulnerability
48	Well #16	249 B Us Highway 491	\$200,000	No specific vulnerability
49	West Jefferson Prv	989 N 9th St	\$300,000	Potential flooding
50	Red Rock Park Reservoir	1399 Pyramid Trail Rd	\$1,000,000	No specific vulnerability
51	Junker Well #2	886 Us Highway 491	\$200,000	No specific vulnerability
52	Atsf Well #10	1011 Roundhouse Rd	\$200,000	Potential flooding



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Asset ID on Map in Appendix C	Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
53	Yah Ta Hey Reservoir	767 A Us Highway 491	\$1,000,000	No specific vulnerability
54	Yah Ta Hey Reservoir A	767 A Us Highway 491	\$1,000,000	No specific vulnerability
55	Yah Ta Hey Reservoir A	767 A Us Highway 491	\$1,000,000	No specific vulnerability
56	Yah Ta Hey Pump Station	767 A Us Highway 491	\$200,000	No specific vulnerability
57	Kachina St Prv	585 Kachina St	\$300,000	Potential flooding
58	Allison Substation	195 Allison Rd	\$1,500,000	Potential flooding
59	Water & Wastewater Dept	1920 Warehouse Ln	\$1,000,000	Potential flooding
60	Electric Dept	1898 Warehouse Ln	\$1,000,000	Potential flooding
61	Noe Substation	1420 S Strong Dr	\$1,000,000	No specific vulnerability
62	Sunshine Substation	1135 Hasler Valley Rd	\$1,000,000	No specific vulnerability
63	Mendoza Substation	5601 Padre Canyon Rd	\$1,000,000	Potential flooding
64	Wingate Substation	853 E Historic Highway 66	\$1,000,000	No specific vulnerability
65	Junker Well #1	1006 Us Highway 491	\$300,000	No specific vulnerability
Healthcare Facilities				
Not Identified	Gallup Indian Medical Center	516 Nizhoni Blvd, Gallup	\$3,500,000	No specific vulnerability
Not Identified	Rehoboth McKinley Co. Hospital	1901 Red Rock Drive Gallup	\$3,500,000	No specific vulnerability
Transportation				
13	MUNICIPAL AIRPORT	2111 W HISTORIC HIGHWAY 66	\$1,000,000	Potential flooding



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Asset ID on Map in Appendix C	Infrastructure	Location	Estimated Facility Cost	Hazard/Risk Exposure
Schools				
Not Identified	Gallup High School	1055 Rico St., Gallup	\$850,000	Potential flooding
Not Identified	Gallup Central High School	325 Magurite, Gallup	\$850,000	Potential flooding
Not Identified	Gallup Jr. High School	680 S. Boardman, Gallup	\$850,000	No specific vulnerability
Not Identified	Gallup Middle School	1001 S. Grandview, Gallup	\$750,000	No specific vulnerability
Not Identified	JFK Middle School	600 S. Boardman, Gallup	\$750,000	No specific vulnerability
Not Identified	Chee Dodge Elem. School	641 N. Hwy 666, Gallup	\$700,000	HAZMAT
Not Identified	Indian Hills Elem. School	3604 Chinza, Gallup	\$700,000	HAZMAT Potential flooding
Not Identified	Jefferson Elem. School	300 Molica, Gallup	\$700,000	No specific vulnerability
Not Identified	Juan de Onate Elem. School	505 East Vega, Gallup	\$700,000	Potential flooding
Not Identified	Lincoln Elem. School	801 West Hill, Gallup	\$700,000	HAZMAT
Not Identified	Red Rock Elem. School	1305 Red Rock, Gallup	\$700,000	No specific vulnerability
Not Identified	Stagecoach Elem. School	725 Freedom Trail, Gallup	\$700,000	No specific vulnerability
Not Identified	Washington Elem. School	700 West Wilson, Gallup	\$700,000	HAZMAT
Not Identified	David Skeet Elem. School	45 Jones Ranch Rd., Gallup	\$700,000	No specific vulnerability
Not Identified	Roosevelt Elem. School	400 E. Logan, Gallup	\$700,000	No specific vulnerability
Not Identified	Gallup Catholic School	515 Park Ave., Gallup	\$600,000	No specific vulnerability
Not Identified	Gallup Christian School	12 Theta St. Mentmore	\$600,000	HAZMAT
Not Identified	University of New Mexico	200 College Dr., Gallup	\$1,500,000	No specific vulnerability
Not Identified	Western New Mexico	2055 State Hwy 602, Gallup	\$1,000,000	No specific vulnerability



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Community Vulnerabilities by Hazard**Wildfire**

Several volunteer fire departments have been identified within a wildfire hazard area. Damage to these fire departments will most likely affect the community's ability to respond to the fire. More than 30 WUI areas have been identified in McKinley County. Additionally McKinley County, the forests and woodlands represent the upper portions of watersheds and important social and economic resources. A large-scale wildfire in the forests would have devastating effects on personal fuelwood collection, recreation, eco-tourism (hunting, fishing, hiking, cycling, etc.), ecological values, and long-term watershed integrity and sustainability for the County.

Flooding/Flash Flooding

McKinley County presently remains vulnerable to flooding throughout its unincorporated areas where arroyos, draws, and washes either cross or run parallel to roadways. The potential for flooding in these areas has been further exacerbated by the presence of a prolonged drought throughout the southwest. This severe drought has caused vegetation to die off, which leads to bank instability along many of the waterways, thereby increasing the possibility of heavier erosion damage when storm waters flow through the area which has added to the potential damage to infrastructure such as roads, bridges, culverts and utilities. Due to the sparse population in the unincorporated areas of the county, the economic losses due to flooding are difficult to predict. However, there is no doubt that these conditions present a danger to the single residences and small family groups located here.

Severe Weather

Critical facilities are typically vulnerable to wind damage, lightning and hail due to age of construction and possible poor condition. No specific critical facilities were identified in McKinley County or the City of Gallup as vulnerable to strong winds, lightning or hail; however, emergency communications capabilities, which use unreliable electric and telephone services, may be vulnerable to disruption.

Drought

McKinley County and City of Gallup's hazard exposure due to drought is very difficult to predict, aside from the loss of revenue from the area's existing agricultural industry. The amount of revenue generated by the county's agricultural industry was not available from the New Mexico Economic Development Department. Also, as discussed earlier, the amount of water available within McKinley County and Gallup is a limiting factor to its continued growth, even under the best of circumstances.

Human Caused Hazards (Hazardous Materials Release)

The entire infrastructure in McKinley County and Gallup has one common threat: HAZMAT. Many buildings are located on or near main hazardous material transportation routes. This situation does not mean that all of these buildings are in imminent danger of being involved in a HAZMAT event, only that they might potentially be involved if a HAZMAT incident occurs in their



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general area. There are occasionally exceptions to the need to mitigate parts of the infrastructure. For example, the location of several fire stations along HAZMAT routes may actually prove to be beneficial, since fire department personnel will be the first responders to any HAZMAT incidents, and their location along hazardous material routes will actually provide first responders with rapid access to the main transportation routes.

Vulnerability and Future Growth (McKinley County and City of Gallup)

McKinley County's vulnerability is further influenced by expected future growth. The 2000 U.S. Census predicted that the county's population would increase from 74,798 to an estimated 88,163 by 2010. However, the 2010 U.S. Census reported 71,492 living in McKinley County, a loss of over 3,000 in population. Current population trends anticipate a very minor increase in population by 2020 to 73,483. The census indicates that the largest concentration of the county's population is, and will continue to be, in Gallup. Additionally, Gallup's main growth is north from Maloney Avenue and along U.S. 491. As growth occurs along U.S. 491, the population's exposure to HAZMAT will also continue to increase.

Concerns over flooding, though not completely known, can also affect the county. The county's unincorporated areas have numerous roadways that travel along or through potential flood areas, based on present FIRM data. Although flooding in these areas will have a minimal impact on the county as a whole, it will affect the transportation needs of area residents. In Gallup the present potential for flooding can disrupt much of the town's business district, and has the potential of closing the Gallup airport. Along with the disruption of Gallup's business district, if county residents are unable to travel to Gallup, there would be a large economic impact on the city's retail operations. Presently the number of structures and roadways threatened by flooding in McKinley County is incomplete. In order to address this issue the 5 year mitigation planning process for McKinley County will include an effort to identify the specific exposure created by flooding to county citizens and structures.

Recent flooding in September of 2013 occurred as a result of several factors, including the suddenness and intensity of the event and damage to infrastructure due to the prolonged drought.

The construction planned by the U.S. Army Corps of Engineers to create a retention basin along the Little Puerco Wash will eliminate or at least reduce the flooding problem in Gallup's downtown business district. Additionally, since Gallup's growth is expected to continue north of Maloney Avenue, it should not create an increase in flood risk in new construction areas.

Drought conditions have affected the county's agricultural economy and are a factor in the reduction of the area's cash receipts. Although the income from crops in the county has rebounded, the cattle industry has continued to decline. Additionally, drought conditions in the unincorporated areas of the county will increase the demand on wildland firefighting operations.

The effects of drought on Gallup have to date remained fairly minor and sufficient water rights are presently available to meet the community's needs. However, the continuation of drought conditions in the county will eventually reduce the level of the subsurface aquifer, requiring



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deeper wells. Additionally, the water rights available to the city will limit its long-term population growth.

There have been HAZMAT incidents in McKinley County but to date these have not been classified as a major release. There have, however, been incidents that have resulted in temporary road closures. On one occasion a semi truck transporting military munitions jackknifed on I-40 within Gallup's city limits. As a result of this accident, the highway was closed until the incident could be resolved. One of the primary causes of this accident was icy conditions on the roadway, which were limited in duration. However, the fact remains that the potential for a HAZMAT event increases as road conditions degrade. In addition to the normal transport of hazardous material, I-40 is also part of the Waste Isolation Pilot Plant route. As such, low-level radioactive material is transported through the county. While no incidents involving radioactive materials have yet occurred, numerous emergency exercises have been run in order to prepare an appropriate emergency response.

Wildland fires occur in McKinley County on an average of two to three times each year. Although the McGaffey/Timberlake areas have not been damaged during past events, the possibility exists and must be considered for mitigation, based on the area's growing fuel load and the continuation of the present drought conditions. The regional drought has contributed to fire danger statewide and can result in a limitation of available fire fighting resources, depending on circumstances in other parts of the state or region.

In addition to increasing fire danger, drought affects the county in other ways. The lack of rainfall throughout the region continues to cause limited water table recharge and results in a lowering of the water table. The water table is further lowered because there is a higher demand on the water system in the absence of rainfall. In addition, as the water table continues to decrease, deeper wells are required to tap into them. Deeper wells are more expensive to drill and larger pumps are required to bring the water to the surface. Finally, the limited water available in the county will eventually limit the amount of population growth that can take place. The only possible mitigation to enable further population growth will be the purchase of additional water rights in the future.



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Vulnerability Overview

Summary of Vulnerability and Losses

McKinley County and the City of Gallup are vulnerable to the effects of natural hazards. Each hazard has a unique set of characteristics that can produce different effects and impact the community differently, depending on the magnitude, duration, and intensity. Furthermore, the same hazard events will affect different parts of the county in different ways, based on geography, development, population distribution, and age of buildings. Flooding is easily mapped from previous trends; however, the other hazards (wildfires, drought and HAZMAT incidents) are harder to map due to the potential to affect areas of the county differently, the inconsistency of existing data, lack of trend data, and the lack of feasibility that these hazards would affect the entire county. For example, the nature of hazmat incidents is that they are potentially possible in all parts of the county due to transportation. They strike at random and the number and severity of past events is not necessarily a predictor of future occurrences. Therefore, loss estimation is more difficult to predict for these types of hazards. Existing disaster data is limited for use in predicting potential losses.

The FEMA *How-to-Guide* gives no guidance on estimating potential losses for drought or HAZMAT. HAZMAT incidents are more likely to cause injury to individuals than to structures, none the less the threat to the community can be devastating. Very limited guidance is given for wildfires. To complete the loss estimate worksheets, vulnerable critical facilities that the MPT identified were used to complete a potential dollar loss per hazard event based on educated assumptions. Table 40 provides an estimate of the percent the county and City of Gallup could be impacted by a natural hazard at any one time.

Table 40 Estimated Impacts from Natural Hazards

Hazard	Average Percentage Used in Calculating County-wide Loss Scenarios	Logic/Source
Wildfire	McKinley County – 100%	McKinley County Community Wildfire Protection Plan 2013
	City of Gallup – 0%	
Flooding / Flash Flooding	McKinley County – 100%	100 Year Flood Model and situational analysis based on past occurrences
	City of Gallup – 100%	
Severe Weather	McKinley County – 69%	Situational analysis based on past occurrences
	City of Gallup – 72%	
Drought	McKinley County – 100%	New Mexico Drought Task Force, New Mexico Drought Plan, Updated December 2013
	City of Gallup – 100%	
Hazardous Materials Incident	McKinley County – 100%	Data provided by the New Mexico State Police, District 6
	City of Gallup – 100%	



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Vulnerability – Critical Facilities

This section summarizes the total estimated losses for each natural hazard profiled in the hazard identification section that could affect the critical infrastructure of the county and each jurisdiction. More detail on how these estimates based on FEMA methodology were derived can be found in each hazard profile. It should be noted these estimates are based on worse-case scenarios and on preliminary, incomplete data. It is generally impossible to predict exactly what damage an event will incur, but nonetheless general estimates can be made to guide planning, preparedness, response and better decision making. Furthermore it can also help increase awareness of the potential effects of natural disasters. These loss estimates also do not take into account potential economic losses, which in many cases may be worse than structural and content losses.

Critical facilities are those facilities that are critical to government response and recovery activities immediately after a disaster. These facilities include but are not limited to police and fire stations, public works facilities, sewer and water facilities, health clinic, bridges and roads, and shelters. Important facilities may not be critical during or immediately after a disaster but are important to the resiliency and recovery of the county from a disaster. Examples of important facilities to the jurisdictions in the county are the Health Centers, Police Department, Fire Department, EMS and special needs facilities. Table 41 provides a consolidated listing of identified critical facilities in McKinley County and the City of Gallup as provided by the MPT.

Table 41 McKinley County and City of Gallup Critical Facilities

Facility	McKinley County	Projected Value Estimate	City of Gallup	Projected Value Estimate
Government	8	\$12,700,000	5	\$3,700,000
Fire – HAZMAT	21	\$12,600,000	5	\$5,100,000
Police Dept.	9	\$5,600,000	2	\$1,000,000
Education	5	\$2,800,000	19	\$14,750,000
Hospitals	2	\$7,000,000	2	\$7,000,000
Utilities	6	\$1,900,000	52	\$24,700,000
Transportation	0	N/A	1	\$1,000,000
Total	51	\$36,300,000	86	\$57,250,000

Source: Hazard Mitigation Team from each jurisdiction

Thirty six (36) critical facilities were identified in a designated natural disaster hazard area, (flooding, wildfire) and twenty three (23) located in a possible HazMat area. It should be noted that all facilities may be affected by some type of severe weather as profiled in this plan. It is however an unknown where and when the affects of severe weather may actually occur and/or



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if critical infrastructure may be affected. A list of specific facilities is provided in Table 34 and 35: McKinley County and City of Gallup Critical Infrastructure.

McKinley County/City of Gallup Critical Infrastructure Loss Estimation

In order to estimate the potential dollar losses to vulnerable critical structures, the HMP Team used the process outlined in FEMA's *"Understanding Your Risks; Identifying Hazards and Estimating Losses."* This process calls for completing a worksheet: the Loss Estimate Worksheet. The HMP Team determined that there are numerous buildings in the county and city critical significance. Loss estimates worksheets were completed for the vulnerable critical facilities for each hazard. It was not the intent of the HMP to make gross assumptions to estimate total losses but base losses on the worst case scenario of the hazards profiled in this Plan.

Loss Estimate Worksheet

To complete this worksheet, information is collected on each facility that was identified as a critical facility. This information is used to calculate the estimated losses on the worksheet. Each data element on the spreadsheet and its source is described below:

After obtaining information on identified critical facility, an estimated loss for each hazard event was calculated to arrive at a total loss (in dollars) to the community for each type of hazard. In order to arrive at a total loss, four components were examined:

- Structure Loss – determined by taking the structure's replacement value and multiplying it by the percent damage;
- Contents Loss – determined by taking the contents loss and multiplying it by the percent damage;
- Structure Use Loss – daily average operating cost multiplied by the functional downtime, which is the average time in days during which a business or service is unable to provide its services due to a hazard event; and
- Function Loss –daily average operating cost multiplied by the displacement time, which is the average time in days that the building's occupants typically must operate from a temporary location while repairs are made to the original building due to a hazard event.

The four categories of loss are then summed to arrive at the total loss for the hazard examined. In determining critical facilities in the county, the HMP Team was asked to determine locations where critical functions are carried out. The location of each facility was then compared with known hazard areas (based on the risk assessment section). The potential damages to each location were estimated based on a number of factors, including square footage and annual operating budgets. FEMA guidance on relation of square footage to facility replacement value was applied, as well as FEMA guidance on the relationship of facility function to content value. Facility management was then contacted to confirm content value, and where guidance did not accurately reflect known content value, the actual values were utilized. Finally, facility management was asked to supply annual operating budget totals for estimation of daily impact due to loss of operational capacity. Data unavailable was identified accordingly. Data deficiencies will be updated during plan maintenance over the next 5 years.



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The loss estimation was performed using the estimated impacts from natural hazards (Table 40) for each Jurisdiction, taking into account the possibility that a vulnerable critical facility may be affected by a hazard and the estimated percentage of damage due to that hazard. Table 42 is the total estimated losses for the vulnerable critical facilities and for each hazard.

Table 42 Potential Natural Hazard Losses to Critical Infrastructure

Hazard	McKinley County	City of Gallup
Flood	\$1,280,000	\$24,800,000
Wildfire	\$4,500,000	\$0
Severe Weather	\$30,744,000	\$53,676,000
Drought (see note)	\$0	\$0
Human Hazard	\$25,850,000	\$4,150,000
Total	\$62,374,000	\$82,626,000

Note: Though Drought is identified as 100% vulnerability, the MPT did not identify any critical facilities as being vulnerable. Though the MPT does recognize the affects of drought could lead to wildfires in vulnerable areas the MPT identified those structures accordingly. As updates are made to this plan, the MPT will review and update accordingly.

Vulnerability Assessment – Flood/Flash Floods

A 100-year flood event is defined as statistically having a 1 percent chance of occurring any one year. The Level 1 flood model loss estimate is based on the HAZUS-MH default data derived from national databases and expert-developed parameters that define the HAZUS-MH software. The probability of inundating rural areas in the county that have older constructed buildings and less adequate to no flood diversion structures in place is highest.

Existing Community Assets

Flood vulnerability is described in terms of the community assets that lie in the path of floods. The flood hazard vulnerability assessment for McKinley County and the City of Gallup is focused on the 100-year storm event base flood elevation, though floods of both greater and lesser flood depths are possible. Vulnerability to flash floods is difficult to determine because local terrain, soil conditions, and construction play a role in how much storm water is able to run off, percolate into the soil, or cause flash flooding.

Vulnerability Assessment – Wildfires

More than 30 WUI areas have been identified in McKinley County. Additionally McKinley County, the forests and woodlands represent the upper portions of watersheds and important social and economic resources. A large-scale wildfire in the forests would have devastating effects on personal fuelwood collection, recreation, eco-tourism (hunting, fishing, hiking, cycling, etc.), ecological values, and long-term watershed integrity and sustainability for the County. The McKinley County CWPP (2013) identifies the highest for wildfire potential in the following areas:



- Navajo
- Ramah
- Zuni Pueblo WUI - Black Rock
- Mariano Lake
- Timberlake High

These rural areas in the county would be of concern and identified as having a higher threat. The economic loss from a wildfire occurrence away from the WUI communities will depend on the acres of rangeland or forestland burned. A rangeland fire would result in the loss of livestock grazing forage. Rangeland and forest losses from wildfire would be accrued over several years until the resources recover.

Existing Community Assets

The vulnerability assessment portion of this report uses existing studies to estimate potential losses from wildfire. *The McKinley County Community Wildfire Protection Plan (CWPP) 2013* identified areas of wildland-urban interface within the county.

Critical Facilities

According to the McKinley MPT no Critical Facilities were identified within the County and/or the City of Gallup as vulnerable to wildfire. Though referencing the WUI maps an estimate loss was developed to identify potential losses on a worst case scenario of a wildfire event. Categories of Critical Facilities include infrastructure and public facilities.

Infrastructure

The Mitigation Planning Team did not identify any major infrastructure threatened by wildfire. There are all types of utilities throughout the County including overhead and underground utilities and propane tanks. There are electrical distribution lines that cross the WUI. However, more detailed information was not available at the time of the WUI report.

Communication structures are scattered throughout the county and located in areas identified as Low, Medium and High Risk areas.

Transportation routes through the county and are considered a high hazard area due to high volumes of hazardous material traveling through the state.

The Hazard Mitigation Team did not identify any infrastructure located in the City of Gallup as being at risk.



Public Facilities

Schools and municipal structures are located throughout the County and within the City of Gallup. The Hazard Mitigation Team did not identify any public structures located in risk areas.

Estimating Potential Loss

The Wildland-Urban Interface (WUI) analyses discussed above show that future wildfires could cause substantial loss of property, along with direct and indirect economic effects for residents and community businesses. Virtually almost all of the vulnerable areas are located in unincorporated areas of the county. No information on housing units in the WUI was found for McKinley County. Digital rural addressing in McKinley County is sporadic in the outlying areas. The CWPP is often the source of housing and other structures in the WUI, however, the McKinley County CWPP did not provide this information.

Future Development Trends

Mitigation options for wildland fire need to address not only the management of fuels, but also the potential for growing population in wildfire threat areas. Traditional tactics for preventing wildfires have focused on fire suppression. Rather than trying to stop all wildfires, mitigation measures such as reducing fuel loads and creating defensible spaces aim to minimize the damage caused by wildfires. More specific mitigation goals and actions are detailed in Section Three of this document.

Vulnerability Assessment – Drought

The DHSEM HMP identifies every jurisdiction in the state vulnerable to drought. Drought measurements are not very precise, and often they are directed toward particular segments of the state. For example, there are drought measurements based upon agricultural conditions; there are measurements of stream flow and water storage in reservoirs; there are measurements of groundwater and effects upon drinking water systems; and there are strictly meteorological and climatic measurements. Some drought indicators might point toward an abatement of drought conditions for the agricultural sector, while the drought continues for drinking water in the same area. Droughts in McKinley County and those jurisdictions (City of Gallup) in this HMP significantly affect human activities, wildfire suppression, natural resources, and water dependent activities, such as agriculture. The consequences of a moderate-to-severe drought pose significant challenges to include:

- **Agriculture** – Impacts associated with agriculture, farming, and ranching. Examples include damage to crop quality, income loss for farmers due to reduced crop yields, reduced productivity of cropland, insect infestation, plant disease, increased irrigation costs, cost of new or supplemental water resource development, reduced productivity of rangeland, forced reduction of foundation stock, closure/limitation of public lands to grazing, high cost/unavailability of water for livestock, and range fires.
- **Water/Energy** – Impacts associated with surface or subsurface water supplies (i. e., reservoirs or aquifers), stream levels or streamflow, hydropower generation, or navigation. Examples include lower water levels in reservoirs, lakes, and ponds; reduced



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flow from springs; reduced streamflow; loss of wetlands; estuarine impacts; increased groundwater depletion, land subsidence, reduced 105 recharge; water quality effects; revenue shortfalls and/or windfall profits; cost of water transport or transfer; cost of new or supplemental water resource development; and loss from impaired navigability of streams, rivers, and canals.

- **Environment** – Impacts associated with wildlife, fisheries, forests, and other fauna. Examples include loss of biodiversity of plants or wildlife; loss of trees from urban landscapes, shelterbelts, wooded conservation areas; reduction and degradation of fish and wildlife habitat; lack of feed and drinking water; greater mortality due to increased contact with agricultural producers, as animals seek food from farms and producers are less tolerant of the intrusion; disease; increased vulnerability to predation; migration and concentration; and increased stress to endangered species.
- **Fire** – Impacts associated with forest and range fires that occur during drought events. The relationship between fires and droughts is very complex. Not all fires are caused by droughts and serious fires can result when droughts are not taking place.
- **Other** – Drought impacts that do not easily fit into any of the above categories. Overall, however, most indications are that the drought will continue and will probably get worse before it gets better. Therefore, McKinley County and the City of Gallup is judged to have high vulnerability to drought.

Existing Community Assets

The effects of drought on McKinley County and City of Gallup remained fairly minor and sufficient water rights are presently available to meet the community's needs for the short term. However, the continuation of drought conditions in the county will eventually limit its long-term population growth. Drought will also prolong and increase the threat of wildfire in the County, and as new construction takes place, an increase in the potential loss due to fire can be anticipated.

Critical Facilities

Depending on the nature of the operation, critical facilities need water for multiple purposes, from potable water to fire suppression. Groundwater supply provides a buffer from the impact of short-term droughts. In the County, rural fire stations sometimes rely on relatively shallow wells that are sensitive to the impact of moderate droughts, resulting in slower recharge rates for storage tanks and sometimes necessitating drilling new wells to a greater depth.

Estimating Potential Loss

McKinley County is an agricultural area, and is therefore extremely susceptible to the effects of drought. According to the NOAA, McKinley County is currently experiencing extreme drought conditions. This drought has had agricultural and hydrological impacts throughout the county. At present the Northwest Plateau area of New Mexico was at minus 1.4 inches as of mid-July 2003, and the long-term deficit is estimated to be minus three to four inches.



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Between 2000 and November 2012 there were three state-declared disasters for effects related to drought, primarily for loss of domestic drinking water: May 1996, May 2000, and June 2002. The total cost of drought-related events for this time period is \$279,459. However, indirect costs are estimated to be between \$50 and \$100 million. Over the past 10 years (120 months), New Mexico has had 50 months of drought. Based on this, McKinley County and the City of Gallup can anticipate at least some type of drought conditions every other year.

Future Development Trends

Although population estimates for McKinley County indicate slow increases in population (US Census, 2010) impacts to the County and the City of Gallup will continue. Because groundwater is typically recharged by surface water a continuation of the current drought and lower water levels in the region will lower the water table even farther and require deeper wells. The existing groundwater is variable in quality, depending upon hydrogeology of the area. Deeper groundwater also requires more intensive treatment to filter out arsenic and other minerals. A State Drought Task Force is focusing on water project construction, water rights, conservation, and water quality to deal with the State's continuing drought conditions.

Vulnerability Assessment – Severe Weather

According to the State of New Mexico Hazard Mitigation Plan, all areas of the state have thunderstorms to include McKinley County and the City of Gallup. According to the National Weather Service (NWS), the thunderstorm season in New Mexico begins over the high plains in the eastern part of the state in mid to late April, peaks in May and June, declines in July and August, and then drops sharply in September and October. The State HMP also states that all counties, to include McKinley County and the City of Gallup, consistently experience lightning activity of LAL5 or higher, specifically during the monsoon seasons to include hail activity during this same monsoon time periods.

Existing Community Assets

McKinley County and the City of Gallup can anticipate some form of severe weather activity based upon seasonal meteorological patterns and local topographical conditions every year. It is susceptible to a full range of severe weather conditions, including substantial rainfall, thunderstorms, dangerous lightning, hail, and drought. Features like lightning, heavy rain, and high thunderstorm winds can damage utility infrastructure, aged or dilapidated structures, and other assets in McKinley County and the City of Gallup.

Critical Facilities

Vulnerability to the effects of severe thunder storms, lightning and hail on buildings is dependent on the age of the building (and what building codes were in effect at the time it was built), type of construction, and condition of the structure (i.e., how well the structure has been maintained). Critical facilities are typically vulnerable to wind damage, lightning and hail due to age of construction and possible poor condition. No specific critical facilities were identified as vulnerable to strong winds, lightning or hail; however, emergency communications capabilities, which use unreliable electric and telephone services, may be vulnerable to disruption.



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Most critical facilities in McKinley County and the City of Gallup are vulnerable to the effects of severe storms, due to potential disruption of services and transportation systems as well as possible structural failure due to high thunderstorm winds, lightning or hail.

Estimating Potential Loss

Severe weather is difficult to predict precisely in pattern, frequency, and degree of severity. The impact from thunderstorm events (thunderstorms, hail, lightning, high wind and extreme heat) has been moderate, with localized flooding occurring from severe thunderstorms and minor damages from lightning and moderate to heavy damage to specific locations from hail. Highly vulnerable populations include those in mobile home parks, recreational vehicles, and aged or dilapidated housing, but no area is safe.

Future Development Trends

The Mitigation Planning Team needs more information on previous occurrences in both the County and City on the affects of severe weather events on both the critical infrastructure and community assets. As future data becomes available the MPT will update the plan accordingly.

Vulnerability Assessment – Human Caused (Hazardous Materials Release)

Hazardous materials can include toxic chemicals, radioactive materials, infectious substances, and hazardous wastes. Accidental hazardous material release can occur wherever hazardous materials are manufactured, stored, transported, or used. Such releases can affect the nearby population and contaminate critical or sensitive environmental areas. Anticipated population growth and related residential and commercial development within McKinley County and the City of Gallup will expose an increasing population to the possibility of hazardous materials (hazmat) emergencies. Due to population density of the County, emergency hazmat response will continue to be difficult in isolated or remote areas of the County.

Existing Community Assets

With a hazardous material release, whether accidental or intentional, there are several potentially exacerbating or mitigating circumstances that will affect the severity of the release. Exacerbating conditions can enhance or magnify the effects of a hazard. Mitigating conditions, on the other hand, can reduce the effects of a hazard. These conditions include:

- Weather conditions that can affect how the released material is dispersed (e.g., high winds can increase the spread of gases or radioactive materials);
- How the chemical was released (e.g., explosion, volatilization, air or water release) and the nature of the substance;
- Micro-meteorological effects of buildings and terrain that can alter travel and duration of agents;
- Shielding in the form of sheltering in-place (staying indoors during an emergency) that protects people and property from harmful effects; and



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- Non-compliance with applicable codes (e.g. fire and building codes) and maintenance failures (e.g., fire protection and containment features) that can substantially increase the damage to the facility and surrounding buildings.

While hazardous material releases in McKinley County and the City of Gallup have occurred in the past, they are considered difficult to predict. An occurrence is largely dependent upon the accidental or intentional actions of a person or group. Identifying those community assets is difficult and requires further study from the MPT to provide a more thorough of the potential impact on the community.

Critical Facilities

During MPT meetings the members identified 19 critical facilities in McKinley County and 17 critical facilities in the City of Gallup are vulnerable to a hazmat incident. It's difficult to predict or determine when a hazmat incident will occur that will affect the population. Both the County and City are most vulnerable from transiting hazardous materials via rail and highway. Further reviews need to be conducted to determine if other critical facilities should be added to the list. As information becomes available during future reviews of the plan will be included and updated accordingly.

Estimating Potential Loss

HAZMAT events in McKinley County and the City of Gallup are generally handled by the Gallup Fire Department with assistance from Volunteer Fire Departments and/or other Jurisdictions depending on the size and scope of the incident. The cost in handling a HAZMAT event is extremely dependent on the materials involved and location of the event. On average, costs associated with most HAZMAT calls are small and cost between \$300 and \$500 per hour. Additionally, a large event, requiring the full team and backup personnel, will cost a minimum of \$3,000 per hour. Along with the cost for fire personnel and equipment, additional costs will be incurred depending on the number of law enforcement and emergency medical personnel that will also be required during a given response. Further costs can be expected when a HAZMAT event occurs in an area of high population or business district.

Future Development Trends

The Mitigation Planning Team needs more information about past hazardous material releases from fixed sites and vehicles transporting hazardous materials, the nature of the operations that already exist in the County and City, and the status of existing emergency action plans.



Capabilities and Resources

Capabilities

McKinley County and the City of Gallup have a number of resources that can be called on to help inform, educate and implement and hazard mitigation actions. Resources and regulatory framework for each jurisdiction in McKinley County and the City of Gallup is summarized in Table 43 and relevant aspects of each regulatory component are discussed below.

Table 43: McKinley County Capability Assessment Matrix

Name of Jurisdiction	Flood Damage Prevention Ordinance	City/County Websites	Emergency Operations Plan	Land use ordinances Subdivision Regulations	Building Codes	Participation in NFIP	Local Law Enforcement	Local Fire Department	Community Wildfire Protection Plan	Economic Development Plan	McKinley County Comprehensive Plan
McKinley County	x	x	x	x	x	x	x	x	x	x	x
City of Gallup	x	x	x	x	x	x	x	x	x	x	x

Summary of Capabilities and Resources

The Mitigation Planning Team – The McKinley County/City of Gallup’s planning team has been meeting regularly since 2013 and is invested in the Hazard Mitigation Planning process. The MPT includes representation of several County and City departments. The MPT included planners who will incorporate information from this plan into other County and City plans.

Website – The HMP had the use of County and City websites that were used to gather information from the public and to seek input for mitigation planning. The planning team will continue to post meeting notices, meeting notes, information requests, and HMP updates as they occur.

Floodplain Ordinances – McKinley County and the City of Gallup have floodplain ordinances and a floodplain manager to administer the ordinances. Through administration of floodplain ordinances, the County and City ensures that all new construction or substantial improvements



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to existing structures located in the 100-year floodplain are built with first-floor elevations above the base flood elevation or are flood proofed.

Zoning – Building Codes – Land Use Regulations – Building codes are important mitigation tools because they can be tailored to fit specific hazards present in each region. At a minimum the County has adopted the State of New Mexico Uniform Building Codes. Starting July 1, 2004, New Mexico's Construction Industries Division, which has oversight and provides inspection services for unincorporated areas of the state, switched from the 1997 Uniform Building Code (UBC) to the 2003 International Building Code (IBC).

McKinley County and the City of Gallup have adopted several development regulations. The Uniform Building Code (UBC), implemented statewide, and the floodplain ordinance, implemented locally, are two of the most important capabilities that the County/City utilizes to prevent potential damage from floods, wind, and other hazards.

- ✓ *Uniform Building Code* – Building codes are important mitigation tools because they are tailored to fit specific hazards present in each region. Consequently, structures that are built to applicable codes are resistant to hazards such as strong winds, floods, and wildfires, and can help mitigate the effects of these hazards. New Mexico has adopted the 1997 UBC code as a minimum standard for all communities and provides inspection services through the Construction Industry Division of the New Mexico Department of Regulations and Licensing. Individual counties and municipalities are at liberty to adopt the most current UBC but have not yet chosen to do so.
- ✓ *Floodplain Ordinance* – Through administration of floodplain ordinances, the municipalities ensure that all new construction or substantial improvements to existing structures located in the 100-year floodplain are built with first-floor elevations above the base flood elevation.

The County also undertook several important planning initiatives prior to this hazard mitigation plan that affect McKinley County and City of Gallup:

- ✓ The McKinley County Comprehensive Plan, adopted by County Commissioners on April 8, 2003, establishes a broad framework for inter-jurisdictional respect and cooperation. Its principal purpose is analyzing citizen's resources toward improving quality of life while preserving tradition and natural assets. While recognizing the sovereignty of tribal lands, property rights of individual citizens, municipal adopted plans and regulations as well as preferences of unincorporated community residents, the plan focuses on a dozen different subject areas:
 - Land Use
 - Transportation
 - Water
 - Intergovernmental Relations
 - Health
 - Housing
 - Education
 - Tourism
 - Economic Development
 - Fiscal Impact
 - Infrastructure



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- ✓ McKinley County has participated in the National Flood Insurance Program (NFIP) since February 1, 2007. McKinley County has had flood damage prevention ordinances since February 20, 2007. These ordinances were designed to minimize flood losses within the County.
- ✓ McKinley County has completed a Community Wildland Protection Plan (CWPP) for the County. This document will be used to assess threat and establish priorities for mitigation.
- ✓ McKinley County has taken steps to address water conservation and reduce the severity of drought for the County through the City of Gallup Joint Utility that offers a rebate program to encourage low flow toilet and other water saving devices for its noncommercial customers. They also participate in WaterSense, a partnership program by the U.S. Environmental Protection Agency, seeks to protect the future of our nation's water supply by offering people a simple way to use less water with water-efficient products, new homes, and services.

Incorporation of Capabilities

The MPT reviewed the initiatives listed above and incorporated these existing efforts where it was applicable into the mitigation actions enumerated in Sections Two and Three of the Plan.

RESOURCES

Additional community-based, technical and funding resources currently available for McKinley County and the City of Gallup include the following:

Community-based Organizations

- ✓ *Firewise Communities/USA*—is a project of the National Wildfire Coordinating Group's Wildland Urban Interface Working Team. It provides information and guidance for communities in the wildland-urban interface area. (www.firewise.org).

Technical Resources—to help in future decision making:

- ✓ *FEMA elevation certificates* - are kept on file at McKinley County Planning and Zoning. Certificates are in paper format only but provide detailed information that can be used to determine risk on a building-by-building basis.
- ✓ *Community Development Block Grants (CDBG) Geographic Information System (GIS)* capabilities at the County level.

Funding Opportunities for possible support of mitigation or multiple objective actions, including:

- ✓ *Community Development Block Grants (CDBG)*—The Community Service Department administers the CDBG program for the County.
- ✓ *Debt Capacity*—Authority to incur debt through special tax, general obligation bonds, revenue bonds, and private activity bonds.



- ✓ *Capital Improvement Program.*
- ✓ *Taxes*—The County and the City have the authority to levy sales taxes.
- ✓ *Fees*—The City has the authority to levy fees for water, sewer, gas, trash collection, landfills and electric service.

SUMMARY OF CAPABILITIES AND RESOURCES

The Capabilities and Resources of McKinley County related to mitigation planning can be summarized in term of opportunities and deficiencies to be addressed in the mitigation plan and implementation strategy as follows:

Opportunities

- Periodic updates to the Comprehensive Plans for McKinley County to provide opportunities to integrate information about hazard vulnerability into the land use subdivision and approval process. This integration will help develop appropriate long-range strategies to combat drought, fire, earthquake, and flood hazards
- CRS planning is consistent with and complementary to the mitigation planning process undertaken for the Disaster Mitigation Act of 2000 and can help in developing more detailed mitigation activities for flood-related disasters in McKinley County
- FEMA funding available for Citizens Emergency Response Team (CERT) to train the public to respond to large disasters, both locally and nationally

Deficiencies

Only 23% of the land holdings in McKinley County are privately owned and therefore taxable. A large percentage (59%) is Indian Trust Land, 13% are Federal lands and 5% are State owned.



Section 4 – Goals, Objectives and Mitigation Actions

This section presents a series of goals, objectives, and mitigation actions to help guide the County in addressing its hazard vulnerabilities. The identified mitigation actions reflect the vulnerabilities discussed in Section One by identifying measures that may help the County and included municipalities avoid, prevent, or otherwise reduce damages from hazards. Additionally, a table is provided outlining those goals, objectives and mitigation actions from the June 30, 2005 Plan and their status since the 2005 Plan was adopted.

Terminology

Goals are general guidelines that explain what you want to achieve. Goals are usually expressed, as broad policy statements representing desired long-term results. In this Plan, goals directly respond to the results of the hazard identification and risk assessment.

Objectives describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals. The described steps are usually measurable and can have a defined completion date.

Actions provide more detailed descriptions of specific work tasks to help a community achieve the goals and objectives. For each objective statement, there are alternatives for mitigation actions that must be evaluated to determine the best choices for each situation.

Mitigation Plans include a listing and description of the preferred mitigation actions and the strategy for implementation, i.e., who is responsible, how will they proceed, when should the action be initiated and/or completed.

Mitigation Goals and Objectives

The goals and objectives presented below were developed in light of the risk assessment findings presented in Section Two and Three, with direction and guidance provided by the McKinley County Mitigation Planning Team and New Mexico Department of Homeland Security and Emergency Management.

Current criteria under DMA 2000 recommend that local mitigation plans be consistent with and support their State's hazard mitigation plan. The State of New Mexico's existing State Hazard Mitigation Plan September 19, 2013, details the mitigation goals, objectives, and strategies based on the State's risk assessment. The State's hazard mitigation goals are presented in Figure 30. The mitigation objectives and actions identified by the Mitigation Planning Team are presented below and according to hazard type in the same order as Section One. However, this listing does not reflect the order in which the projects will be implemented. In Section Four, recommended projects are prioritized for implementation as resources become available.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Figure 30: New Mexico Hazard Mitigation Goals

State of New Mexico Hazard Mitigation Goals
<ul style="list-style-type: none">• Reduce the number of injuries due to natural hazards• Reduce the number of fatalities from natural hazards• Reduce the amount of property damage, both public and private, from natural hazards• Shorten recovery times after natural hazard events• Improve communication, collaboration and integration among state and local emergency management agencies• Increase awareness and understanding of risks and opportunities for mitigation among the citizens and elected officials of New Mexico

Mitigation Goals

The overarching goal of mitigation is to save lives, limit injuries, decrease property damage, and reduce recovery time in future responses. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical facilities, reduce exposure to liability and minimize community disruption. Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions by 1) *increasing awareness of hazards and their effects*; 2) *decreasing the possibility of impact from the most significant threats*; 3) *decreasing the vulnerability of critical and non-critical facilities*; 4) *increasing established response mechanisms by enhancing partnerships*; and 5) *increasing coordination between levels of government regarding incidents and response mechanisms*. This current HMP is intended to facilitate these goals and actions and to focus on the county's top priorities for hazard mitigation for the next five years. If other hazards that currently are not deemed significant do become significant in the future, updates to this plan will include mitigation strategies to address them.

The Plan Update process requires review of previous goal and objectives that were defined in the previous plan. The following goals and objectives have been realized since the June 30, 2005 Mitigation Plan was adopted. The MPT met and reviewed the 2005 Plan goals and objectives and identified those that were no longer required or adequate and identified new goals for the updated plan. Additionally, the MPT worked to assign new actions for the new goals and objectives and provided information on those actions that were either completed, ongoing, new, or were to be retained and reprioritized in the updated Plan. Table 44 is a comparison of goals and objectives based on the 2005 HMP and the updated May 2014 Hazard Mitigation Plan for McKinley County and the City of Gallup. Table 45 provides an update on those actions identified in the June 30, 2005 Hazard Mitigation Plan for McKinley County and the City of Gallup.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

PAST GOALS, OBJECTIVES, ACTIONS UPDATE

Table 44: Comparison of McKinley County Goals and Objectives from 2005 to 2014 as Determined by the Mitigation Planning Team

Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
Wildfire			
McKinley County		McKinley County	
Increase the safety of the residents in the Timberlake and McGaffey areas by reducing the threat of wildfire in the area.	<ul style="list-style-type: none"> Provide the residents of areas identified as urban/wildland interface with information concerning the creation of defensible space around their residences. Provide the residents of areas identified as urban wildland interface with information concerning the use of fire resistant landscaping materials. Establish revised building codes for areas identified as urban/wildland interface to require the use of fire resistant and fire retardant construction materials. 	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.	<ul style="list-style-type: none"> Reduce the exposure to critical facilities in high or extreme wildfire hazard areas. Reduce the exposure of residential structures to wildfires. Educate the public in defensible space and other preventative measures to minimize wildfire risk.
City of Gallup		City of Gallup	
None Identified	None Identified	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.	<ul style="list-style-type: none"> Reduce the exposure to critical facilities in high or extreme wildfire hazard areas. Reduce the exposure of residential structures to wildfires. Educate the public in defensible space and other preventative measures to minimize wildfire risk.



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Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
Drought			
McKinley County		McKinley County	
Establish a countywide water conservation program, through educating the general public, about methods that can be used to reduce present water use.	<ul style="list-style-type: none">• Provide the public with information concerning actions they can take to reduce their personal water use.• Provide the public with information concerning drought-resistant landscaping materials and the use of reusable water sources.	Reduce possibility of damage and loss due to drought.	<ul style="list-style-type: none">• Educate the population on damage and loss due to drought• Continue efforts to encourage residents to use water-saving landscaping techniques• Diversify County’s sources of potable water.
Reduce overall water use in the county during times of drought.	<ul style="list-style-type: none">• Enact legislation that restricts water usage in McKinley County based on existing drought conditions.		
City of Gallup		City of Gallup	
Reduce the city’s water use during times of drought.	Enact legislation concerning the restricted use of water during periods of drought.	Reduce possibility of damage and loss due to drought.	<ul style="list-style-type: none">• Educate the population on damage and loss due to drought• Continue efforts to encourage residents to use water-saving landscaping techniques.• Diversify City’s sources of potable water.
Reduce the annual usage of water by residential customers.	<ul style="list-style-type: none">• Create a public education program on the use of drought resistant plants for use in landscaping.• Create a public education program on methods of reducing water usage.• Revise the city’s building code to require the use of low flow toilets and shower heads in new construction.• Revise the city’s building code to require the use of gray water recovery systems in new construction.		



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Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
Flood			
McKinley County		McKinley County	
Ensure that all floodplains in McKinley County are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.	<ul style="list-style-type: none">• Begin participating in the National Flood Insurance Program.• Seek an update of floodplain maps for McKinley County.• Review all present floodplain related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.	<ul style="list-style-type: none">• Ensure that all floodplains in McKinley County are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.• Reduce exposure of structures and roads to flooding• Build and support local capacity to enable the public to prepare for, respond to and recover from disasters
Evaluate all county roads to ensure the safety of the county transportation system relating to flood danger.	<ul style="list-style-type: none">• Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.• Inspect county road system for the possibility of roadway collapse potential due to the erosion of waterway banks.		
City of Gallup		City of Gallup	
Identify and prevent growth into floodplains in Gallup.	<ul style="list-style-type: none">• Seek an update of floodplain maps for Gallup.• Review all present floodplain-related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.	<ul style="list-style-type: none">• Ensure that all floodplains in and around the City of Gallup are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
Evaluate the existing storm drainage system in Gallup and upgrade as required.	<ul style="list-style-type: none"> Redesign the system presently in place for the activation of the pumping station in the Maloney Ave. area in order to avoid future flooding. Locate areas within Gallup's present drainage system where diversion channels or retention basins can be created to reduce the demands on the present storm drainage system. Based on updated floodplain maps, evaluate and redesign the present storm drainage system to provide adequate drainage in Gallup during storm situations. 		<ul style="list-style-type: none"> Reduce exposure of structures and roads to flooding Build and support local capacity to enable the public to prepare for, respond to and recover from disasters
Severe Weather			
McKinley County		McKinley County	
None Identified	None Identified	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to severe weather.	<ul style="list-style-type: none"> Develop a comprehensive approach to reducing the possibility of damage and loss of function to identified vulnerable buildings and critical facilities, due to the effects of severe weather hazards. Address identified data limitations regarding lack of detailed information about characteristics of individual structures such as construction type, age, condition, compliance with current building codes, etc.
		Reduce possibility of injury and death due to severe weather.	<ul style="list-style-type: none"> Increase public awareness of actions to take during all types of severe weather. Increase participation in and number of storm watcher programs throughout the County



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
			<ul style="list-style-type: none">Identify critical facilities and buildings that are vulnerable to severe weather events.
		Reduce possibility of severe damage, injury and death due to High Wind.	<ul style="list-style-type: none">Identify critical facilities and buildings that are vulnerable to high winds.
		Reduce possibility of injury and death due to Extreme Heat.	<ul style="list-style-type: none">Increase public awareness of actions to take during extreme heat events.
City of Gallup		City of Gallup	
None Identified	None Identified	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to severe weather.	<ul style="list-style-type: none">Develop a comprehensive approach to reducing the possibility of damage and loss of function to identified vulnerable buildings and critical facilities, due to the effects of severe weather hazards.Address identified data limitations regarding lack of detailed information about characteristics of individual structures such as construction type, age, condition, compliance with current building codes, etc.
		Reduce possibility of injury and death due to severe weather.	<ul style="list-style-type: none">Increase public awareness of actions to take during all types of severe weather.Increase participation in and number of storm watcher programs throughout the City
		Reduce possibility of severe damage, injury and death due to High Wind.	<ul style="list-style-type: none">Identify critical facilities and buildings that are vulnerable to high winds.
		Reduce possibility of injury and death due to Extreme Heat.	<ul style="list-style-type: none">Increase public awareness of actions to take during extreme heat events.



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Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
Human Caused (HAZMAT)			
McKinley County		McKinley County	
Reduce the consequences of a HAZMAT incident when it occurs in McKinley County.	<ul style="list-style-type: none"> Develop an alternate route around known potential HAZMAT event locations. Create building/zoning codes that limit the exposure of major transportation routes to potential fixed site HAZMAT events. 	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to human-caused hazards.	<ul style="list-style-type: none"> Develop a comprehensive approach to reducing the possibility of injury and loss of life for residents and occupants of existing structures and critical facilities with the highest relative vulnerability to the effects of hazardous material releases from discrete locations. Protect the public water system and other critical facilities from contamination from hazardous materials incidents Protect the general population and special populations from hazardous materials incidents. Increase awareness of hazards and actions to take during an emergency.
City of Gallup		City of Gallup	
Reduce or eliminate the potential effects of a HAZMAT incident in Gallup.	<ul style="list-style-type: none"> Review and evaluate Gallup's building/zoning codes and restrict the construction of new hazardous material users/producers within city limits. When new infrastructure or schools locations are considered, ensure that they are located outside the potential affected zones of a HAZMAT incident. Evaluate the possibility of creating a hazardous material bypass around Gallup. 	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to human-caused hazards.	<ul style="list-style-type: none"> Develop a comprehensive approach to reducing the possibility of injury and loss of life for residents and occupants of existing structures and critical facilities with the highest relative vulnerability to the effects of hazardous material releases from discrete locations. Protect the public water system and other critical facilities from contamination from hazardous materials incidents



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Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
			<ul style="list-style-type: none">Protect the general population and special populations from hazardous materials incidents.Increase awareness of hazards and actions to take during an emergency.
Public Awareness			
McKinley County		McKinley County	
None Identified	None Identified	Promote disaster-resistant development.	<ul style="list-style-type: none">Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard areas and improve the ability to identify vulnerable structures.Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.
		Develop a unified approach to hazard mitigation that will include all residents of the County – including the Navajo Nation and Zuni Pueblo	<ul style="list-style-type: none">Provide public education to increase awareness of hazards and opportunities for mitigation.Promote partnerships to continue the development of a Countywide approach to identifying and implementing mitigation actions.
City of Gallup		City of Gallup	
None Identified	None Identified	Promote disaster-resistant development.	<ul style="list-style-type: none">Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard areas and improve the ability



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard Mitigation Plan 2008		Hazard Mitigation Plan 2014	
Goal	Objective	Goals	Objective
			to identify vulnerable structures. <ul style="list-style-type: none"> • Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.
		Develop a unified approach to hazard mitigation that will include all residents of the City	<ul style="list-style-type: none"> • Provide public education to increase awareness of hazards and opportunities for mitigation. • Promote partnerships to continue the development of a City-wide approach to identifying and implementing mitigation actions.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Table 45: Update of Past Goals, Objectives and Actions from the June 30, 2005 HMP

Hazard	Goal	Objective	Actions	Remarks
McKinley County				
Wildfire	Increase the safety of the residents in the Timberlake and McGaffey areas by reducing the threat of wildfire in the area.	Provide the residents of areas identified as urban/wildland interface with information concerning the creation of defensible space around their residences.	Defensible Space Education.	Ongoing and reprioritized
		Provide the residents of areas identified as urban wildland interface with information concerning the use of fire.	Landscaping Material Education	Ongoing and reprioritized
		Establish revised building codes for areas identified as urban/wildland interface to require the use of fire resistant and fire retardant construction materials.	Revision of building codes	Ongoing and reprioritized
City of Gallup				
Wildfire	None Identified	None Identified	N/A	N/A



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
McKinley County				
Drought	Establish a countywide water conservation program, through educating the general public, about methods that can be used to reduce present water use.	Provide the public with information concerning actions they can take to reduce their personal water use.	Personal water use reduction	Ongoing and reprioritized
		Provide the public with information concerning drought-resistant landscaping materials and the use of reusable water sources.	Reusable water source	Ongoing and reprioritized
	Reduce overall water use in the county during times of drought.	Enact legislation that restricts water usage in McKinley County based on existing drought conditions.	Drought usage restrictions	Ongoing and reprioritized
City of Gallup				
Drought	Reduce the city's water use during times of drought.	Enact legislation concerning the restricted use of water during periods of drought.	No Action Identified in the 2005 Hazard Mitigation Plan	N/A
	Reduce the annual usage of water by residential customers.	Create a public education program on the use of drought resistant plants for use in landscaping.	Public Education Campaign	Ongoing and reprioritized
		Create a public education program on methods of reducing water usage.	Water use restrictions	Ongoing and reprioritized



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
City of Gallup				
Drought	Reduce the annual usage of water by residential customers.	Revise the city's building code to require the use of low flow toilets and shower heads in new construction.	Revision of the City's Building Code.	Ongoing and reprioritized
		Revise the city's building code to require the use of gray water recovery systems in new construction.	Required installation of gray water recovery systems	Ongoing and reprioritized
McKinley County				
Flood	Ensure that all floodplains in McKinley County are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.	Begin participating in the National Flood Insurance Program.	Participation in National Flood Insurance Program	Completed
		Seek an update of floodplain maps for McKinley County.	Update Floodplain Maps	Completed
		Review all present floodplain related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.	Review and Update of Building/Zoning Codes	Not completed, ongoing and reprioritized.
	Evaluate all county roads to ensure the safety of the county transportation system relating to flood danger.	Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.	Inspection and redesign of water crossings	Not completed, ongoing and reprioritized.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
McKinley County				
Flood	Evaluate all county roads to ensure the safety of the county transportation system relating to flood danger.	Inspect county road system for the possibility of roadway collapse potential due to the erosion of waterway banks.	Safe Crossing Program.	Not completed, ongoing and reprioritized.
			Evaluation of waterway banks in relationship to county roads	Not completed, ongoing and reprioritized.
City of Gallup				
Flood	Identify and prevent growth into floodplains in Gallup.	Seek an update of floodplain maps for Gallup.	Update Floodplain Maps	Completed
		Review all present floodplain-related building/zoning codes for the City of Gallup to ensure that future construction projects will not create the potential for loss due to flooding.	Review and Update of Building/Zoning Codes	Not completed, ongoing and reprioritized.
	Evaluate the existing storm drainage system in Gallup and upgrade as required.	Redesign the system presently in place for the activation of the pumping station in the Maloney Ave. area in order to avoid future flooding.	Pump activation method	Not completed, ongoing and reprioritized.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
City of Gallup				
Flood	Evaluate the existing storm drainage system in Gallup and upgrade as required.	Locate areas within Gallup's present drainage system where diversion channels or retention basins can be created to reduce the demands on the present storm drainage system.	Construction of diversion channels and required retention basins	Not completed, ongoing and reprioritized.
		Based on updated floodplain maps, evaluate and redesign the present storm drainage system to provide adequate drainage in Gallup during storm situations.	Evaluation and upgrading of storm drainage system	Not completed, ongoing and reprioritized.
McKinley County				
Severe Weather	None Identified	None Identified	N/A	N/A
City of Gallup				
Severe Weather	None Identified	None Identified	N/A	N/A



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
McKinley County				
Human Caused	Reduce the consequences of a HAZMAT incident when it occurs in McKinley County.	Develop an alternate route around known potential HAZMAT event locations.	Creation of localized bypasses	Completed
		Create building/zoning codes that limit the exposure of major transportation routes to potential fixed site HAZMAT events.	Evaluate and revise building/zoning codes	Not completed, ongoing and reprioritized.
			Review and Revision of the All Hazards Emergency Operations Plan	Completed
			Public Education Program	Not completed, ongoing and reprioritized.
City of Gallup				
Human Caused	Reduce or eliminate the potential effects of a HAZMAT incident in Gallup.	Review and evaluate Gallup's building/zoning codes and restrict the construction of new hazardous material	Review and amend building/zoning codes	Not completed, ongoing and reprioritized.
		When new infrastructure or schools locations are considered, ensure that they are located outside the potential affected zones of a HAZMAT incident.	Comprehensive review prior to new construction	Completed
		Evaluate the possibility of creating a hazardous material bypass around Gallup.	Creation of a hazardous material bypass	Completed



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Hazard	Goal	Objective	Actions	Remarks
McKinley County				
Public Awareness	None Identified	None Identified	N/A	N/A
City of Gallup				
Public Awareness	None Identified	None Identified	N/A	N/A



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

The ultimate mission of hazard mitigation is the protection and preservation of life and property from the effects of the occurrence of natural hazards. Local governments can make progress toward this goal through coordinated planning and financing to achieve the specific objectives set forth in their hazard mitigation plans. To this end, the Mitigation Planning Team (MPT) strategy has been to develop several methods for mitigating the hazards identified in Section 2, Hazard Identification/Risk Analysis, as the most likely hazards to have severe consequences in McKinley County: flood, drought wildfire, severe weather and human caused hazards. The MPT has developed goals and objectives and has suggested action items that can provide directions and methods for mitigating these hazards.

The Team met to discuss goals and objectives. Feedback from local officials and communities stress lack of resources and need to work within McKinley County and City of Gallup's limited capabilities. Tables 46 through 57 identify those goals, objectives and actions discussed during MPT meetings.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Wildfire Mitigation Actions – McKinley County

Table 46: Wildfire Mitigation Actions for McKinley County

Hazard	Goal	Objective	Actions
Wildfire	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.	Reduce the exposure to critical facilities in high or extreme wildfire hazard areas.	Identify, create and maintain defensible space around critical facilities located in high or extreme wildfire hazard areas, such as schools, fire stations, etc.
			Conduct assessment of County owned critical facilities vulnerable to wildfire and replace roofs with fire resistant materials.
		Reduce the exposure of residential structures to wildfires.	Reduce fuel loads and create defensible space around structures in the wildland - urban interface areas. <ul style="list-style-type: none"> • Expand Chipping Program • Expand Fuel Thinning Program
		Educate the public in defensible space and other preventative measures to minimize wildfire risk.	Make educational materials available through the Fire Marshal's Office and the Office of Emergency Management Use Department to inform citizens about Best Management Practices (BMPs) for defensible Space. <ul style="list-style-type: none"> • Outreach Notification
			Apply for and Create Firewise Communities in high risk subdivisions.
			Educate the public on evacuation routes and evacuation procedures. Build upon existing evacuation routes.
			Educate the public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Flooding Mitigation Actions – McKinley County

Table 47: Flooding Mitigation Actions for McKinley County

Hazard	Goal	Objective	Actions
Flooding	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.	Ensure that all floodplains in McKinley County are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.	Review all present floodplain related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.
		Reduce exposure of structures and roads to flooding	Enhance and/or develop drainage in flood prone areas of the county.
			Conduct studies and update floodplain and Floodway maps in the County.
			Continue to meet the compliance requirements outlined in the NFIP.
			Inspect county road system for the possibility of roadway collapse potential due to the erosion of waterway banks.
			Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.
		Build and support local capacity to enable the public to prepare for, respond to and recover from disasters	Expand and disseminate GIS and other hazard information on the internet.
			Develop, support and fund Citizen Corps Programs, to include Community Emergency Response Teams (CERT) that also includes a mitigation component.



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			Create a virtual and physical library that contains all technical studies, particularly natural resources.
			Develop and Flood Hazard Education/Outreach Plan.
			Work with County officials to increase awareness among property owners including information mailings to property owners in the 100-year floodplain; and sponsoring a series of workshops about costs and benefits of acquiring and maintaining flood insurance coverage for property owners in the 100-year floodplain.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Severe Weather Mitigation Actions – McKinley County

Table 48: Severe Weather Mitigation Actions for McKinley County

Hazard	Goal	Objective	Actions
Severe Weather (Thunderstorms to include Hail, Lightning high wind and extreme heat)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to severe weather.	Develop a comprehensive approach to reducing the possibility of damage and loss of function to identified vulnerable buildings and critical facilities, due to the effects of severe weather hazards.	Conduct non-technical evaluation process for critical facilities to determine relative severe weather vulnerability and gather information for subsequent refinements of this mitigation plan.
		Address identified data limitations regarding lack of detailed information about characteristics of individual structures such as construction type, age, condition, compliance with current building codes, etc.	Complete structure data records in the County Geographic Information System to allow future revisions of this plan to more easily incorporate information about property values, construction types, etc.
	Reduce possibility of injury and death due to severe weather.	Increase public awareness of actions to take during all types of severe weather.	Increase number of radios/televisions with warning capabilities in public buildings, parks, and recreational areas to announce alerts from the Emergency Alert System and National Weather Radio.
			Purchase NOAA radio for public buildings.
		Increase participation in and number of storm watcher programs throughout the County/City	Increase number of National Weather Service's SKYWARN on the ground storm spotters; recruit and train additional storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

			Establish a County Storm Ready Community to enhance mitigation and preparedness for the impacts of severe weather through better planning, education, and awareness.
			Utilize existing critical facility data records in the County Geographic Information System to target County Owned structures in need of updating.
			Conduct a survey of all manufactured homes in the County to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).
			Determine the number of emergency generators to power essential buildings and seek acquisition.
	Reduce possibility of severe damage, injury and death due to High Wind.	Identify critical facilities and buildings that are vulnerable to high winds.	Utilize existing critical facility data records in the County Geographic Information System to target structures in need of updating.
			Conduct a survey of all manufactured homes in the County to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).
	Reduce possibility of injury and death due to Extreme Heat.	Increase public awareness of actions to take during extreme heat events.	Review existing extreme heat emergency response plans for enhancement opportunities
			Work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities during heat emergencies.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Drought Mitigation Actions – McKinley County

Table 49: Drought Mitigation Actions for McKinley County

Hazard	Goal	Objective	Actions
Drought	Reduce possibility of damage and loss due to drought.	Educate the population on damage and loss due to drought	Publish and distribute educational materials on water conservation techniques and drought management strategies.
			Conduct public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk to drought.
			Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictions and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.
			Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.
		Continue efforts to encourage residents to use water-saving landscaping techniques.	Enforce existing zoning and building regulations on water use.
			Expand County water conservation incentive program.
			Implement projects to use treated effluent for non potable uses.
		Diversify County's sources of potable water.	Conduct public water supply and drought vulnerability assessments.
			Incorporate drought mitigation activities into county management planning activities.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Human Caused Hazards (Hazmat) Mitigation Actions – McKinley County

Table 50: Human Caused Hazards (HazMat) for McKinley County

Hazard	Goal	Objective	Actions
Human Caused Hazards (Hazard Material Releases)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to human-caused hazards.	Develop a comprehensive approach to reducing the possibility of injury and loss of life for residents and occupants of existing structures and critical facilities with the highest relative vulnerability to the effects of hazardous material releases from discrete locations.	<p>The Mitigation Planning Team should work with facility owners and operators identified in Section One of this plan as having the greatest potential impact (based on population in the immediate vicinity) to ensure:</p> <ul style="list-style-type: none"> • Facilities are in compliance with all relevant local, state and federal requirements; • Neighboring property owners understand the potential extent of the risk; and • Alert and warning systems are appropriate to the situation. <p>Pursue the installation of warning systems around hazardous material facilities if it is determined that existing warning systems are inadequate for the purposes of alerting neighboring property owners.</p>
		Protect the public water system and other critical facilities from contamination from hazardous materials incidents	Assess need to and methods to harden critical facilities against the effects of human-made hazards, e.g., the accidental or intentional release of chemical, biological, or radioactive material; the accidental or intentional detonation of explosives; or acts of random violence or terrorism.
		Protect the general population and special populations from hazardous materials incidents.	Maintain and update equipment used to respond to hazardous materials incidents.
			Ensure the Emergency Operations Plan meets or exceeds current state and federal hazardous materials emergency planning requirements.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

		Increase awareness of hazards and actions to take during an emergency.	The Mitigation Planning Team should seek opportunities to inform individuals and business owners regarding recommendations for how to prepare for hazardous material releases. The recommendations will advise taking some of the same actions to prepare for earthquakes, floods, and fires, i.e., store a multi-day supply of food and water, make sure flashlights, portable radios, and spare batteries are on hand; and identify out-of-town contacts and a place to reunite if separated from family members. All residents can be better prepared by becoming more aware of surroundings and reporting suspicious activity to local officials.
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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Public Awareness Mitigation Actions – McKinley County

Table 51: Public Awareness Mitigation Actions for McKinley County

Hazard	Goal	Objective	Actions
Public Awareness	Promote disaster-resistant development.	Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard areas and improve the ability to identify vulnerable structures.	Distribute and promote the inclusion of the vulnerability analysis information as part of periodic plan review and revisions at the County level.
			Utilize a GIS for identifying “sensitive area” properties in the County.
		Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.	Work with the State, County, City and municipal building inspectors to consistently enforce the building code from jurisdiction to jurisdiction.
	Develop a unified approach to hazard mitigation that will include all residents of the County – including the Navajo Nation and Zuni Pueblo	Provide public education to increase awareness of hazards and opportunities for mitigation.	Identify and publicize success stories as part of an overall consistent public relations program. Develop opportunities for community participation in mitigation planning programs and emergency preparedness programs, to include citizen advisory committees and Citizen Corps Programs.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

		Promote partnerships to continue the development of a Countywide approach to identifying and implementing mitigation actions.	Convene regular meetings with the Mitigation Planning Team to discuss issues and progress related to the implementation of the plan.
			Promote partnerships among the County departments, non-profit organizations, and the private sector to develop a citywide approach to mitigation activities.
			Incorporate hazard mitigation concepts into all applicable County operations.
			Coordinate with Navajo and Zuni governments to identify areas of concern and projects that will benefit all residents of McKinley County
			Identify Emergency Alerts Systems to notify and provide emergency information to McKinley County residents.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Wildfire Mitigation Actions – City of Gallup

Table 52: Wildfire Mitigation Actions for City of Gallup

Hazard	Goal	Objective	Actions
Wildfire	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.	Reduce the exposure to critical facilities in high or extreme wildfire hazard areas.	Identify, create and maintain defensible space around critical facilities located in high or extreme wildfire hazard areas, such as schools, fire stations, etc.
			Conduct assessment of City-owned critical facilities vulnerable to wildfire and replace roofs with fire resistant materials.
		Reduce the exposure of residential structures to wildfires.	Develop dependable sources of water for fire suppression in all residential areas of the City.
		Educate the public in defensible space and other preventative measures to minimize wildfire risk.	Apply for and Create Firewise Communities in high risk subdivisions.
			Educate the public on evacuation routes and evacuation procedures. Build upon existing evacuation routes.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Flooding Mitigation Actions – City of Gallup

Table 53: Flooding Mitigation Actions for City of Gallup

Hazard	Goal	Objective	Actions
Flooding	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.	Ensure that all floodplains in and around the City of Gallup are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.	Review all present floodplain related building/zoning codes for the City of Gallup to ensure that future construction projects will not create the potential for loss due to flooding.
		Reduce exposure of structures and roads to flooding	Conduct flash flooding hydrology studies in flood prone areas of the city.
			Enhance and/or develop drainage in flood prone areas of the county/city.
			Conduct studies and update floodplain and Floodway maps in the City.
			Continue to meet the compliance requirements outlined in the NFIP.
			Inspect city road system for flood-prone crossings and develop safety crossings for county transportation use.
		Build and support local capacity to enable the public to prepare for, respond to and recover from disasters	Expand and disseminate GIS and other hazard information on the internet.



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			Develop, support and fund Citizen Corps Programs, to include Community Emergency Response Teams (CERT) that also includes a mitigation component.
			Create a virtual and physical library that contains all technical studies, particularly natural resources.
			Develop a Flood Hazard Education/Outreach Plan.
			Work with City officials to increase awareness among property owners including information mailings to property owners in the 100-year floodplain; and sponsoring a series of workshops about costs and benefits of acquiring and maintaining flood insurance coverage for property owners in the 100-year floodplain.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Severe Weather Mitigation Actions – City of Gallup

Table 54: Severe Weather Mitigation Actions for City of Gallup

Hazard	Goal	Objective	Actions
Severe Weather (Thunderstorms to include Hail, Lightning high wind and extreme heat)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to severe weather.	Develop a comprehensive approach to reducing the possibility of damage and loss of function to identified vulnerable buildings and critical facilities, due to the effects of severe weather hazards.	Conduct non-technical evaluation process for critical facilities to determine relative severe weather vulnerability and gather information for subsequent refinements of this mitigation plan.
		Address identified data limitations regarding lack of detailed information about characteristics of individual structures such as construction type, age, condition, compliance with current building codes, etc.	Complete structure data records in the City Geographic Information System to allow future revisions of this plan to more easily incorporate information about property values, construction types, etc.
	Reduce possibility of injury and death due to severe weather.	Increase public awareness of actions to take during all types of severe weather.	Increase number of radios/televisions with warning capabilities in public buildings, parks, and recreational areas to announce alerts from the Emergency Alert System and National Weather Radio.
			Purchase NOAA radio for public buildings.
		Increase participation in and number of storm watcher programs throughout the City	Increase number of National Weather Service's SKYWARN on the ground storm spotters; recruit and train additional storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

			Establish a City Storm Ready Community to enhance mitigation and preparedness for the impacts of severe weather through better planning, education, and awareness.
		Identify critical facilities and buildings that are vulnerable to severe weather events.	Utilize existing critical facility data records in the City Geographic Information System to target City-Owned structures in need of updating.
			Conduct a survey of all manufactured homes in the City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).
			Determine the number of emergency generators to power essential buildings and seek acquisition.
	Reduce possibility of severe damage, injury and death due to High Wind.	Identify critical facilities and buildings that are vulnerable to high winds.	Utilize existing critical facility data records in the City Geographic Information System to target structures in need of updating.
			Conduct a survey of all manufactured homes in the City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).
	Reduce possibility of injury and death due to Extreme Heat.	Increase public awareness of actions to take during extreme heat events.	Review existing extreme heat emergency response plans for enhancement opportunities
			Work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities during heat emergencies.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Drought Mitigation Actions – City of Gallup

Table 55: Drought Mitigation Actions for City of Gallup

Hazard	Goal	Objective	Actions
Drought	Reduce possibility of damage and loss due to drought.	Educate the population on damage and loss due to drought	Publish and distribute educational materials on water conservation techniques and drought management strategies.
			Conduct public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk to drought.
			Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictions and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.
			Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.
		Continue efforts to encourage residents to use water-saving landscaping techniques.	Enforce existing zoning and building regulations on water use.
			Expand City water conservation incentive program.
			Implement projects to use treated effluent for non potable uses.
		Diversify City's sources of potable water.	Conduct public water supply and drought vulnerability assessments.
			Incorporate drought mitigation activities into city management planning activities.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Human Caused Hazards (Hazmat) Mitigation Actions – City of Gallup

Table 56: Human Caused Hazards (HazMat) for City of Gallup

Hazard	Goal	Objective	Actions
Human Caused Hazards (Hazard Material Releases)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to human-caused hazards.	Develop a comprehensive approach to reducing the possibility of injury and loss of life for residents and occupants of existing structures and critical facilities with the highest relative vulnerability to the effects of hazardous material releases from discrete locations.	<p>The Mitigation Planning Team should work with facility owners and operators identified in Section One of this plan as having the greatest potential impact (based on population in the immediate vicinity) to ensure:</p> <ul style="list-style-type: none"> Facilities are in compliance with all relevant local, state and federal requirements; Neighboring property owners understand the potential extent of the risk; and Alert and warning systems are appropriate to the situation. Pursue the installation of warning systems around hazardous material facilities if it is determined that existing warning systems are inadequate for the purposes of alerting neighboring property owners.
		Protect the public water system and other critical facilities from contamination from hazardous materials incidents	Assess need to and methods to harden critical facilities against the effects of human-made hazards, e.g., the accidental or intentional release of chemical, biological, or radioactive material; the accidental or intentional detonation of explosives; or acts of random violence or terrorism.
		Protect the general population and special populations from hazardous materials incidents.	Maintain and update equipment used to respond to hazardous materials incidents.
			Ensure the Emergency Operations Plan meets or exceeds current state and federal hazardous materials emergency planning requirements.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

		<p>Increase awareness of hazards and actions to take during an emergency.</p>	<p>The Mitigation Planning Team should seek opportunities to inform individuals and business owners regarding recommendations for how to prepare for hazardous material releases. The recommendations will advise taking some of the same actions to prepare for earthquakes, floods, and fires, i.e., store a multi-day supply of food and water, make sure flashlights, portable radios, and spare batteries are on hand; and identify out-of-town contacts and a place to reunite if separated from family members. All residents can be better prepared by becoming more aware of surroundings and reporting suspicious activity to local officials.</p>
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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Public Awareness Mitigation Actions – City of Gallup

Table 57: Public Awareness Mitigation Actions for City of Gallup

Hazard	Goal	Objective	Actions
Public Awareness	Promote disaster-resistant development.	Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard areas and improve the ability to identify vulnerable structures.	Distribute and promote the inclusion of the vulnerability analysis information as part of periodic plan review and revisions at the City level.
			Utilize a GIS for identifying “sensitive area” properties in the City.
		Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.	Work with the State, County, City and municipal building inspectors to consistently enforce the building code from jurisdiction to jurisdiction.
	Develop a unified approach to hazard mitigation that will include all residents of the County – including the Navajo Nation and Zuni Pueblo	Provide public education to increase awareness of hazards and opportunities for mitigation.	Identify and publicize success stories as part of an overall consistent public relations program.
			Develop opportunities for community participation in mitigation planning programs and emergency preparedness programs, to include citizen advisory committees and Citizen Corps Programs.
		Promote partnerships to continue the development of a City-wide approach to identifying and implementing mitigation actions.	Convene regular meetings with the Mitigation Planning Team to discuss issues and progress related to the implementation of the plan.
			Promote partnerships among the City departments, non-profit organizations, and the private sector to develop a citywide approach to mitigation activities.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

			Incorporate hazard mitigation concepts into all applicable City operations.
			Identify Emergency Alerts Systems to notify and provide emergency information to City of Gallup residents.



Prioritization of Mitigation Actions

The methodology used here to determine action item priorities was based upon a consensus of the MPT. Factors considered were cost effectiveness, environmental impact, and technical feasibility. However, nothing in this plan should be construed as an absolute. Rather, the priorities identified in this plan are to be viewed as guidelines for McKinley County, the City of Gallup and its partners in hazard mitigation within the county, not as requirements. McKinley County and the City of Gallup need to assess its evolving vulnerability to the hazards it faces and make its own priority determinations. This may result in continual change in the ranking of hazards.

The mitigation strategies described here, including funding for mitigation actions, are part of an overall, general plan for preventing or mitigating beforehand potentially hazardous situations. However, far less mitigation funding is available than is needed, and there is intense competition for what is available. The Department of Homeland Security and Emergency Management (DHSEM) is sometimes able to offer grant applicants technical assistance in planning and executing specific projects, but federal pre-disaster mitigation funding must be authorized annually by Congress. Post-disaster mitigation funding is based on disaster costs arising from a Stafford Act disaster declaration.

Often grant funding is for specific types of projects, and potential grant recipients must use what is available to them, regardless of priority. The Federal Emergency Management Agency (FEMA) allocates grants to local governments based upon recommendations from the state. The state in turn prioritizes grant applications based upon the needs of a given applicant in a given situation. Considering these limitations, it is not possible to predict the amount of mitigation grant funding that will be available in the future, and so funding has not been considered a limiting factor in developing mitigation strategies and action items for this plan.

Other factors, such as special considerations with respect to National Environmental Policy Act (NEPA) regulations and the National Historic Properties Act (NHPA) can impose limitations on spending federal funds, making some actions so difficult as to become all but impossible. For planning purposes, the MPT has not considered these limitations either. When the time actually comes for deciding to pursue a specific project with federal funding, all of these factors will come into play.

FEMA defines Benefit-Cost Analysis (BCA) as the method by which the future benefits of a mitigation project are determined and compared to its cost. The end result is a Benefit-Cost Ratio (BCR), which is derived from a project's total net benefits divided by its total cost. The BCR is a numerical expression of the cost-effectiveness of a project. BCRs of 1.0 or greater have more benefits than costs and are therefore cost-effective.



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Fundable projects were those that the benefit-cost analysis had determined to be cost effective. For these projects, the cost of implementing the mitigation technique is less than the cost of not providing any mitigation and continuing to pay for the consequences of not mitigating.

The Team used the STAPLE + E process, which is composed of the following evaluation categories: **S**ocial, **T**echnical, **A**ministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. Each category has its own specific considerations that must be met when evaluating a mitigation method (Figure 31).

Figure 31: STAPLE+E Process

Evaluation Category	Considerations
Social	<ul style="list-style-type: none">• Community Acceptance• Adversely Affects Segment of Population
Technical	<ul style="list-style-type: none">• Technical Feasibility• Long-Term Solution• Secondary Impacts
Administrative	<ul style="list-style-type: none">• Staffing Levels & Training• Funding Allocated• Maintenance/Operations
Political	<ul style="list-style-type: none">• Political Support• Local Champion or Proponent• Public Support
Legal	<ul style="list-style-type: none">• State Authority• Existing Local Authority• Action Potentially Subject to Legal Challenge by Opponents
Economic	<ul style="list-style-type: none">• Benefit of Mitigation• Cost of Mitigation Action• Contributes to Economic Goals• Outside Funding Requirements
Environmental	<ul style="list-style-type: none">• Affects Land/Water Bodies• Affects Endangered Species• Affects Hazardous Materials and Waste Sites• Consistent with Community's Environmental Goals• Consistent with Federal Laws

Source: Table adapted from FEMA 386-3, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies*

Each criterion in the STAPLE + E process was evaluated and rated according to: 0 = Poor, 1 = Fair, 2 = Good, 3 = Excellent. These rating were defined as:



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

Poor: The mitigation method does not meet basic criteria established under the evaluation category.

Fair: The mitigation method meets the basic criteria established under the evaluation category.

Good: The mitigation method exceeds the basic criteria established under the evaluation category.

Excellent: The mitigation method exceeds the basic established criteria in an innovative or new way.

The lists of projects that follow contain the list of mitigation actions, including the rationale for inclusion, responsible organizations, estimated costs, possible funding sources, and timeline for implementation. Following is the list of mitigation actions, identified by the Mitigation Planning Team, for the identified jurisdictions. The actions for each jurisdiction (McKinley County and City of Gallup) are listed in order of priority and the overall priority ranking, per the preceding discussion, is also indicated. Table 58 and 59 outlines those projects by natural hazard and priority. Some projects support all jurisdictions profiled in this HMP and actions are identified accordingly.

Ranking Results

The prioritization of mitigation actions in this Plan should not be construed as absolute. It is not necessary for the first priority to be met before subsequent priorities are addressed. McKinley County and the City of Gallup will often make determinations about what project to implement based on available resources such as funding and staffing. Often grant funding is available for a specific project type; potential grant recipients must use what is available to them, even if the action item is not listed as the top priority. The priorities identified in this Plan are to be viewed as guidelines for McKinley County and the City of Gallup, not as requirements.



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SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

McKinley County Prioritized Projects

Table 58: McKinley County Prioritized Mitigation Actions

McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Publish and distribute educational materials on water conservation techniques and drought management strategies.	\$50,000	Ongoing	Local Water Authority McKinley County OEM	1	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Public Awareness	Identify Emergency Alerts Systems to notify and provide emergency information to McKinley County residents.	\$120,000	18 Months	McKinley County OEM	2	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Coordinate with Navajo and Zuni governments to identify areas of concern and projects that will benefit all residents of McKinley County	\$0.00	12 Months	McKinley County OEM	3	<ul style="list-style-type: none"> • Self-funded
Human Caused Hazards (Hazard Material Releases)	<p>The Mitigation Planning Team should work with facility owners and operators identified in Section One of this plan as having the greatest potential impact (based on population in the immediate vicinity) to ensure:</p> <ul style="list-style-type: none"> • Facilities are in compliance with all relevant local, state and federal requirements; • Neighboring property owners understand the potential extent of the risk; and • Alert and warning systems are appropriate to the situation. Pursue the installation of warning systems around hazardous material facilities if it is determined that existing warning systems are inadequate for the purposes of alerting neighboring property owners. 	\$125,000	18 Months	McKinley County OEM	4	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Human Caused Hazards (Hazard Material Releases)	Ensure the Emergency Operations Plan meets or exceeds current state and federal hazardous materials emergency planning requirements.	\$0.00	12 Months	McKinley County OEM County FD	5	<ul style="list-style-type: none"> • Self-funded



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Human Caused Hazards (Hazard Material Releases)	The Mitigation Planning Team should seek opportunities to inform individuals and business owners regarding recommendations for how to prepare for hazardous material releases. The recommendations will advise taking some of the same actions to prepare for earthquakes, floods, and fires, i.e., store a multi-day supply of food and water, make sure flashlights, portable radios, and spare batteries are on hand; and identify out-of-town contacts and a place to reunite if separated from family members. All residents can be better prepared by becoming more aware of surroundings and reporting suspicious activity to local officials.	\$0.00	12 Months	McKinley County OEM	6	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Flooding	Review all present floodplain related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.	\$0.00	24 Months	McKinley County OEM Floodplain Manager	7	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Increase number of radios/televisions with warning capabilities in public buildings, parks, and recreational areas to announce alerts from the Emergency Alert System and National Weather Radio.	\$15,000	12 Months	McKinley County OEM	8	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Wildfire	Apply for and Create Firewise Communities in high risk subdivisions.	\$60,000	24 Months	McKinley County FD	9	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Promote partnerships among the County departments, non-profit organizations, and the private sector to develop a citywide approach to mitigation activities.	\$0.00	18 Months	McKinley County OEM	10	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Drought	Conduct public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk to drought.	\$0.00	12 Months	Local Water Authority McKinley County OEM	11	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Enforce existing zoning and building regulations on water use.	\$0.00	Ongoing	Local Water Authority McKinley County OEM	12	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Wildfire	Conduct assessment of County owned critical facilities vulnerable to wildfire and replace roofs with fire resistant materials.	\$120,000	18 Months	McKinley County FD	13	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Incorporate hazard mitigation concepts into all applicable County operations.	\$0.00	12 Months	McKinley County OEM	14	<ul style="list-style-type: none"> • Self-funded
Flooding	Conduct flash flooding hydrology studies in flood prone areas of the city.	\$300,000	18 Months	McKinley County OEM	15	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Wildfire	Educate the public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures.	\$60,000	18 months	McKinley County FD	16	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Human Caused Hazards (Hazard Material Releases)	Assess need to and methods to harden critical facilities against the effects of human-made hazards, e.g., the accidental or intentional release of chemical, biological, or radioactive material; the accidental or intentional detonation of explosives; or acts of random violence or terrorism.	\$0.00	24 Months	McKinley County OEM	17	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Flooding	Enhance and/or develop drainage in flood prone areas of the county/city	\$10,000,000	60 Months	Public Works	18	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Drought	Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.	\$50,000,000	120 Months	Local Water Authority	19	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Public Awareness	Utilize a GIS for identifying "sensitive area" properties in the County.	\$0.00	Ongoing	McKinley County GIS	20	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Determine the number of emergency generators to power essential buildings and seek acquisition.	\$2,000,000	36 Months	Facilities McKinley County OEM	21	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Human Caused Hazards (Hazard Material Releases)	Maintain and update equipment used to respond to hazardous materials incidents.	\$250,000	18 Months	County FD County Law Enforcement McKinley County OEM	22	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Identify and publicize success stories as part of an overall consistent public relations program.	\$10,000.00	18 Months	McKinley County OEM	23	<ul style="list-style-type: none"> • Self-funded
Wildfire	Reduce fuel loads and create defensible space around structures in the wildland - urban interface areas. <ul style="list-style-type: none"> • Expand Chipping Program • Expand Fuel Thinning Program 	\$300,000	24 Months	McKinley County FD	24	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Work with the State, County, City and municipal building inspectors to consistently enforce the building code from jurisdiction to jurisdiction.	\$0.00	Ongoing	McKinley County OEM	25	<ul style="list-style-type: none"> • Self-funded
Public Awareness	Convene regular meetings with the Mitigation Planning Team to discuss issues and progress related to the implementation of the plan.	\$0.00	12 Months	McKinley County OEM	26	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities during heat emergencies.	\$0.00	12 Months	McKinley County OEM	27	<ul style="list-style-type: none"> • Self-funded • Private sector donations



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Wildfire	Make educational materials available through the Land Use Department to inform citizens about Best Management Practices (BMPs) for defensible Space.	\$30,000	Ongoing	McKinley County FD NM State Forestry	28	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Wildfire	Identify, create and maintain defensible space around critical facilities located in high or extreme wildfire hazard areas, such as schools, fire stations, etc.	\$600,000	18 Months	McKinley County FD	29	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Inspect county road system for the possibility of roadway collapse potential due to the erosion of waterway banks.	\$200,000	Ongoing	McKinley County OEM Floodplain Manager NMDOT	30	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.	\$200,000	Ongoing	McKinley County OEM Floodplain Manager NMDOT	31	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Develop opportunities for community participation in mitigation planning programs emergency preparedness programs, to include citizen advisory committees and Citizen Corps Programs.	\$125,000	18 Months	McKinley County OEM	32	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Drought	Expand County water conservation incentive program.	\$200,000	Ongoing	Local Water Authority	33	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictions and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.	\$150,000.00	60 Months	Local Water Authority	34	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Wildfire	Educate the public on evacuation routes and evacuation procedures. Build upon existing evacuation routes.	\$0.00	18 months	County FD McKinley County OEM	35	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct non-technical evaluation process for critical facilities to determine relative severe weather vulnerability and gather information for subsequent refinements of this mitigation plan.	\$0.00	12 Months	McKinley County OEM	36	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Establish a County Storm Ready Community to enhance mitigation and preparedness for the impacts of severe weather through better planning, education, and awareness.	\$5,000	12 Months	McKinley County OEM	37	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Flooding	Develop and Flood Hazard Education/Outreach Plan.	\$40,000	12 Months	McKinley County OEM	38	<ul style="list-style-type: none"> • Mitigation grants • Self Funded
Flooding	Conduct studies and update floodplain and Floodway maps in the County.	\$300,000	Land Use	McKinley County OEM	39	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Create a virtual and physical library that contains all technical studies, particularly natural resources.	\$150,000	18 Months	McKinley County OEM	40	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct a survey of all manufactured homes in the County to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).	\$150,000	24 Months	McKinley County OEM	41	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Flooding	Develop, support and fund Citizen Corps Programs, to include Community Emergency Response Teams (CERT) that also includes a mitigation component.	\$125,000	18 Months	McKinley County OEM	42	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Severe Weather (Thunderstorms, high wind, extreme heat)	Complete structure data records in the County Geographic Information System to allow future revisions of this plan to more easily incorporate information about property values, construction types, etc.	\$50,000	12 Months	County GIS	43	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Increase number of National Weather Service's SKYWARN on the ground storm spotters; recruit and train additional storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions.	\$5,000	24 Months	McKinley County OEM	44	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Flooding	Continue to meet the compliance requirements outlined in the NFIP.	\$0.00	On-going	McKinley County Floodplain Manager	45	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Work with County officials to increase awareness among property owners including information mailings to property owners in the 100-year floodplain; and sponsoring a series of workshops about costs and benefits of acquiring and maintaining flood insurance coverage for property owners in the 100-year floodplain.	<ul style="list-style-type: none"> • Self-funded 	<ul style="list-style-type: none"> • Federal and State grant programs 	McKinley County OEM	46	<ul style="list-style-type: none"> • Mitigation grants • Self Funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Utilize existing critical facility data records in the County Geographic Information System to target County-Owned structures in need of updating	\$50,000	12 Months	County GIS McKinley County OEM	47	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Review existing extreme heat emergency response plans for enhancement opportunities	\$0.00	On-going	McKinley County OEM	48	<ul style="list-style-type: none"> • Self-funded
Flooding	Expand and disseminate GIS and other hazard information on the internet.	\$30,000	12 Months	County GIS	49	<ul style="list-style-type: none"> • Self-funded



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McKinley County Hazard Mitigation Prioritized Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Severe Weather (Thunderstorms, high wind, extreme heat)	Utilize existing critical facility data records in the County Geographic Information System to target structures in need of updating.	\$50,000	12 Months	County GIS McKinley County OEM	50	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct a survey of all manufactured homes in the County to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).	\$150,000	24 Months	McKinley County OEM	51	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Purchase NOAA radio for public buildings.	\$5,000	6 Months	McKinley County OEM	52	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Drought	Implement projects to use treated effluent for non potable uses.	\$1,000,000	24 Months	Local Water Authority	53	<ul style="list-style-type: none"> • Self-funded
Drought	Conduct public water supply and drought vulnerability assessments.	\$150,000	36 Months	Local Water Authority McKinley County OEM	54	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Drought	Incorporate drought mitigation activities into county management planning activities.	\$0.00	18 Months	Local Water Authority McKinley County OEM	55	<ul style="list-style-type: none"> • Self-funded



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City of Gallup Prioritized Projects

Table 59: City of Gallup Prioritized Hazard Mitigation Actions

City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Publish and distribute educational materials on water conservation techniques and drought management strategies.	\$50,000	Ongoing	City of Gallup Water Div	1	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Public Awareness	Identify Emergency Alerts Systems to notify and provide emergency information to City of Gallup residents.	\$120,000	18 Months	City of Gallup OEM	2	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Human Caused Hazards (Hazard Material Releases)	<p>The Mitigation Planning Team should work with facility owners and operators identified in Section One of this plan as having the greatest potential impact (based on population in the immediate vicinity) to ensure:</p> <ul style="list-style-type: none"> • Facilities are in compliance with all relevant local, state and federal requirements; • Neighboring property owners understand the potential extent of the risk; and • Alert and warning systems are appropriate to the situation. Pursue the installation of warning systems around hazardous material facilities if it is determined that existing warning systems are inadequate for the purposes of alerting neighboring property owners. 	\$125,000	18 Months	City of Gallup OEM	4	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Human Caused Hazards (Hazard Material Releases)	Ensure the Emergency Operations Plan meets or exceeds current state and federal hazardous materials emergency planning requirements.	\$0.00	12 Months	City of Gallup OEM City of Gallup FD	5	<ul style="list-style-type: none"> • Self-funded



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City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Human Caused Hazards (Hazard Material Releases)	The Mitigation Planning Team should seek opportunities to inform individuals and business owners regarding recommendations for how to prepare for hazardous material releases. The recommendations will advise taking some of the same actions to prepare for earthquakes, floods, and fires, i.e., store a multi-day supply of food and water, make sure flashlights, portable radios, and spare batteries are on hand; and identify out-of-town contacts and a place to reunite if separated from family members. All residents can be better prepared by becoming more aware of surroundings and reporting suspicious activity to local officials.	\$0.00	12 Months	City of Gallup OEM	6	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Flooding	Review all present floodplain related building/zoning codes City of Gallup to ensure that future construction projects will not create the potential for loss due to flooding.	\$0.00	24 Months	City of Gallup OEM Floodplain Manager	7	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Increase number of radios/televisions with warning capabilities in public buildings, parks, and recreational areas to announce alerts from the Emergency Alert System and National Weather Radio.	\$15,000	12 Months	City of Gallup OEM	8	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Wildfire	Apply for and Create Firewise Communities in high risk subdivisions.	\$60,000	24 Months	City of Gallup FD	9	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Promote partnerships among the City departments, non-profit organizations, and the private sector to develop a citywide approach to mitigation activities.	\$0.00	18 Months	City of Gallup OEM	10	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Drought	Conduct public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk to drought.	\$0.00	12 Months	Water Div City of Gallup OEM	11	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations



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City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Enforce existing zoning and building regulations on water use.	\$0.00	Ongoing	Water Div Land Use	12	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Wildfire	Conduct assessment of City-owned critical facilities vulnerable to wildfire and replace roofs with fire resistant materials.	\$120,000	18 Months	City of Gallup FD	13	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Incorporate hazard mitigation concepts into all applicable City operations.	\$0.00	12 Months	City of Gallup OEM	14	<ul style="list-style-type: none"> • Self-funded
Flooding	Conduct flash flooding hydrology studies in flood prone areas of the city.	\$300,000	18 Months	Land Use	15	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Human Caused Hazards (Hazard Material Releases)	Assess need to and methods to harden critical facilities against the effects of human-made hazards, e.g., the accidental or intentional release of chemical, biological, or radioactive material; the accidental or intentional detonation of explosives; or acts of random violence or terrorism.	\$0.00	24 Months	City of Gallup OEM	16	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Flooding	Enhance and/or develop drainage in flood prone areas of the county/city	\$10,000,000	60 Months	Public Works	17	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Drought	Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.	\$50,000,000	120 Months	Water Div	18	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Utilize a GIS for identifying “sensitive area” properties in the City.	\$0.00	Ongoing	City of Gallup GIS	19	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Determine the number of emergency generators to power essential buildings and seek acquisition.	\$2,000,000	36 Months	Facilities City of Gallup OEM	20	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs



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City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Human Caused Hazards (Hazard Material Releases)	Maintain and update equipment used to respond to hazardous materials incidents.	\$250,000	18 Months	City of Gallup FD City of Gallup PD	21	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Identify and publicize success stories as part of an overall consistent public relations program.	\$10,000.00	18 Months	City of Gallup OEM	22	<ul style="list-style-type: none"> • Self-funded
Public Awareness	Work with the State, County, City and municipal building inspectors to consistently enforce the building code from jurisdiction to jurisdiction.	\$0.00	Ongoing	Land Use	23	<ul style="list-style-type: none"> • Self-funded
Public Awareness	Convene regular meetings with the Mitigation Planning Team to discuss issues and progress related to the implementation of the plan.	\$0.00	12 Months	City of Gallup OEM	24	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities during heat emergencies.	\$0.00	12 Months	City of Gallup OEM	25	<ul style="list-style-type: none"> • Self-funded • Private sector donations
Wildfire	Identify, create and maintain defensible space around critical facilities located in high or extreme wildfire hazard areas, such as schools, fire stations, etc.	\$600,000	18 Months	City of Gallup FD	26	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.	\$200,000	Ongoing	City of Gallup OEM Floodplain Manager City of Gallup Roads Dept	27	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Develop opportunities for community participation in mitigation planning programs and emergency preparedness programs, to include citizen advisory committees and Citizen Corps Programs.	\$125,000	18 Months	City of Gallup OEM	28	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.



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City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Drought	Expand City water conservation incentive program.	\$200,000	Ongoing	Water Div	29	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Drought	Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictions and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.	\$150,000.00	60 Months	Water Div	30	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Wildfire	Educate the public on evacuation routes and evacuation procedures. Build upon existing evacuation routes.	\$0.00	18 months	City of Gallup FD City of Gallup OEM	31	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct non-technical evaluation process for critical facilities to determine relative severe weather vulnerability and gather information for subsequent refinements of this mitigation plan.	\$0.00	12 Months	Land Use City of Gallup OEM	32	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Public Awareness	Distribute and promote the inclusion of the vulnerability analysis information as part of periodic plan review and revisions at the City level.	\$0.00	12 Months	City of Gallup OEM	33	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Establish a City Storm Ready Community to enhance preparedness for the impacts of severe weather through better planning, education, and awareness.	\$5,000	12 Months	City of Gallup OEM	34	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations.
Flooding	Develop and Flood Hazard Education/Outreach Plan.	\$40,000	12 Months	Land Use City of Gallup OEM	35	<ul style="list-style-type: none"> • Mitigation grants • Self Funded
Flooding	Conduct studies and update floodplain and Floodway maps in the City.	\$300,000	Land Use	Land Use	36	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Flooding	Create a virtual and physical library that contains all technical studies, particularly natural resources.	\$150,000	18 Months	Land Use	37	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct a survey of all manufactured homes in the City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).	\$150,000	24 Months	Land Use	38	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Develop, support and fund Citizen Corps Programs, to include Community Emergency Response Teams (CERT) that also includes a mitigation component.	\$125,000	18 Months	City of Gallup OEM	39	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Severe Weather (Thunderstorms, high wind, extreme heat)	Complete structure data records in the City Geographic Information System to allow future revisions of this plan to more easily incorporate information about property values, construction types, etc.	\$50,000	12 Months	City of Gallup GIS	40	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Increase number of National Weather Service's SKYWARN on the ground storm spotters; recruit and train additional storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions.	\$5,000	24 Months	City of Gallup OEM	41	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Flooding	Continue to meet the compliance requirements outlined in the NFIP.	\$0.00	On-going	Land Use	42	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Flooding	Work with City officials to increase awareness among property owners including information mailings to property owners in the 100-year floodplain; and sponsoring a series of workshops about costs and benefits of acquiring and maintaining flood insurance coverage for property owners in the 100-year floodplain.	<ul style="list-style-type: none"> • Self-funded 	<ul style="list-style-type: none"> • Federal and State grant programs 	Private sector donations	43	<ul style="list-style-type: none"> • Mitigation grants • Self Funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Utilize existing critical facility data records in the City Geographic Information System to target City-Owned structures in need of updating	\$50,000	12 Months	City of Gallup GIS Land Use	44	<ul style="list-style-type: none"> • Self-funded



SECTION 4 – GOALS, OBJECTIVES AND MITIGATION ACTIONS

City of Gallup Prioritized Hazard Mitigation Actions						
Project Data		Estimated Project Cost	Estimated Completion	Agency or Dept. Responsible	Action Priority	Possible Funding Sources
Hazard	Actions					
Severe Weather (Thunderstorms, high wind, extreme heat)	Review existing extreme heat emergency response plans for enhancement opportunities	\$0.00	On-going	City of Gallup OEM	45	<ul style="list-style-type: none"> • Self-funded
Flooding	Expand and disseminate GIS and other hazard information on the internet.	\$30,000	12 Months	City of Gallup GIS	46	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Utilize existing critical facility data records in the City Geographic Information System to target structures in need of updating.	\$50,000	12 Months	City of Gallup GIS Land Use	47	<ul style="list-style-type: none"> • Self-funded
Severe Weather (Thunderstorms, high wind, extreme heat)	Conduct a survey of all manufactured homes in the City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).	\$150,000	24 Months	Land Use	48	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs
Severe Weather (Thunderstorms, high wind, extreme heat)	Purchase NOAA radio for public buildings.	\$5,000	6 Months	City of Gallup OEM	49	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Drought	Implement projects to use treated effluent for non potable uses.	\$1,000,000	24 Months	Water Div	50	<ul style="list-style-type: none"> • Self-funded
Drought	Conduct public water supply and drought vulnerability assessments.	\$150,000	36 Months	Water Division City of Gallup OEM	51	<ul style="list-style-type: none"> • Self-funded • Federal and State grant programs • Private sector donations
Drought	Incorporate drought mitigation activities into city management planning activities.	\$0.00	18 Months	Water Division City of Gallup OEM	52	<ul style="list-style-type: none"> • Self-funded



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Section 5 – Mitigation Plan and Implementation Strategy

Monitoring, Evaluating and Updating the Plan

The Disaster Mitigation Act of 2000 (DMA2K) signed into law on October 30, 2000, amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 – Mitigation Planning. Section 322 places emphasis on local mitigation planning. It requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants. An Interim Final Rule for implementing Section 322 ((44 Code of Federal Regulations (CFR) Parts 201 and 206) was published in the Federal Register (FR), Volume 67, Number 38, pages 8844 – 8854, on February 26, 2002. The requirements for local plans, or Local Mitigation Plan Criteria, are found in part 201.6.

Planning Process

As noted earlier, the MPT followed FEMA's hazard mitigation planning process as prescribed in the How-To-Guides. This planning process ensured public involvement and the participation of interested agencies and private organizations. Documentation of the planning process is addressed in this section.

Monitoring, evaluating, and updating the Plan are critical to maintaining its relevance. Effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for monitoring, evaluating, and updating the Plan, and what those responsibilities entail. This section also lays out the method and schedule of these activities and describes how the public will be involved on a continuing basis.

Historically, the task of creating the McKinley County Hazard Mitigation Plan began with the establishment of a working group by Anthony Dimas, Jr., McKinley County Emergency Manager (EM). The EM sent out invitations to those agencies, both internal and external to the County/City, which provides support and services (i.e., National Weather Service, Local Emergency Planning Committee, Tribal/Pueblo, City, State and Federal agencies and organizations (i.e., Western Refinery, Department of Health and BNSF). Appendix A provides those sign in sheets of those agencies participating in the mitigation plan update. Additionally, Emergency Managers and those agencies boarding McKinley County were provided the opportunity to participate in the mitigation plan update and to participate in the review process of the draft plan.

After identification of the hazards and the risks they pose to the community, action plans were formulated in order to reduce or eliminate each hazardous situation. These plans were developed as a result of the working group, public input, and research conducted from sources including state drought planners, the National Weather Service, the U.S. Army Corps of Engineers, FIRM floodplain maps, and the University of New Mexico.



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

Once hazards were identified, an effort was made to determine the risk each hazard posed to county residents, and its historic frequency of occurrence. This process was accomplished by a historical review of local newspapers, county documents, public input, New Mexico state government records, and university sources. Additionally, the hazard risk was planned from the aspect of the worst-case scenario for both the present population and the planned increase in population five years later. This information is located in Part II, Risk Identification and Analysis.

These action plans were prioritized based on risk factors and frequency of occurrence. Once the plan strategies and priority were established by the working group, they were presented to the County Commissioners and members of the public by posting at the public libraries and county website for review and comment. The strategies and action plans established to mitigate hazards within the County is discussed in Part IV, Implementation Strategies.

The public was given the opportunity to be involved in the planning process and their input was incorporated in the plan in the following manner:

- An online questionnaire was introduced to the public through the website and postings in the paper. The questionnaire was also mentioned during radio interviews several times during the year. The results of the questionnaire were used to provide guidance to the MPT to identify hazards of concern to the community. (see Appendix B)
- A public meeting to provide an opportunity for input in the Plan was held on Date, November 13, 2013 at the McKinley County Courthouse for public comment. A meeting notice was posted on McKinley County's Office of Emergency Management's website (See Appendix A).
- The Draft HMP offered to the public on the McKinley County OEM website for review and comment.

In New Mexico neighboring county/city emergency managers provide support, expertise, and resources to each other. The MPT provided copies of the draft HMP to neighboring emergency managers via email for their review. Additionally, McKinley County will provide a copy of the final HMP to these neighboring emergency managers. A copy of the correspondence to those neighboring emergency managers is located in Appendix A of this document.

Existing Planning Mechanisms

Prerequisites

The Local Hazard Mitigation Plan Criteria state that the plan must satisfy three prerequisites before the plan will be reviewed by the state and FEMA. If these prerequisites have not been fulfilled, the plan will not be reviewed. The three prerequisites are:

- Adoption by the local governing body
- For multi-jurisdictional plans, each jurisdiction must adopt the plan
- For multi-jurisdictional plans, each jurisdiction must participate in the planning process.



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

The McKinley County plan is a multi-jurisdiction plan and will require adoption by the McKinley County Commissioners and the City of Gallup City Council. Once approved the resolution showing adoption of this plan will appear in the introductory elements (before the Table of Contents) of this HMP. After adoption, copies of the Plan will be given to the respective zoning and planning departments. During updates and revisions of community planning documents, the Plan will be presented to the planning committee for consideration.

Implementation of the HMP Plan in the Jurisdictions

Once the HMP has been approved the resolution will be incorporated into the HMP and provided to the state and FEMA. Once approved, McKinley County and the City of Gallup will begin the process of incorporating the strategies and actions outlined in the Plan into future planning projects. Where applicable, all mitigation actions will be incorporated into existing planning documents via zoning, subdivision regulations and capital improvements program and other regulatory mechanisms. The McKinley County's MPT is responsible for monitoring strategies, actions and any updates to this HMP. Every six months mitigation meetings will be conducted to review the status of each jurisdiction's progress. The McKinley County EM will monitor the plan progress and coordinate meetings.

Hazard Mitigation Planning Team

A permanent entity needs to be responsible for maintaining the Plan and for monitoring, evaluating, and updating it. This Plan recommends creating a permanent planning group, the MPT, with representation from County/City departments and local agencies. The McKinley County Office of Emergency Management (OEM) will be the entity in charge of monitoring the plan. McKinley County OEM, the Executive Manager, will post notices on the County/City website and other appropriate sites to announce the meetings. The McKinley County OEM represents citizen, municipal, business, educational, volunteer, and county interests in supporting mitigation strategies and actions for this plan.

The MPT will oversee the progress made on the implementation of the identified action items and update the plan, as needed, to reflect changing conditions. The MPT will therefore serve as the focal point for coordinating countywide mitigation efforts. The MPT will:

- Establish quarterly meetings and will focus on the Plan as events within the community apply to the evaluation, updating, and monitoring of hazards within the Plan.
- Focus specifically on the evaluation, updating, and monitoring the plan once per year.
- Monitor the mitigation activities by reviewing reports from the agencies identified for implementation of the different mitigation actions.
- Request that the responsible agency or organization submit a semi-annual report, which provides adequate information to assess the status of mitigation actions.
- Provide their feedback to the individual agencies.



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

Evaluation of the Plan should include not only checking on whether or not mitigation actions are implemented, but also assessing their degree of effectiveness. The MPT will:

- Review the qualitative and quantitative benefits (or avoided losses) of the mitigation activities and compare them to the goals and objectives that the Plan sets out to achieve.
- Evaluate mitigation actions to see if they need to be modified or discontinued in light of new developments.
- Document progress annually.

Additionally the Plan will:

- Be updated every five years, as required by the DMA 2000, or following a disaster.
- New data will be added from the existing and new technical resources, as well as from local planning entities and the Mitigation Team, to assess;
 - Population,
 - Housing trends,
 - The potential effects of natural and human caused hazards on people and structures, and
 - To ensure necessary inclusion into local and county planning mechanisms.
- The updated Plan will account for any new developments in the County or special circumstances (e.g., post-disaster). Issues that come up during monitoring and evaluation, which require changes in mitigation strategies and actions, will be incorporated in the Plan and planning processes at this stage.
- The McKinley County OEM will be responsible to soliciting information to update specific information, and this office will be responsible for updating county and city information and incorporating it into the revised Plan.

Public Involvement

McKinley County is dedicated to involving the public directly in reshaping and updating the Plan. Although the MPT represents the public to some extent during its review of the plan, the public will be able to comment directly on and provide feedback about the plan during the review period.

- A public meeting will be held after each MPT meeting. This meeting will provide a forum wherein the public can express concerns, opinions, or ideas about the plan. McKinley County OEM will publicize and host the meeting. The McKinley County Emergency Manager will be responsible for keeping track of public comments about the plan.
- The MPT will involve the public during the evaluation and update of the Plan through annual public education activities, public workshops, and public hearings.



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

- The MPT will also keep the public informed through newsletters, mailings, and the different agencies implementing the plan.
- McKinley County and the City of Gallup are encouraged develop a website dedicated to the McKinley County Hazard Mitigation Plan. The MPT will incorporate the public comments in the next update of the Plan.

Updating the Plan

Monitoring, Evaluating, and Updating the Plan

Monitoring, evaluating, and updating the Plan are critical to maintaining its relevance to ensure that the HMP remains an active and relevant document. Effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. McKinley County/city of Gallup has developed a method to ensure that regular review and update of the Plan occurs, a method that encompasses decision making, direction, and documentation:

- Local officials will determine which projects / action items will be implemented and how and when they will be completed
- Review and revision of the Plan will be directed by the McKinley County Office of Emergency Management, and
- The MPT will be responsible for monitoring, evaluating, and documenting the plan's progress throughout the year. Although the members of the MPT may change from year to year, future MPTs will continue to execute the same job functions as the current MPT

The McKinley County Emergency Manager is responsible for contacting MPT members and organizing meetings and will monitor progress on the mitigation action items. Monitoring is important for future eligibility for any mitigation funding that may be available. FEMA and the NMDHSEM have the authority to evaluate the progress of existing mitigation plans to determine if the plan is fulfilling program requirements.

- The plan will be reviewed, revised, and updated every five years from the date of FEMA's approval. If a disaster occurs or as action items are met, the plan will be reviewed, revised, and updated sooner than the required five years.
- Public involvement and outreach to other agencies and boarding jurisdictions will be offered the opportunity to participate and provide input/feedback during the plan update process

The MPT will reconvene approximately one year before the five-year period is up and begin evaluating the plan. HMP review and update will comprise a review of each goal and action item to determine the relevance to changing situations in the county and/or changes to state or federal policy and to ensure that current and expected conditions are being addressed. Key topics and questions that will be addressed include the following:

- Identification of hazards: Are there new hazards that affect the community?



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

- Development of hazard profiles: Are additional maps or new hazard studies available? Have chances of future events changed? Have recent and future development in the community been assessed for their effect on hazard areas?
- Inventory of assets. Have inventories of existing structures in hazard areas been updated? Are there any new special high-risk populations? Is future land development accounted for in the inventories?
- Estimation of losses. Have losses been updated to account for recent changes?

If the response to any of the above questions is “yes,” then the Plan will be updated accordingly. The HMP will be evaluated annually and will be updated at least every two years. A revised copy of the plan will be completed by October of each year and submitted for public comment. McKinley County will approve the updated plan each December. More frequent updates may be submitted for approval as needed to address new or unexpected mitigation goals and objectives or funding opportunities. A revised HMP reflecting changes in development, progress in mitigation efforts and changes in priorities will be submitted in accordance with DMA2K for approval within five years in order to continue eligibility for FEMA assistance. Table 60 provides a projected meeting schedule for maintaining the HMP.

Table 60: Projected Meeting Schedule to Maintain the Hazard Mitigation Plan

HMP Meeting	Date
Initial meeting following plan approval	One month after approval
HMP Project Review	Six months after initial planning meeting
HMP Plan Review	Six months following Project Review
HMP Project Review	Six months following plan review
HMP Plan Review	Six months following project review
HMP Project Review	Six months following plan review
HMP Plan Review	Six months following project review
HMP Project Review	Six months following plan review
HMP Plan Review / Start Process to renew Grant for plan update with State and FEMA	Six months following project review

The MPT also will review the risk assessment portion of the Plan and determine if this information should be updated or modified. Revisions to this plan may also be required for different situations, e.g., the identification of specific new mitigation action items, the completion of listed mitigation action items, or a change in mitigation plan requirements for funding programs. If no changes are necessary, the MPT will provide a written justification for this determination.



SECTION 5 – MITIGATION PLAN AND IMPLEMENTATION STRATEGY

The McKinley County EM is responsible for incorporating all changes into the HMP electronically after the MPT has met and decided on the changes. The McKinley County EM will complete all necessary revisions at least three months prior to the end of the five-year period to allow the MPT time to review the update. During the revision process, the McKinley County EM will send status reports to the appropriate departments for review and comment. Any required revisions will be implemented within six months following the review process. This process will be repeated for each five-year review of the plan. An updated/revised plan will be submitted to the NM DHSEM and FEMA.



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Appendix A – Agendas, Minutes and Sign-In Sheets

June 16, 2014 Mitigation Meeting with County Officials



McKinley County, New Mexico Hazard Mitigation Plan

Monday June 14, 2014

11:00 a.m. – 12:00 p.m.

Location: Barelus Coffee House
1502 4th St SW, Albuquerque, NM 87102

Type of Meeting: Hazard Mitigation Plan (HMP) County Leadership Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC

11:00 a.m. – 11:45 p.m. Hazard Mitigation Plan Discussion Topics

- Discuss FEMA Review
- Discuss Content Updates as suggested/identified by FEMA
- Discuss City of Gallup's Content

11:45a.m. – 12:00p.m. Open Discussion

12:00 p.m. Adjournment



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McKinley County
Office of Emergency Management

Hazard Mitigation Planning Meeting Sign-In Sheet
County Leadership Meeting

Date: June 16, 2014

Please Print Information Legibly

McKinley County HMP Meeting Sign In Sheet DATE: June 16, 2014

NAME	ORGANIZATION	CONTACT	INFORMATION
Anthony Dimas Jr	MCOEM	505-722-4248	adimase@co.mckinley.nm.us
BRUCE SWINBLE	COUNTY	(505) 863-1444	bswinble@co.mckinley.nm.us
PATRICIA PATTERSON	MCOEM	505-722-4248	ppatterson@co.mckinley.nm.us



June 13, 2014 Mitigation Review Request to Surrounding Jurisdictions

McKinley County Hazard Mitigation Plan

1 message

Anthony Dimas <adimas@co.mckinley.nm.us> Fri, Jun 13, 2014 at 3:32 PM
To: Brian Money <bmoney@co.mckinley.nm.us>, Dominique Lenox <dominiquem.lenox@state.nm.us>, Don Cooper <cooperd@sjces.net>, Edward Sanchez <esanchezZFD@hotmail.com>, Faye Platero <fayeplatero@yahoo.com>, Johnny Johnson <jjsondem@yahoo.com>, "Ken Tiller (ktiller@lagunatribe.org)" <ktiller@lagunatribe.org>, "Lazzari, Jerry, DOH" <Jerry.Lazzari@state.nm.us>, Marcella Benton <Marcella.Benton@state.nm.us>, "Martinez, Kenneth F, DHSEM" <KennethF.Martinez@state.nm.us>, Mike Mestas <mestasm@sjces.net>, Patricia Patterson <pattersonp@co.mckinley.nm.us>, Paula Thomassen <ThomassenP@sjces.net>, "Purley, Joyce, DHSEM" <Joyce.Purley@state.nm.us>, "Rosalita M. Whitehair" <rwhitehair@navajo-nsn.gov>, "Rose, Michael, DOH" <Michael.Rose@state.nm.us>, Sophie Beym <sophi.beym@gmail.com>, Susan Mahooty <smahooty@co.mckinley.nm.us>, Susan Walker <susan.walker@state.nm.us>, Tony Boyd <chieftboyd@yahoo.com>, "Vigil, Donna, DHSEM" <DonnaS.Vigil@state.nm.us>, Wendy <wendy.blackwell@state.nm.us>
Cc: "Brian Fields (bwfabq@gmail.com)" <bwfabq@gmail.com>

Good Afternoon Area 4,

Our mitigation plan is currently in the final stages of review and we would like to extend the opportunity to you to review and provide any comments or to give you an idea of what we are doing and what may be helpful to your jurisdiction. You can find our plan on our website at <http://mcoem.com/>

Any comments or questions can be directed to: B-Sting Ventures (Brian Fields)

Thank You

Anthony

Anthony L. Dimas Jr.
Director - OEM

McKinley County
Office of Emergency Management
2221 East Boyd
Gallup, NM 87301

P: (505) 722-4248

F: (505) 722-9009

Email: adimas@co.mckinley.nm.us <<mailto:oem@co.mckinley.nm.us>>

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February 25, 2014 Meeting Agenda/Minutes with City and County OEM Staff



**McKinley County, New Mexico
Hazard Mitigation Plan**

**Tuesday February 25, 2014
1:00 p.m. – 2:30 p.m.**

Location: McKinley County Office of Emergency Management
2221 Boyd Ave.
Gallup, NM 87305

Type of Meeting: Hazard Mitigation Plan (HMP) Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC
Lora Sedore, EM Specialist, B-Sting Ventures, LLC

1:00 p.m. – 1:05 p.m. Introductions

1:05 p.m. – 2:15 p.m. Hazard Mitigation Plan Update Overview by Brian Fields

- Discuss Current Status of HMP
- Discuss Mitigation Action Items and Priority Process

2:15 p.m. – 2:30 p.m. Closing Remarks / Next Meeting

2:00 p.m. Adjournment



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McKinley County, New Mexico Hazard Mitigation Plan

**Tuesday February 25, 2014
1:00 p.m. – 2:30 p.m.**

Location: McKinley County Office of Emergency Management
2221 Boyd Ave.
Gallup, NM 87305

Type of Meeting: Hazard Mitigation Plan (HMP) Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC
Lora Sedore, EM Specialist, B-Sting Ventures, LLC

Introductions were made around the room.

Mr. Fields provided an update of the HMP to the group. He presented the team with a list of proposed projects to be prioritized. He explained FEMA's STAPLE+E process and discussed the value of the process to the HMP.

Mr. Fields will send the electronic Word version of the STAPLE+E to McKinley County OEM (Anthony Dimas, Jr.) for distribution to County and City Departments via email. Some tasks for the Mitigation Planning Team members to accomplish include:

- Conduct the score assessment based on the criteria presented
- Share the form with other departments or agencies for review and assessment
- Add any additional projects to the form if one has recently come available
- Return the completed assessment form to McKinley County OEM (Anthony Dimas, Jr.) by noon March 14.

BSV will compile the results and incorporate them into the Draft HMP. BSV will return the Draft HMP to MCOEM by the 1st week of April – Mr. Anthony Dimas, Jr. will provide the Draft HMP for review by all mitigation team members and provide an opportunity for the public to provide comments. It will be posted on the MCOEM website for 30 days. Any comments will be incorporated into the HMP. The HMP will be submitted to the State Mitigation Officer (and or Jordan form FEMA) before submission to FEMA for review and approval.



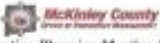
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APPENDIX A – AGENDAS, MINUTES AND SIGN-IN SHEETS



The meeting adjourned at 2:30pm. Attached below are the sign in sheets from the meeting.


Hazard Mitigation Planning Meeting Sign-In Sheet

Date: February 25, 2014

Please Print Information Legibly

NAME	ORGANIZATION	MAILING ADDRESS	MAIN PH #	EMAIL ADDRESS	INITIALS
Brianne Pardo	B-Sting Ventures LLC	4001 W. 1st St. Apt. 101 Albuquerque, NM 87102	505-261-3007	brianne.pardo@gmail.com	BP
Lore Sedore	B-Sting Ventures	20721 S. 1st St. NE Albuquerque, NM 87110	505-261-3007	lore.sedore@b-sting.com	LS
Scott Sotola	NAC O&M	2251 Bayard Ave Cedar Rapids, IA 52401	563-777-4242	ssotola@nac.org	SS
Charles Kavelop	McKinley Co. Roads		722-2303		CK
Anthony Davis Jr	MC&M	P.O. Box 70	722-4248	adavis@mc&m.com	AD
Robert Brown	DM&M		505-867-2334	robert.brown@dm&m.com	RB
Stiger DL	LNM - Group		505-863-7607	dstiger@lnm.com	DL
Tiffany Mount	Gallop Med Flight		505-870-7259	tmount@gallopmedflight.com	TM
Nathan G. Oakes	McKinley Dist	207 W. 1st St.	722-4248	nathan.g.oakes@mc-m.com	NO
Richard C. Oakes	EDAC	516 E. 1st St. Apt. 101 Albuquerque, NM 87102	505-722-1000	richard.c.oakes@edac.com	RO
Richard C. Oakes	EDAC	516 E. 1st St. Apt. 101 Albuquerque, NM 87102	722-1311	richard.c.oakes@edac.com	RO


Hazard Mitigation Planning Meeting Sign-In Sheet

NAME	ORGANIZATION	MAILING ADDRESS	MAIN PH #	EMAIL ADDRESS	INITIALS
Jon W. DeYoung	City of Gallop	1015 2nd St. NE Albuquerque, NM 87102	505-261-6102	jdeyoung@gmail.com	JD
Pearl Reed	McKinley County	207 W. 1st St. Albuquerque, NM 87102	722-4248	pearlreed@mc-m.com	PR



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November 13, 2013 Meeting Minutes with City and County OEM Staff

FOR OFFICIAL USE ONLY

McKinley County Hazard Mitigation Plan Meeting Minutes

Date/ Location

November 13, 2013
2:00 pm – 3:00 pm
McKinley County EOC
Gallup, NM 87301

A sign-in sheet for attendees is attached at the end of this document.

Purpose

The purpose of the Hazard Mitigation Planning (HMP) meeting was to discuss the status of the plan update and introduce additional planning requirements to the City of Gallup and McKinley County Emergency Managers and staff.

OVERVIEW OF ACTIVITIES

The meeting was facilitated by Brian Fields and Lora Sedore, contractor with B-Sting Ventures, LLC (BSV). The following was completed:

- Discuss status of the plan and information still needed from the community
- Discuss County Critical Facilities (Inventory Assets)
- Discuss Mitigation Action Items and Priority Process

Hazard Mitigation Plan Update Process

Mr. Fields opened the discussion with a brief reminder of the HMP Process and what mitigation plan means for the county, the value to society and the benefits of mitigation planning and their roles and responsibilities in supporting this update. Mr. Fields outlined where we currently are in the update process and require the input of the planning to complete the process.

Natural Hazard Assessment/Previous Natural Hazard Occurrence/ Goals, Objectives and HMP Development Next Steps

Mr. Fields outlined the following steps:

- Inventory City Assets
 - Example: Historic Buildings, High Value Assets, Critical Facilities
- Estimate Loss
 - Task A: Determine the Extent of Damages
 - Task B: Calculate the Loss from Each Hazard Event
 - Task C: Provides the Vulnerability Information to Assist in Identifying Goals, Projects and Prioritizing Mitigation Actions
- Goals/Objectives/Action Items

Hazard Mitigation Meeting

McKinley County OEM



FOR OFFICIAL USE ONLY

- Once hazards are identified we will send out an assessment sheet asking you for your recommend goals, objectives and actions.
- BSV will also send out recommendations for you to consider
- These need to be identified/finalized before the next HMP Meeting

TO DO LISTS

McKinley County and City of Gallup Emergency Managers

- Provide information on historical events to BSV
- Provide project ideas for HMP
- Continue process of getting your leadership involved with what we are doing – this makes the process easier when it's time to adopt the mitigation plan
- Update County website and add information to City website Also add a mechanism on the website that allows the public to send you their thoughts

B-Sting Ventures, LLC (BSV)

- Provide Meeting notes
- Complete draft plan for review

The HMP meeting adjured at 3:00pm

Additional questions or comments can be directed to the following:

Anthony Dimas Jr.
Emergency Manager
McKinley County OEM
2221 East Boyd
Gallup, NM. 87301
Phone: 505-722-4248
adimas@co.mckinley.nm.us

JM DeYoung
Risk/Emergency Manager
City of Gallup
110 West Aztec Ave.
Gallup, NM 87301
Phone: 505-762-6102
jdeyoung@gallupnm.gov

Brian W. Fields
B-Sting Ventures (BSV) LLC
703-863-8857 mobile
bwfabq@gmail.com

Lora Sedore
B-Sting Ventures (BSV) LLC
505-263-7013
Abqljs1@aol.com



APPENDIX A – AGENDAS, MINUTES AND SIGN-IN SHEETS

FOR OFFICIAL USE ONLY

HAZARD MITIGATION PLAN MEETING SIGN IN SHEET



Hazard Mitigation Planning Meeting Sign-In Sheet Public Meeting

Date: Nov 13, 2013

*Per-Minuting w/ Gallop OEM +
McKinley County OEM*

Please Print Information Legibly

First Name	Last Name	Organization	Contact Information Phone/Cel	Email Address
Jon	DeYoung	City of Gallop	(505) 722-6102 (505) 722-4975	jdeyoung@gallopnm.gov
Lora Sobiech		B Strong	952-263-2013	alsobies@bstrong.com
Suzanne	MARTIN	MCDEM	(505) 722-4248	Suzanne@mc-dem.org
Anthony Davis Jr		MCDEM	305 722-4248	Admstr@mc-dem.org

Hazard Mitigation Meeting

McKinley County OEM



Figure 32: Hazard Mitigation Plan Public Notice



PUBLIC NOTICE

PUBLIC NOTICE IS HEREBY GIVEN that the McKinley County Office of Emergency Management will hold a public meeting to discuss the McKinley County All-Hazard Mitigation Plan on Wednesday November 13, 2013 at 5:00 p.m.

This meeting will be held in the Commission Chambers, Third Floor of the McKinley County Courthouse, 207 West Hill, Gallup, New Mexico.

Auxiliary aides for the disabled are available upon request; please contact Susan Mahooty at (505) 722-4248 at least 48 hours in advance of the meeting to make any necessary arrangements.

All interested parties are invited to attend.

Done this 6th day of November 2013

McKINLEY COUNTY EMERGENCY MANAGEMENT

/S/ Anthony Dimas Jr., Director

Publication date: November 9, 2013



Figure 33: Hazard Mitigation Plan Public Notice for Local Paper

**LEGAL NOTICE
Gallup - McKinley County
NEW MEXICO**

PUBLIC NOTICE
PUBLIC NOTICE IS HEREBY
GIVEN that the McKinley County
Office of Emergency Management
will hold a public meeting to dis-
cuss the McKinley County
All-Hazard Mitigation Plan on
Wednesday November 13, 2013 at
5:00 p.m.

This meeting will be held in the
Commission Chambers, Third
Floor of the McKinley County
Courthouse, 207 West Hill, Gal-
lup, New Mexico.

Auxiliary aides for the disabled
are available upon request; please
contact Susan Mahooty at (505)
722-4248 at least 48 hours in ad-
vance of the meeting to make any
necessary arrangements.

All interested parties are invited
to attend.

Done this 6th day of November
2013

**McKINLEY COUNTY EMER-
GENCY MANAGEMENT**
/S/ Anthony Dimas Jr., Director

**Legal# 14838 Published in The
Independent November 9, 2013.**



September 19, 2013 HMP Agenda



McKinley County, New Mexico
Hazard Mitigation Plan

Thursday September 19, 2013
10:00 a.m. – 12:00 p.m.

Location:
McKinley County Courthouse
207 West Hill St. Gallup, NM 87301
Commission Chambers

Type of Meeting: Hazard Mitigation Plan Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC
Lora Sedore, EM Specialist, B-Sting Ventures, LLC

10:00 a.m. – 10:05 a.m. Introductions

10:05 a.m. – 11:45 a.m. Hazard Mitigation Plan Update Overview by Brian Fields

- Conduct updated Hazard Assessment
- Discuss Past Hazard Events since the last meeting
- Discuss County Critical Facilities (Inventory Assets)
- Discuss Mitigation Action Items and Priority Process

11:45 a.m. – 12:00 a.m. Closing Remarks / Next Meeting

12:00 p.m. Adjournment



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September 19, 2013 HMP Minutes

McKinley County Hazard Mitigation Plan Meeting Minutes

Date/ Location

September 19, 2013
10:00 am – 12:00 pm
McKinley County EOC
Gallup, NM 87301

A sign-in sheet for attendees is attached at the end of this document.

Purpose

The purpose of the Hazard Mitigation Planning (HMP) meeting was to discuss the status of the plan update and introduce additional planning requirements to the HMP Team.

OVERVIEW OF ACTIVITIES

The meeting was facilitated by Brian Fields and Lora Sedore, contractor with B-Sting Ventures, LLC (BSV). The following was conducted in accordance with the published agenda:

- Conduct updated Hazard Assessment
- Discuss Past Hazard Events since the last meeting
- Discuss County Critical Facilities (Inventory Assets)
- Discuss Mitigation Action Items and Priority Process

Opening Remarks

Ms Susan Mahooty, McKinley County OEM welcomed the HMP Team and thanked them for their continued support in attending the meetings and participating in the mitigation plan update. Ms Mahooty then turned the meeting over to Mr. Fields who continued the presentation.

The Planning group discussions were as follows:

Introduction of Hazard Mitigation Plan Update Process

Mr. Fields opened the discussion with a brief reminder of the HMP Process and what mitigation plan means for the county, the value to society and the benefits of mitigation planning and their roles and responsibilities in supporting this update. Mr. Fields outlined where we currently are in the update process and require the input of the planning to complete the process.

Hazard Mitigation Meeting

McKinley County OEM



Natural Hazard Assessment/Previous Natural Hazard Occurrence/ Goals, Objectives and Actions

Ms Lora Sedore, BSV, lead the discussion and the results are presented below.

Hazard	Information needed	Responsible party
Flooding	Recent events	MPT; Susan has photos of the most recent event and will send to BSV
	Photos of events	
	List of Critical facilities in the flood plain	OEM; Susan will present the list with instructions to Anthony and Patricia at the OEM for consideration
	Maps of floodplain	GIS; Susan has request mapping from the GIS (flood plain and critical infrastructure)
Haz Mat	Recent incidents	NM SP files – Capt Aragon will provide information on HazMAT incidents that have occurred since the last HMP
	Current Zoning	Planning/Zoning Department- BSV will review on line zoning /regulations
Drought	Current water conservation measures – including voluntary or regulatory	City of Gallup Water Utilities/Navajo or Zuni Water authorities – OEM will request information on current conservation plans
Wildfire	Areas at risk	CWPP; BSV has a copy of the 2008 plan – Susan will provide status of the updated plan
Severe Weather	Recent events	MPT; each team member will provide information to BSV
	Events since 2005	NCDC; BSV will review data on the NCDC

Proposed goals and projects

Hazard and Goal	Project	Point of Contact
All Hazards Develop a unified approach to hazard mitigation that will include all residents of the County – including the Navajo Nation and Zuni Pueblo	Coordinate with Navajo and Zuni governments to identify areas of concern and projects that will benefit all residents of McKinley County	McKinley County OEM
	Identify Emergency Alerts Systems to notify and provide emergency information to McKinley County residents.	
Provide back-up generators to critical facilities	Identify critical facilities in need o emergency generators during an emergency	McKinley County OEM
Floods Identify areas of concern Provide information for the public to help to create a community aware of their responsibly before, during and after an event	Studies of areas prone to flooding	Flood plain manager
	Identify areas where access may be compromised during flooding	Flood plain manager
	Public Awareness Campaign <ul style="list-style-type: none"> • fairs • schools • public events 	McKinley County OEM

Hazard Mitigation Meeting

McKinley County OEM



Hazard and Goal	Project	Point of Contact
Haz Mat Provide information for the public to help to create a community aware of their responsibly before, during and after an event. Ensure zoning does not allow hazmat facilities locations close to residences, schools etc	Public Awareness	McKinley County OEM
	Zoning requirements for hazmat – on going from previous plan	LEPC
Drought Provide information for the public to help to create a community aware of their responsibly for water conservation during drought	Conservation – on going efforts	City of Gallup Water Utilities/Navajo or Zuni Water authorities
Wildfire Provide information for the public to help to create a community aware of their responsibly before, during and after an event Support efforts of local forestry/fire departments to identify and complete projects	Coordinate with CWPP projects	McKinley County OEM
Severe Weather Provide information for the public to help to create a community aware of their responsibly before, during and after an event Ensure zoning/building permits/codes are enforced	Public Awareness	McKinley County OEM
	Critical facilities hardening studies	McKinley County OEM
	Zoning/permitting	McKinley County Planning Department

HMP Development Next Steps

Mr. Fields outlined the following steps that will occur over the next 30 to 40 days:

- Inventory City Assets
 - Example: Historic Buildings, High Value Assets, Critical Facilities
- Estimate Loss
 - Task A: Determine the Extent of Damages
 - Task B: Calculate the Loss from Each Hazard Event
 - Task C: Provides the Vulnerability Information to Assist in Identifying Goals, Projects and Prioritizing Mitigation Actions
- Goals/Objectives/Action Items
 - Once hazards are identified we will send out an assessment sheet asking you for your recommend goals, objectives and actions.
 - BSV will also send out recommendations for you to consider
 - These need to be identified/finalized before the next HMP Meeting

Hazard Mitigation Meeting

McKinley County OEM



TO DO LISTS

Mitigation Planning Team (MPT)

- Provide information on historical events to BSV
- Provide project ideas for HMP
- Begin the process of getting your leadership involved with what we are doing – this makes the process easier when it's time to adopt the mitigation plan
- Attend all meetings – and in the event you can't make it, send a representative in your place
- Provide an "Opportunity" for the public to be involved. Highly recommended examples include:
 - Establish a website and update often. Also add a mechanism on the website that allows the public to send you're their thoughts
 - Send out flyers and/or put information in local paper or media outlets
- **Set date for public meeting**

B-Sting Ventures, LLC (BSV)

- Provide Meeting notes
- Complete draft plan for review in October

The HMP meeting adjured at 12:00pm

Additional questions or comments can be directed to the following:

Anthony Dimas Jr.
Emergency Manager
McKinley County OEM
2221 East Boyd
Gallup, NM. 87301
Phone: 505-722-4248
adimas@co.mckinley.nm.us

Brian W. Fields
B-Sting Ventures (BSV) LLC
703-863-8857 mobile
bwfabq@gmail.com

Lora Sedore
B-Sting Ventures (BSV) LLC
505-263-7013
Abqlj1@aol.com



HAZARD MITIGATION PLAN MEETING SIGN IN SHEET

McKinley County
Office of Emergency Management

Hazard Mitigation Planning Meeting Sign-In Sheet

Date September 19, 2013

Please Print Information Legibly

NAME	ORGANIZATION	MAILING ADDRESS	MAIN PH #	EMAIL ADDRESS	INITIALS
Shirley Thomas	B-Skyg Weather com	400 N. Pine Tomball, TX 77365	713-880-5857	shirley.thomas@b-skyg.com	ST
Laura Egan	B-Skyg Weather com	2121 Seitz 116 N. 1st St Tomball, TX 77365	281-263-1013	laura.egan@b-skyg.com	LE
Wanda Martinez	McKinley County	P.O. Box 70 Loving, NM 87005	(505) 722-4248	wanda.martinez@mc.kinley.nm.us	WM
Brandi Graham	Mentor	2215 E. Boyd 4000 E. Highway Hwy 66, Lovelock 716 E. 1st St, Reno, NV 68801	805-722-8819	brandi@mc.kinley.nm.us	BG
NIC Aragall	Norip		863-9353	jose.aragall@norip.com	RA
Rich Cernovsky	ATC		727-1110	rich.cernovsky@atc.com	RC
Tracy Wilson	McMADA	700 N. 1st St 87501	505-408-8282	tracy.wilson@mc.mada.com	TW
Tracy Wilson	McMADA	8005 Broadway Dr #250	505-408-8282	tracy.wilson@mc.mada.com	TW
Kristen Plummer	McMADA	8005 Broadway Dr #250	505-408-8282	kristen.plummer@mc.mada.com	KP
Cheryl Stigter	McMADA	2000 1st St 87501	505-408-8282	cheryl.stigter@mc.mada.com	CS
D.L. Stigter	UNM-Gallup		505-863-7807	dls@unm.edu	DS

May 23, 2013 HMP Agenda



McKinley County, New Mexico
Hazard Mitigation Plan

Thursday May 23, 2013
10:00 a.m. – 12:00 p.m.

Location:

McKinley County Courthouse
207 West Hill St. Gallup, NM 87301
Commission Chambers

Type of Meeting: Hazard Mitigation Plan Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC
Lora Sedore, EM Specialist, B-Sting Ventures, LLC

10:00 a.m. – 10:05 a.m. Introductions

10:05 a.m. – 11:45 a.m. Hazard Mitigation Plan Update Overview by Brian Fields

- Review Current Identified Hazards for Update Plan
- Discuss Past Hazard Events for Each Identified Hazard
- Discuss County Critical Facilities (Inventory Assets)
- Discuss Mitigation Action Items and Priority Process
- Discuss Plan Review Process

11:45 a.m. – 12:00 a.m. Closing Remarks / Next Meeting

12:00 p.m. Adjournment



May 23, 2013 HMP Minutes

McKinley County Hazard Mitigation Plan Meeting Minutes

Date/ Location

May 23, 2013
9:00 am – 10:30 am
McKinley County Courthouse
207 West Hill St. Gallup, NM 87301
Commission Chambers

A sign-in sheet for attendees is attached at the end of this document.

Purpose

The purpose of the Hazard Mitigation Planning (HMP) meeting was to discuss the status of the plan update and introduce additional planning requirements to the HMP Team.

OVERVIEW OF ACTIVITIES

The meeting was facilitated by Brian Fields and Lora Sedore, contractor with B-Sting Ventures, LLC (BSV). The following was conducted in accordance with the published agenda:

- Review Current Identified Hazards for Update Plan
- Discuss Past Hazard Events for Each Identified Hazard
- Discuss County Critical Facilities (Inventory Assets)
- Discuss Mitigation Action Items and Priority Process
- Discuss Plan Review Process

Opening Remarks

Anthony Dimas, Jr., McKinley County Emergency Manager, welcomed the HMP Team and thanked them for their continued support in attending the meetings and participating in the mitigation plan update. Mr. Dimas then turn the meeting over to Mr. Fields who continued the presentation.

The Planning group discussion is as follows:

Introduction of Hazard Mitigation Plan Update Process

Mr. Fields opened the discussion with a brief reminder of the HMP Process and what mitigation plan means for the county, the value to society and the benefits of mitigation planning and their roles and responsibilities in supporting this update. Mr. Fields outlined where we currently are in the update process and stated these will be highlighted on the timeline table and presented to the HMP Team in a timetable.

Hazard Mitigation Meeting

McKinley OEM



Natural Hazard Assessment

Mr. Fields outlined to the HMP Team the hazards identified in the 2005 plan and provided to the group the updated assessment conducted at the April 2013 meeting. This assessment is ongoing and will be finalized at the upcoming Local Emergency Planning Committee meeting scheduled for the last week of May 2013. Assessment results will be provided to BSV who will finalize and submit to the HMP Team for final review and approval.

Previous Natural Hazard Occurrence

Mr. Fields has conducted research on previous occurrences in the county. Research efforts included using the National Climatic Data Center (NCDC) data base, which is not always updated with every occurrence, internet research and a request submitted to the Albuquerque National Weather Service. Mr. Fields requested the HMP Team assist in the search of collecting previous occurrence data, to include photos if possible, and provide to him as soon as possible. This data will be included in the updated HMP.

Discuss Goals, Objectives and Actions

Mr. Fields reminded the group that over the next 30 days he will be requesting the HMP Team to review the goals and objectives for the HMP plan. Most important to the plan are the actions that support those natural hazards profiled in the plan. We have to have a minimum of two actions for each hazard identified. Mr. Fields encouraged the HMP Team to review current plans that may have a project that relates to the hazards identified in the mitigation plan. Example provide to the HMP Team: *If the county has a project for fixing an area that has a flooding issue, include that project in the mitigation plan.*

HMP Development Next Steps

Mr. Fields outlined the following steps that will occur over the next 30 to 40 days:

- Continue to Identify Natural Hazards
 - We Are About 75% Complete – Require Additional Data / Expanded Data; For Example – **What Past Hazards has the County Experienced?**
- Inventory City Assets
 - Example: Historic Buildings, High Value Assets, Critical Facilities
- Estimate Loss
 - Task A: Determine the Extent of Damages
 - Task B: Calculate the Loss from Each Hazard Event
 - Task C: Provides the Vulnerability Information to Assist in Identifying Goals, Projects and Prioritizing Mitigation Actions
- Goals/Objectives/Action Items
 - Once hazards are identified we will send out an assessment sheet asking you for your recommend goals, objectives and actions.

Hazard Mitigation Meeting

McKinley OEM



- BSV will also send out recommendations for you to consider
- These need to be identified before the next HMP Meeting
- Provide any photos that are relevant to the hazards identified
- Provide any past hazard history relevant to the hazards identified
- Begin the process of getting your leadership involved with what we are doing – this makes the process easier when it's time to adopt the mitigation plan
- Attend all meetings – and in the event you can't make it, send a representative in your place
- Provide an "Opportunity" for the public to be involved. Highly recommended examples include:
 - Establish a website and update often. Also add a mechanism on the website that allows the public to send you're their thoughts
- Send out flyers and/or put information in local paper or media outlets

The HMP meeting adjured at 10:30 am.

Additional questions or comments can be directed to the following:

Anthony Dimas Jr.
Emergency Manager
McKinley County OEM
2221 East Boyd
Gallup, NM. 87301
Phone: 505-722-4248
adimas@co.mckinley.nm.us

Brian W. Fields
B-Sting Ventures (BSV) LLC
703-863-8857 mobile
bwfabq@gmail.com

Lora Sedore
B-Sting Ventures (BSV) LLC
505-263-7013
Abqlj1@aol.com



HAZARD MITIGATION PLAN KICK OFF MEETING SIGN IN SHEET

[illegible]

April 4, 2013 HMP Agenda



McKinley County, New Mexico
Hazard Mitigation Plan

Thursday April 4, 2013
2:00 p.m. – 4:00 p.m.

Location: Metro Dispatch (McKinley County EOC)
2221 Boyd Ave.
Gallup, NM 87305

Type of Meeting: Hazard Mitigation Plan Kickoff Meeting

Meeting Facilitators:

Brian Fields, VP & COO B-Sting Ventures, LLC
Lora Sedore, EM Specialist, B-Sting Ventures, LLC

2:00 p.m. – 2:05 p.m. Introductions

2:05 p.m. – 3:45 p.m. Hazard Mitigation Plan Project Overview by Brian Fields

- Introduction of Hazard Mitigation Plan Update Process
- Discuss Conducting a Natural Hazard Assessment
- Natural Hazard Mitigation Planning Process
- Requirements from the Hazard Mitigation Planning Team
- Next Steps

3:45 p.m. – 4:00 p.m. Closing Remarks / Next Meetings

4:00 p.m. Adjournment



April 4, 2013 HMP Minutes

McKinley County Hazard Mitigation Plan
Kickoff Meeting Minutes

Date/ Location

March 6, 2013
2:00 pm – 4:00 pm
McKinley County Courthouse
207 West Hill St. Gallup, NM 87301
Commission Chambers

A sign-in sheet for attendees is attached at the end of this document.

Purpose

The purpose of the Hazard Mitigation Planning (HMP) kick off meeting was to develop the HMP Team and to introduce the hazard mitigation plan update processes.

OVERVIEW OF ACTIVITIES

The meeting was facilitated by Brian Fields and Lora Sedore, contractor with B-Sting Ventures, LLC (BSV). The following was conducted in accordance with the published agenda:

Opening Remarks

Anthony Dimas, Jr., McKinley County Emergency Manager welcomed HMP Team and briefly explained what will take place over the next 15 to 18 months. Mr. Dimas stressed the importance of everyone's participation as we go through each process towards updating the HMP. Mr. Dimas asked each member to introduce themselves and the agency they represent. Mr. Dimas then turn the meeting over to Mr. Fields who continued the kickoff presentation.

The Planning group discussion is as follows:

Introduction of Hazard Mitigation Plan Update Process

Mr. Fields continued the discussion with a brief overview of the HMP Process and what mitigation plan means for the county, the value to society and the benefits of mitigation planning. Mr. Fields then provided the HMP Team with an overview of the process recognized and suggested by FEMA. Mr. Fields outlined where we currently are in the update process and stated these will be highlighted on the timeline table and presented to the HMP Team in a timetable.

Discuss Conducting a Natural Hazard Assessment

Mr. Fields outlined to the HMP Team the hazards identified in the 2005 plan. As part of the update McKinley County HMP must reevaluate their hazards and determine if priorities have

Hazard Mitigation Meeting

McKinley OEM



changed, requires profiling or no longer requires profiling. Mr. Fields introduced the Natural Hazard Mitigation assessment process and explained the three categories (Probability/Frequency, Risk and Magnitude of Impact/Severity) that will be assessed for each hazard. Following the hazard assessment analysis, Mr. Fields requested everyone in the room fill out a hazard sheet and return at the conclusion of the meeting. Mr. Fields requested that Mr. Dimas send a copy of the hazard assessment form to other agencies that were not able to attend the scheduled meeting.

Discuss Goals, Objectives and Actions

Mr. Fields provided a brief discussion the requirement to develop Goals, Objectives and Actions for the HMP. This requirement comes later in the planning process but Mr. Fields wanted to stress the importance of thinking now about actions (projects) that relate to the hazards being profiled in the plan update. Mr. Fields reminded them to look at internal plans that may have current projects that relate to the profiled hazard.

HMP Development Next Steps

Mr. Fields outlined the following steps that will occur over the next 30 to 40 days:

- Begin the process of getting your leadership involved with what we are doing – this makes the process easier when it's time to adopt the mitigation plan
- Attend all meetings – and in the event you can't make it, send a representative in your place
- Provide an "Opportunity" for the public to be involved. Highly recommended examples include:
 - Establish a website and update often. Also add a mechanism on the website that allows the public to send you're their thoughts
 - Send out flyers and/or put information in local paper or media outlets
 - Develop a HMP Timeline with dates and plan update processes
 - Review hazard assessments received and combine results into one product
 - Begin past hazard occurrence review
 - Begin populating the updated mitigation plan with demographic information

Questions raised during the meeting

- Will we reference any other mitigation plans? Answer: Yes, if there are plans available from surrounding jurisdictions we'll reference them accordingly.
- For projects, if a neighboring jurisdiction has a hazard (i.e., flood or wildfire) that affects McKinley County can we include as a project; examples identified included (neighboring jurisdiction has a major disaster and the population is diverted or comes to the county, can we use the mitigation plan obtain reimbursement? Answer: For this type of support, disaster funds would be utilized to cover costs associated with response. But there may be a possibility to identify projects that could mitigate the affects of a hazard that could

Hazard Mitigation Meeting

McKinley OEM



come into the county, example sited included air quality alerts for wildfire and smoke coming into the county.

The HMP meeting adjured at 3:30 pm.

Additional questions or comments can be directed to the following:

Brian W. Fields – Exercise Director

B-Sting Ventures (BSV) LLC

703-863-8857 mobile

bwfabq@gmail.com

Lora Sedore- Exercise Controller

B-Sting Ventures (BSV) LLC

505-263-7013

Abqljs1@aol.com



APPENDIX A – AGENDAS, MINUTES AND SIGN-IN SHEETS

HAZARD MITIGATION PLAN KICK OFF MEETING SIGN IN SHEET



Hazard Mitigation Planning Meeting Sign-In Sheet

Date: 4/4/2013

Please Print Information Legibly

NAME	ORGANIZATION	MAILING ADDRESS	MAIN PH #	EMAIL ADDRESS	INITIALS
LEVI AREN	EL PASO NATURAL GAS CO.	P.O. Box 103 Rahoth, NM 87322	712-36174 712-36499	levi.aren@elgas.com	LA
KIM HOFFMAN	McKinley	Box 510 Gallup NM 87301	863-3537	kim.hoffman@mcokinley.com	KH
R. C. CROW	CPD	BOARDMAN 1020 Main St. NE Albuquerque, NM 87106	863-9365	rcrow@albuquerque.com	RHC
NIC ARALON	NMSP	LLM 1711 1901 RAB Road Gallup NM 87301	225-6277 863-7152	jose.aralon@nm.gov	NA
BOB BAKER	RACMS	2008 W. 1st St. Gallup NM 87301	505-863-4411	rbaker@racms.org	BB
ESPERANZA MORALES	MCSD	10 W. 1st St. Gallup NM 87301	726-6102	jdeming@mcokinley.com	EM
JIM DE VOUNG	City of Gallup	1800 South 2nd Gallup NM 87301	722-2195	jdeming@mcokinley.com	JD
JOHNNY GREENE	Gallup Fire Dept	516 E. Nicholas Blvd Gallup NM 87301	722-1406	johnny.greene@cityofgallup.com	JG
RICHARD CONING	GIAC	P.O. Box 70 Gallup NM 87301	722-4212	richard.coning@cityofgallup.com	RC
BRIAN MORLEY	McKinley				BM



Hazard Mitigation Planning Meeting Sign-In Sheet

NAME	ORGANIZATION	MAILING ADDRESS	MAIN PH #	EMAIL ADDRESS	INITIALS
SUSAN HANCOCK	McKinley	P.O. Box 70 Gallup NM 87301	722-4212	susan.hancock@cityofgallup.com	SH
KIM KAMP	ConocoPhillips	119 Box 57347 Belen NM 87002	505-863-1023	kimberly.kamp@conocophillips.com	KK
RENEE ASHCROFT	UNM Gallup	705 Gallup Ave Gallup NM 87301	505-863-7638	rene.ashcroft@unm.edu	RA
SHEILA SIBER	GRSSC	2400 Pecos Ave Gallup NM 87301	722-1575	sheila.siber@grssc.org	SS
JOHN HALL	RACMS	2008 W. 1st St. Gallup NM 87301	505-863-4411	john.hall@racms.org	JH
ROBERTA HALL	City of Gallup	P.O. Box 2470 Gallup NM 87301	722-6053	roberta.hall@cityofgallup.com	RH
RON KERNER	UNM-G	705 Gallup Ave Gallup NM 87301	505-863-7638	ron.kerner@unm.edu	RK
DL STIGER	UNM-G	P.O. Box 4853 Gallup NM 87301	863-7607	dstiger@unm.edu	DS
NATHAN G. BATES	McKinley County	Box 70 Gallup NM 87301	863-7517	nathan.g.bates@mcokinley.com	NB
JAMES WILSON	MCSD	2008 W. 1st St. Gallup NM 87301	505-863-4411	james.wilson@mcokinley.com	JW
HEATHER PATTERSON	McKinley County	P.O. Box 70 Gallup NM 87301	722-4212	heather.patterson@mcokinley.com	HP

Hazard Mitigation Meeting

McKinley OEM



Local Emergency Planning Meeting Agendas



McKinley County LEPC
2221 Boyd Ave.
PO Box 70
Gallup, NM 87305
Phone: (505) 722-4248
Fax: (505) 722-9009

Email: oem@co.mckinley.nm.us

AGENDA Friday, March 14, 2014 Fire Rock Navajo Casino

- I. Welcome & Introductions
- II. Approval of Agenda
- III. McKinley County Disaster Declaration
 - a. FEMA 1936
 - b. FEMA 4152
- IV. Hazard Mitigation Plan Update
- V. Exercise Update
 - a. HazMat – BNSF Full Scale Exercise, July 30, 2014
 - b. 2015 HazMat Exercise, TTX – Fall 2014, FSE – Summer 2014⁵
 - i. Looking for partners to host
- VI. THIRA Plan
- VII. Shelter Assessment Plan
- VIII. Training
 - a. <https://www.preparingnewmexico.org/>
 - b. <http://www.training.fema.gov/EMI/>
 - c. <https://www.cdp.dhs.gov/>
- IX. Next Meeting
 - a. May 20, 2014 McKinley County EOC 10:00 AM – 12:00 PM
- X. Adjourn





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AGENDA
Tuesday, December 3, 2013
McKinley County EOC

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. McKinley County Disaster Declaration - FEMA
- V. Hazard Mitigation Plan Updates
- VI. Exercise Updates
 - a. HazMat – BNSF Full Scale Exercise in 2014
- VII. Training Opportunity
 - a. See Attachment
<https://www.preparingnewmexico.org/>
<http://www.training.fema.gov/EMI/>
<https://cdp.dhs.gov/>
- VIII. NEW 2013 State Homeland Security Grant
- IX. Presentation – American Red Cross - Michael S. Anaya-Gorman
- X. Next Meeting – TBD
- XI. Adjourn





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AGENDA
Tuesday, September 24, 2013
McKinley County EOC

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. McKinley County Disaster Declaration - FEMA
- V. Hazard Mitigation Plan Updates
 - a. Minutes
 - b. City
- VI. Exercise Updates
 - a. HazMat – BNSF TTX September 27, 2013
 - b. Mass Flu POD Drill November 2, 2013
 - c. HazMat – BNSF Full Scale Exercise
- VII. Training Opportunity
 - a. See Attachment
<https://www.preparingnewmexico.org/>
<http://www.training.fema.gov/EMI/>
<https://cdp.dhs.gov/>
- VIII. NEW 2013 State Homeland Security Grant
- IX. Next Meeting – November 19, 2013
- X. Adjourn





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AGENDA
Tuesday, July 23, 2013
McKinley County EOC

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. By-Laws & Sub-committees
- V. CONNECT Presentation: Lynn Cuellar
- VI. Hazard Mitigation Plan Updates
- VII. HMEP Grant: Hazardous Materials Emergency Preparedness Grant
- VIII. Exercise Updates
- IX. Training
 - a. Sports & Special Events Incident Management – October 1-2, 2013 – Location TBA
- X. Next Meeting
 - i. September ²⁴~~7~~, 2013 10:00 AM – 12:00 PM McKinley County EOC (tentative date)





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AGENDA
Tuesday, May 28, 2013
McKinley County EOC

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. By-Laws & Sub-committees
 - a. Introduction of new LEPC Secretary
- V. Code Red Presentation: Jim Erickson
- VI. Hazard Mitigation Plan Updates
 - a. Assessment Handout
 - b. FAQ's
- VII. HMEP Grant: Hazardous Materials Emergency Preparedness Grant
 - a. Funding awarded: \$16,950 to conduct a Table Top Exercise.
- VIII. Exercise Updates
- IX. Training
 - a. DIAP (CMVCI) – June 4-6, 2013 – GMCS Student Support Services Bldg.
 - b. ICS 300 – June 17-19, 2013 – RMCHCS 3rd Floor Solarium
 - c. ICS 400 – June 20-21, 2013 – RMCHCS 3rd Floor Solarium
 - d. LEPC Conference – July 10-11, 2013 – Albuquerque, NM
 - e. Sports & Special Events Incident Management – October 1-2, 2013 – Location TBA
- X. Next Meeting
 - a. July 23, 2013 10:00 AM – 12:00 PM McKinley County EOC





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AGENDA
Tuesday, March 26, 2013
McKinley County EOC

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. By-Laws – Please bring a copy
 - a. Discussion – Input from agencies
- V. HMEP Grant: Hazardous Materials Emergency Preparedness Grant
 - a. Applications Process / Projects
- VI. Grants & Technology Veterans, LLC
 - a. Jeff Gallegos
 - i. Presentation on iLinkx: www.iLinkx.com
- VII. EOP & Hazard Mitigation Plan Updates
 - a. EOP Complete
 - i. Approved – Feb. 19th, 2013
 - b. Hazard Mitigation Plan Rewrite/Update
 - i. Kick Off Meeting April 4th
- VIII. Exercise
 - a. Courthouse Active Shooter Table Top Exercise
 - i. TTX April 3rd
 - b. GMCS Central Office Table Top
 - i. IPC April 4th
- IX. Training
 - a. TNG-140: Wilderness Search
 - i. May 1st – 2nd, McGaffey
 - b. PER-213: Wide Area Search
 - i. May 3rd – 5th, McGaffey
- X. Next Meeting
 - a. May 28th, 2013 at McKinley County EOC
 - i. 10:00 AM-12:00 PM





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AGENDA

Tuesday, January 22, 2013
Red Rock Room – Rio West Mall

- I. Welcome & Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. By-Laws – Please bring a copy
 - a. Discussion – Input from agencies
- V. Sub-Committees
 - a. Public Health – Richard Canning/Donna Corley
 - b. Public Safety – **Needed**
 - c. Training & Exercise – Sheila Silva/Sherri Helton
 - d. Planning – Richard Canning/John Begay
 - e. Business/Industry Outreach – **Needed**
- VI. SHSGP Grant Update
- VII. EOP & Hazard Mitigation Plan Updates
- VIII. Exercise
 - a. Update on Courthouse Active Shooter Exercise
 - b. Table Top Exercise for schools
- IX. Training
 - a. Disaster Preparedness for Hospitals & Healthcare Organizations Within the Community Infrastructure – January 30-31, 2013 – GIMC
 - b. Hazmat Sampling Course – February 19-21, 2013 – Fire Station #4
 - c. Operational Level Response to Hazmat/WMD Incidents (PER 212) – March 12-14, 2013 – Metro Dispatch
- X. Next Meeting
 - a. March 26, 2013 10:00 AM-12:00 PM Metro Dispatch





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Agenda September 25, 2012

- I. Welcome and Introductions
- II. Approval of Agenda
- III. Approval of Minutes
- IV. Sub-Committees
 - a. Public Health
 - b. Public Safety
 - c. Training & Exercise
 - d. Planning
 - e. Business/Industry Outreach Committee
- V. City of Gallup Emergency Management-Clybert Zunie
- VI. Exercise
 - a. State EOC Exercise
 - i. September 18, 2012
 - b. McKinley County Active Shooter Exercise
 - i. October 21, 2012
- VII. EOP and Hazard Mitigation Plans Update
 - a. Agency Meetings held
- VIII. CERT Team Update
- IX. Training
 - a. NIMS compliance update
 - b. EOC Operations & Planning for All-Hazards Events
 - i. Nov. 14-16, 2012
- X. LEPC Next Meeting
 - a. November 27, 2012 10:00 – 12:00 Metro Dispatch





McKinley County LEPC
2221 Boyd Ave
Gallup, NM 87301
Phone 505-722-4248
Fax 505-722-9009
Email: oem@co.mckinley.nm.us

McKinley County LEPC
Local Emergency Planning Committee
Agenda – July 20th, 2012

- I. Welcome and Introductions
- II. Approval of Agenda & Minutes
- III. Sub-Committees
 - a. Need assistance getting the sub-committees started
- IV. Exercise
 - a. McKinley County EOC Exercise
 - i. We are complete with our EOC Table Top. Exercise Complete: July 10th
 - b. State EOC Exercise
 - i. Update: FSE to test our EOC: Sept. 18th 7:30 am – 2:00
 - c. McKinley County Active Shooter Exercise
 - i. Mid-Term Planning Conference on Aug. 7th: 11:00 – 1:30 Rio West Mall
- V. Emergency Operations Plan
 - a. Kick Off Planning Meeting on Aug. 6th at 1:30 – 3:30
- VI. Hazard Mitigation Plan
 - a. Grant was approved, waiting for award letter.
- VII. CERT Team – McKinley County
 - a. Introduction Meeting Tomorrow: July 21st OEM Conf. Room
- VIII. Training: See Attached
- IX. LEPC Next Meeting: Sept 25th, 10:00 am / Metro Dispatch
- X. Adjourn





McKinley County Office of
Emergency Management

P.O. Box 70
Gallup, NM 87305
Phone 505-722-4248
Fax 505-722-9009
oem@co.mckinley.nm.us

McKinley County LEPC
Local Emergency Planning Committee
Agenda – May 29th, 2012

- I. Welcome and Introductions
- II. Approval of Agenda & Minutes
- III. Sub-Committees
 - a. Need assistance getting the sub-committees started
- IV. Exercise
 - a. McKinley County EOC Exercise
 - i. Update: EOC Training June 11-12, Metro Dispatch
 - b. State EOC Exercise
 - i. Update
 - c. Emergency Preparedness Area 4 Communications Exercise
 - i. Update
 - d. McKinley County Active Shooter Exercise
 - i. Concept & Objectives Meeting: June 8th, 2012 / Metro / 11:00 am – 1:30 pm
- V. 2012 State Homeland Security Grant
 - a. Automatic Allocation – \$58,502.00
 - b. Competitive - \$41,794.80 / with match of \$13,931.60 (25%): Total Possible \$114,228.40
- VI. Emergency Operations Plan
 - a. Update: We asked for funds in the OEM FY13 Budget to update the December 2005 Plan
- VII. Hazard Mitigation Plan
 - a. Update: Grant to FEMA has been written to update/revise March 2005 Plan
- VIII. CERT Team – McKinley County
 - a. Trying to get a CERT Team
- IX. Every 15 Minutes Presentation: McKinley County DWI Program
- X. Training: See Attached
- XI. LEPC Next Meeting: July 24th, 10:00 am / Metro Dispatch
- XII. Adjourn



McKinley County Webpage

How to Start Preparing	Emergency Supply Kit	Preparing for Fire	Extreme Weather
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Welcome to our Web Site!

Things happen.

We are the local government agency that is responsible for planning for and responding to different kinds of natural or manmade disasters. Things happen, and we're here to both prepare our community before an event occurs, and come to aid when something does happen. We attempt to manage risk and to provide assistance when the resources of individuals in our community are overwhelmed.

Our goal is to make this website a useful tool for both the general public of McKinley County, and for our professional first responders alike. You will find resources to aid you in preparing yourself and your family for the typical weather-related emergencies that occur in the Four Corners area, from fire to mud slides. Check out our Disaster Plan pages. There are many classes and courses that our county personnel are required to take to keep up their certification in knowing the latest and best ways to take care of people in a crisis situation. We are instrumental in facilitating these necessary trainings. Here they can access our calendar for upcoming classes, and also download important documents that accompany these courses in our easy-to-use online library.

IMPORTANT FORMS

Meeting Documents
Hazard Mitigation

The following draft documents are available for review and public comment.

Please e-mail your comments to: pattersonp@co.mckinley.nm.us

or mail comments to :

McKinley County OEM
Attention Patricia Patterson
PO Box 70
Gallup, NM 87305

- [Mitigation Plan 2005](#)
- [Hazard Mitigation FAQ](#)
- [Hazard Mitigation Public Meeting Notice](#)
- [Meeting Dates](#)
- [Hazard Analysis Form](#)

LEPC
EOP

- McK EOP Basic Plan Signed



McKinley County Webpage



McKinley County/City of Gallup Hazard Mitigation Plan

McKinley County has recently received funding through FEMA to update the Mitigation Plan and the update is being managed through the McKinley County Office of Emergency Management.

A Planning Team of local experts and citizens have been meeting for the last few months and provided input to update the current plan. They will help to review and identify potential hazards and set mitigation goals specific to the needs of the residents of the County including the City of Gallup.

Meeting dates were as follows:

March 6, 2013
March 23, 2013
April 3, 2013
April 4, 2013
May 23, 2013
September 19, 2013

The public is encouraged to participate in the process and you may request copies of the meeting notes from the McKinley County Office of Emergency Management.

A public meeting will held on November 13, 2013 from 5:00 PM to 7:00 PM at the McKinley County Commission Chambers

We will have a draft copy of the plan and will explain what a mitigation plan is and how the community can be involved in the planning.



McKinley County Webpage

McKinley County Emergency Management Hazard Mitigation Plan FAQs

What is Mitigation?

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Mitigation is taking action now—before the next disaster—to reduce human and financial consequences later (analyzing risk, reducing risk, insuring against risk).

What is Mitigation Planning?

Mitigation planning is a process that communities use to assess risks and identify actions to reduce vulnerability to threats through hazard mitigation. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for State, local, and Indian Tribal governments to undertake a risk-based approach to reducing risks from natural hazards through mitigation planning.

What is a Mitigation Plan?

A Mitigation Plan is a community-driven, living document that communities use to reduce their vulnerability to natural and/or man-made hazards.

Why assess and plan for risk?

The plan and its development process show the link between land-use decisions and vulnerability. It serves as a tool to be used by planners or other officials to advise and inform decision makers.

Why have a Mitigation Plan?

Communities must have a plan in order to apply for or receive a Mitigation Grant. These grants can augment local mitigation activities already being done. Ultimately, these actions reduce vulnerability, and communities are able to recover more quickly from disasters.

Who Should Help in the Mitigation Planning?

The McKinley County Mitigation Planning Team (MPT) will consist of representatives from those jurisdictions and agencies that have an interest in pursuing mitigation of the disasters that may occur in McKinley County. The team will begin meeting in early spring of 2013 and will continue for the next year.

Look for more information on the Plan www.mcoem.com or contact the McKinley County Office of Emergency Management at 505-722-4248



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Appendix B – Multi-Jurisdiction Hazard Identification

Hazard Ranking and Scoring: The County offered to the Hazard Mitigation Planning Team and the public a hazards analysis/prioritization sheet and provide their view what hazards the County was vulnerable too. The end results of the assessment provided the basis of those hazards profiled in the updated mitigation plan.

Figure 34: Hazard Analysis/Prioritization Sheet

McKinley County Natural Hazards Analysis/Prioritization		Agency/Organization	Phone/Email																																				
Name																																							
<p>1. Hazard Risk Analysis: Rate the Known Hazards that affect the McKinley County, New Mexico. Use the following steps:</p> <p>a. Identify Probability/Frequency using the chart below:</p> <table border="1"> <tr> <td>No</td> <td>0</td> <td>Has not occurred</td> </tr> <tr> <td>Nuisance</td> <td>1</td> <td>Occurs less than once every 10 years or more</td> </tr> <tr> <td>Medium</td> <td>2</td> <td>Occurs less than once every 5 to 10 years</td> </tr> <tr> <td>High</td> <td>3</td> <td>Occurs once every year or up to once every five years</td> </tr> </table> <p>b. Identify the Magnitude/Severity using the chart below:</p> <table border="1"> <tr> <td>No</td> <td>0</td> <td>Has not Occurred</td> </tr> <tr> <td>Nuisance</td> <td>1</td> <td> <ul style="list-style-type: none"> Negligible property damages (less than 5% of all buildings and infrastructure) Negligible loss of quality of life Local emergency response capability is sufficient to manage the hazard </td> </tr> <tr> <td>Medium</td> <td>2</td> <td> <ul style="list-style-type: none"> Moderate property damages (15% to 50% of all buildings and infrastructure) Some loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to involve one or more counties </td> </tr> <tr> <td>High</td> <td>3</td> <td> <ul style="list-style-type: none"> Property damages to greater than 50% of all buildings and infrastructure Significant loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to require federal assistance </td> </tr> </table> <p>c. Identify the Risk (Duration of loss of critical facilities and services) using the chart below:</p> <table border="1"> <tr> <td>No</td> <td>0</td> <td>Has not occurred</td> </tr> <tr> <td>Nuisance</td> <td>1</td> <td>Loss of critical facilities and services for up to one week</td> </tr> <tr> <td>Medium</td> <td>2</td> <td>Loss of critical facilities and services from one week to three weeks</td> </tr> <tr> <td>High</td> <td>3</td> <td>Loss of critical facilities and services for more than three weeks</td> </tr> </table>				No	0	Has not occurred	Nuisance	1	Occurs less than once every 10 years or more	Medium	2	Occurs less than once every 5 to 10 years	High	3	Occurs once every year or up to once every five years	No	0	Has not Occurred	Nuisance	1	<ul style="list-style-type: none"> Negligible property damages (less than 5% of all buildings and infrastructure) Negligible loss of quality of life Local emergency response capability is sufficient to manage the hazard 	Medium	2	<ul style="list-style-type: none"> Moderate property damages (15% to 50% of all buildings and infrastructure) Some loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to involve one or more counties 	High	3	<ul style="list-style-type: none"> Property damages to greater than 50% of all buildings and infrastructure Significant loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to require federal assistance 	No	0	Has not occurred	Nuisance	1	Loss of critical facilities and services for up to one week	Medium	2	Loss of critical facilities and services from one week to three weeks	High	3	Loss of critical facilities and services for more than three weeks
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Natural Hazards	Probability / Frequency	Magnitude / Severity	Risk																																				
Wildland / Urban Interface Fires																																							
Drought																																							
Floods / Flash Floods																																							
Severe Weather (Includes High Wind, Winter Storms, and Thunderstorm)																																							
Land Subsidence																																							
Landslide																																							
Dam Failure																																							
Volcanoes																																							
Human-Caused Hazards (Hazard Materials Releases)																																							
Tornado																																							
Extreme Heat / Extreme Temperatures (If not both please circle the one Assessing)																																							
Earthquake																																							
Expansive Soil																																							

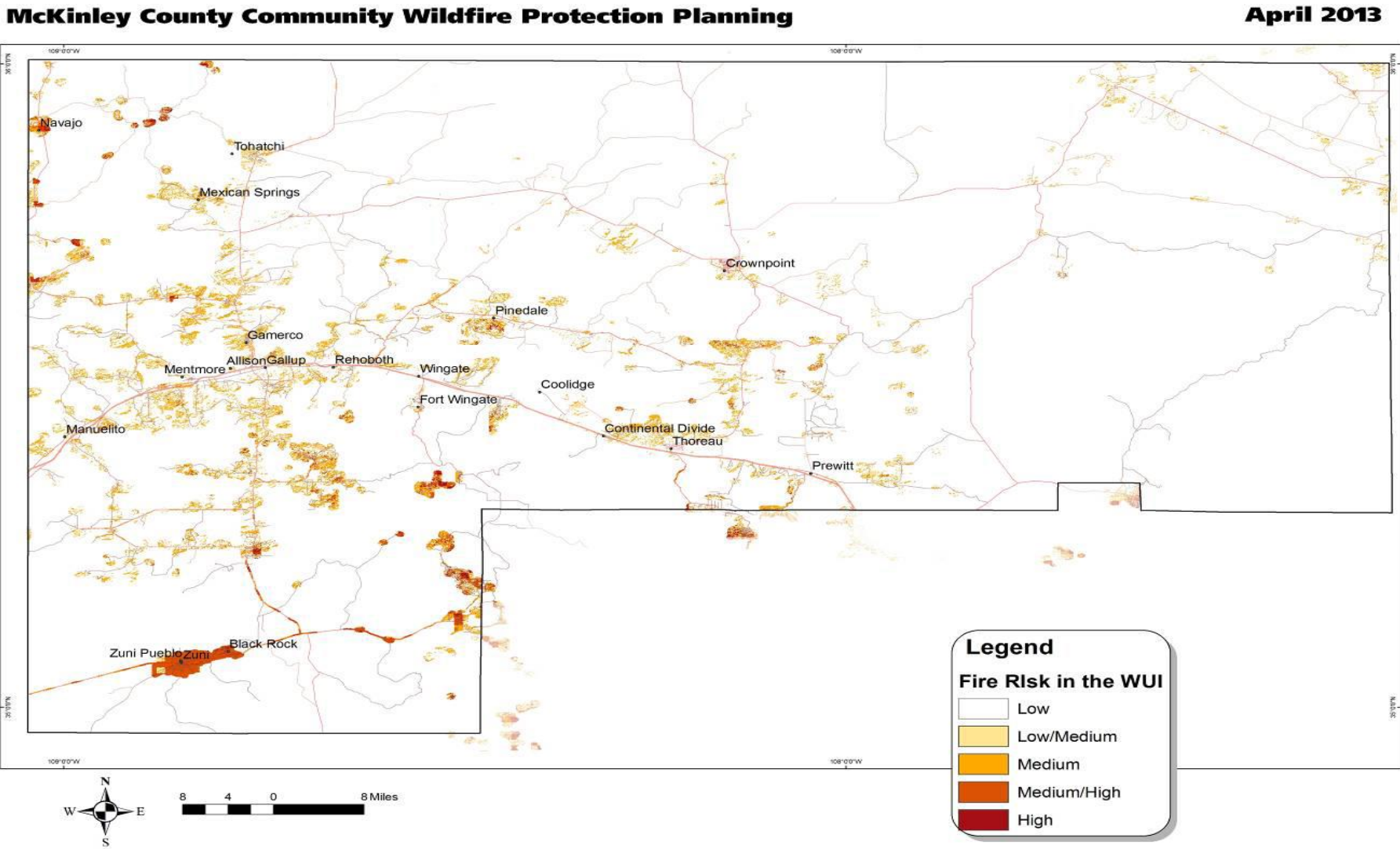


Figure 35: Finalized Hazard Analysis/Prioritization Sheet

McKinley County Natural Hazards Analysis/Prioritization																																																																														
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	0	1	2	3																																																																										
No	Has not occurred																																																																													
Nuisance		Occurs less than once every 10 years or more																																																																												
Medium			Occurs less than once every 5 to 10 years																																																																											
High				Occurs once every year or up to once every five years																																																																										
	0	1	2	3																																																																										
No	Has not Occurred																																																																													
Nuisance		<ul style="list-style-type: none"> Negligible property damages (less than 5% of all buildings and infrastructure) Negligible loss of quality of life Local emergency response capability is sufficient to manage the hazard 																																																																												
Medium			<ul style="list-style-type: none"> Moderate property damages (15% to 50% of all buildings and infrastructure) Some loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to involve one or more counties 																																																																											
High				<ul style="list-style-type: none"> Property damages to greater than 50% of all buildings and infrastructure Significant loss of quality of life Emergency response capability, economic and geographic effects of the hazard are of sufficient magnitude to require federal assistance 																																																																										
	0	1	2	3																																																																										
No	Has not occurred																																																																													
Nuisance		Loss of critical facilities and services for up to one week																																																																												
Medium			Loss of critical facilities and services from one week to three weeks																																																																											
High				Loss of critical facilities and services for more than three weeks																																																																										
Natural Hazards	Probability / Frequency	Magnitude / severity	Risk																																																																											
Wildland / Urban Interface Fires	High	High	Medium																																																																											
Severe Weather (Includes Thunderstorm, Hail, Lightning, Extreme Heat and High Wind)	High	Medium	Medium																																																																											
Floods / Flash Floods	High	Nuisance	Nuisance																																																																											
Drought	High	Medium	Nuisance																																																																											
Human-Caused Hazards (Hazard Materials Releases)	Medium	Medium	Nuisance																																																																											
Land Subsidence	No	No	No																																																																											
Landslide	No	No	No																																																																											
Dam Failure	No	No	No																																																																											
Volcanoes	No	No	No																																																																											
Tornado	No	No	No																																																																											
Earthquake	No	No	No																																																																											
Expansive Soil	No	No	No																																																																											

Appendix C – McKinley County / City of Gallup Maps

Figure 36: McKinley County Wildfire Urban Interface Map



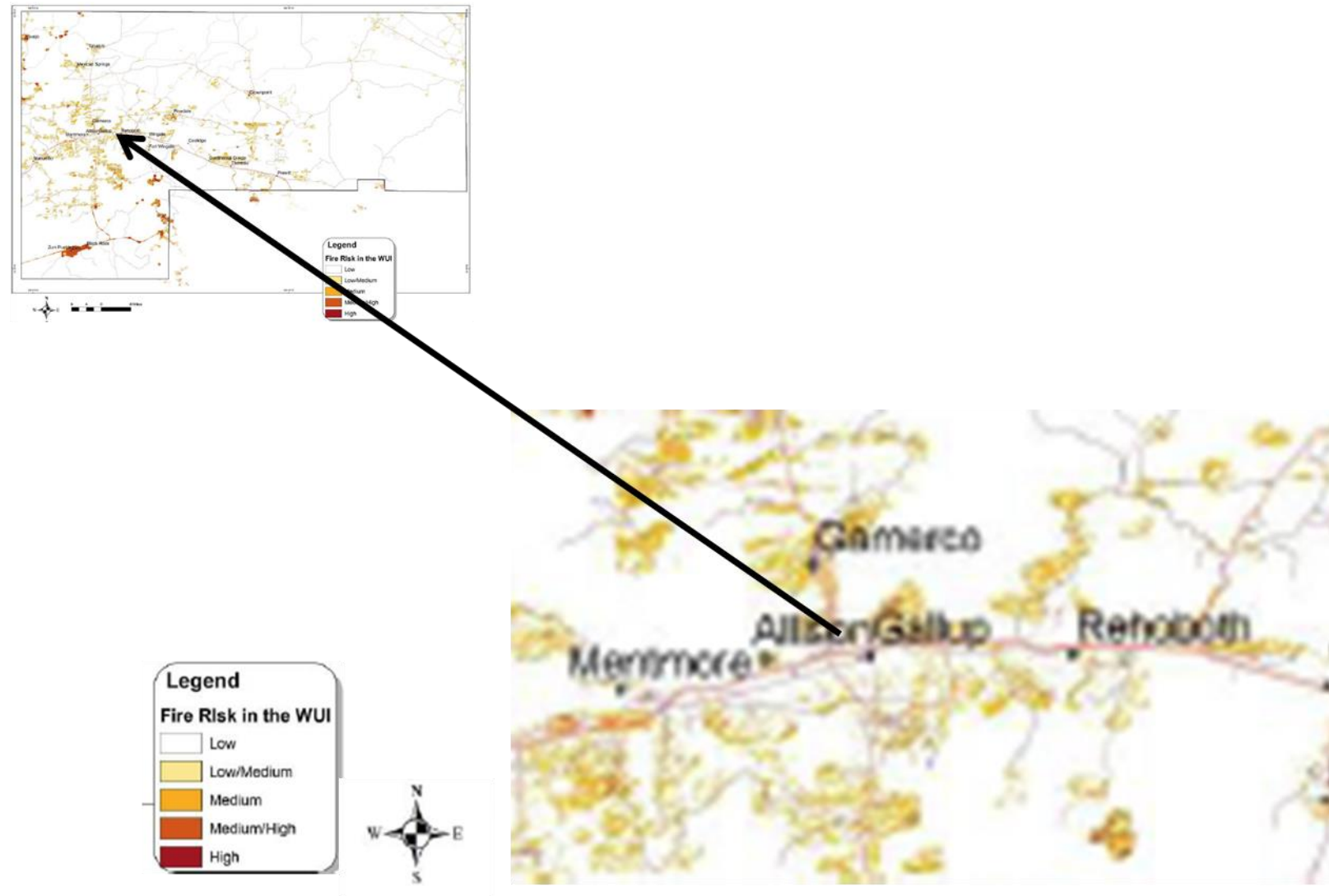
Source: McKinley County CWPP Update, 2013



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Figure 37: City of Gallup Wildfire Urban Interface Map

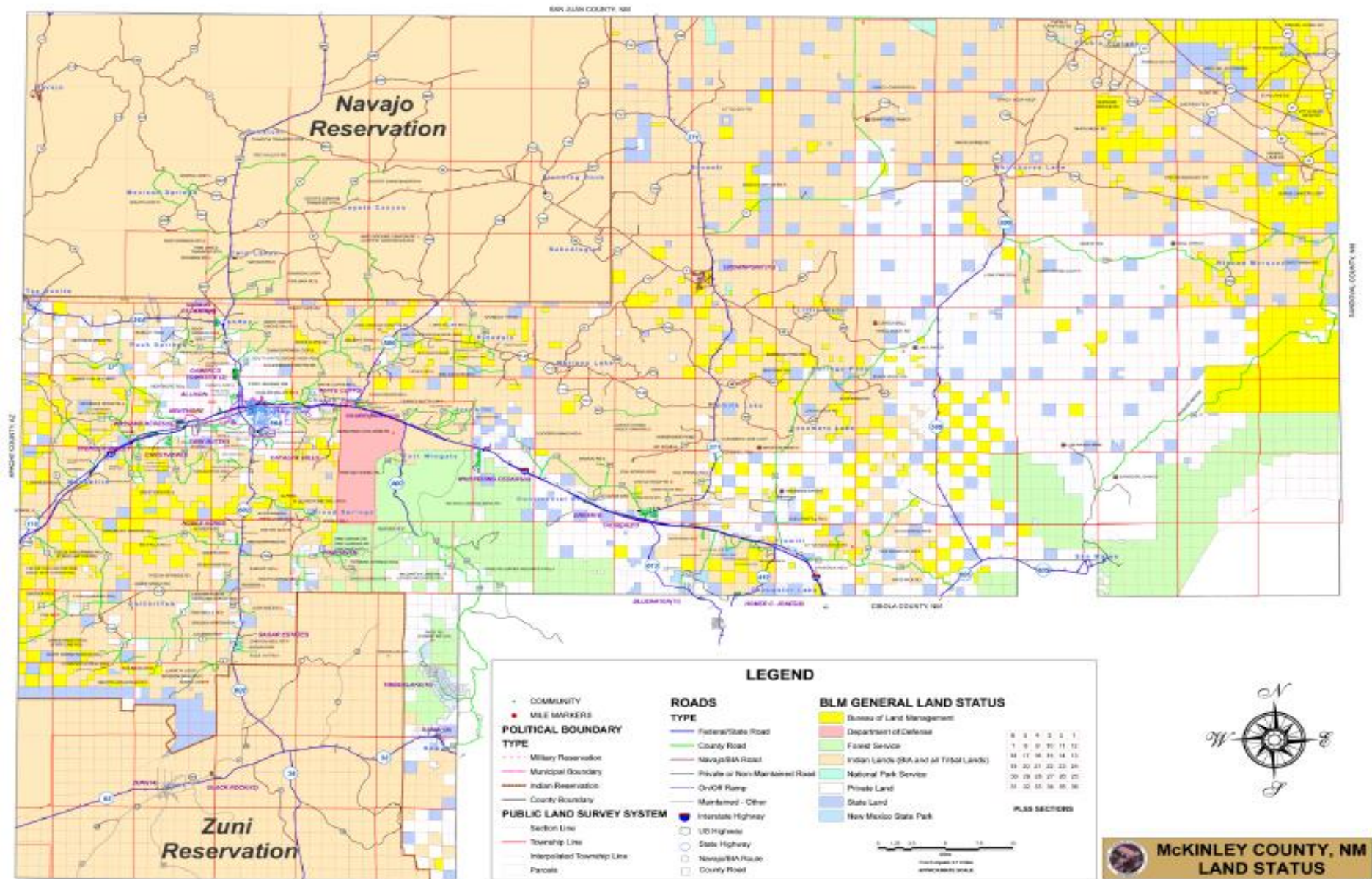


Source: McKinley County CWPP Update; 2013

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Figure 38: McKinley County Land Status



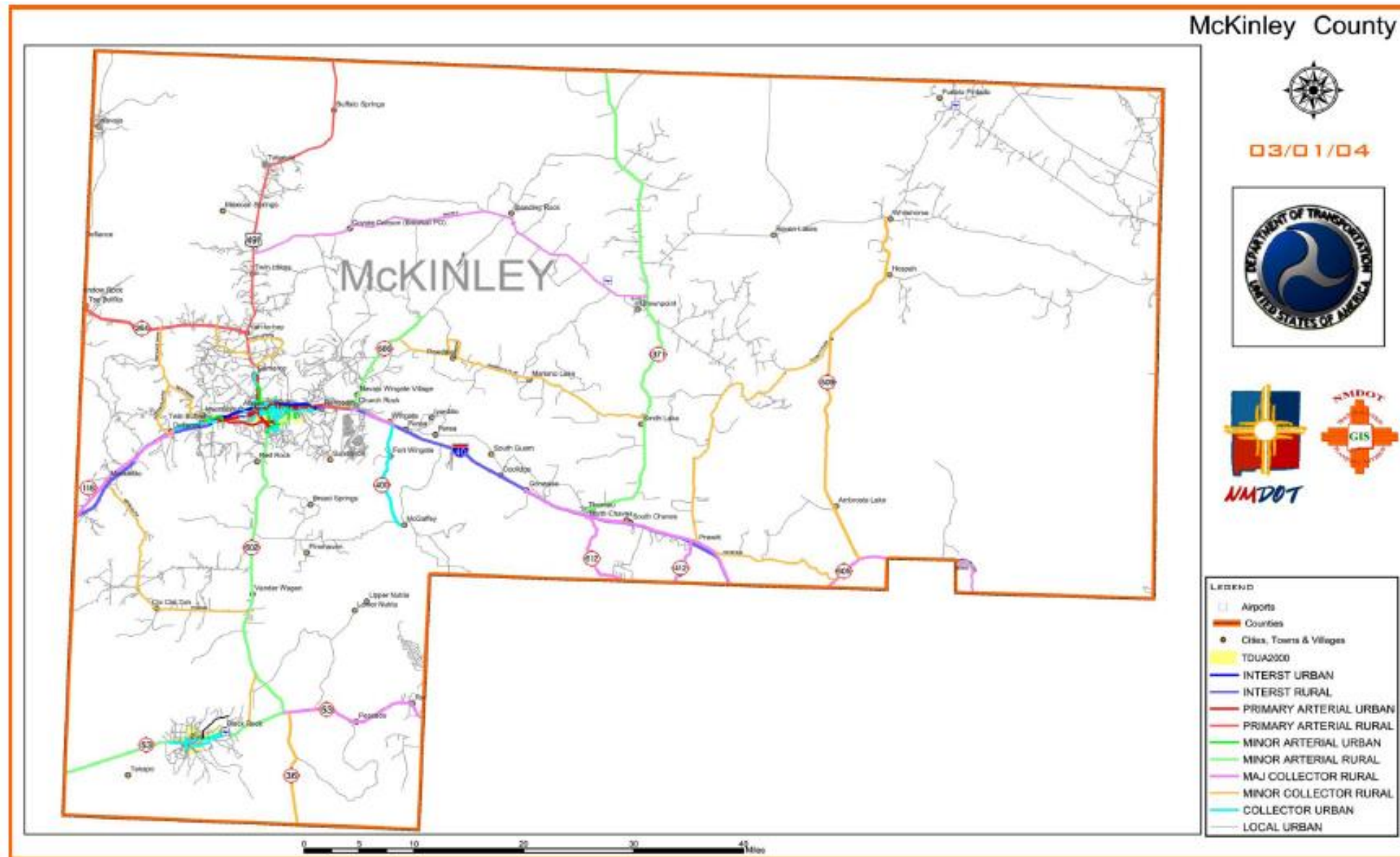
Source: McKinley County GIS Department



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Figure 39: McKinley County Road System

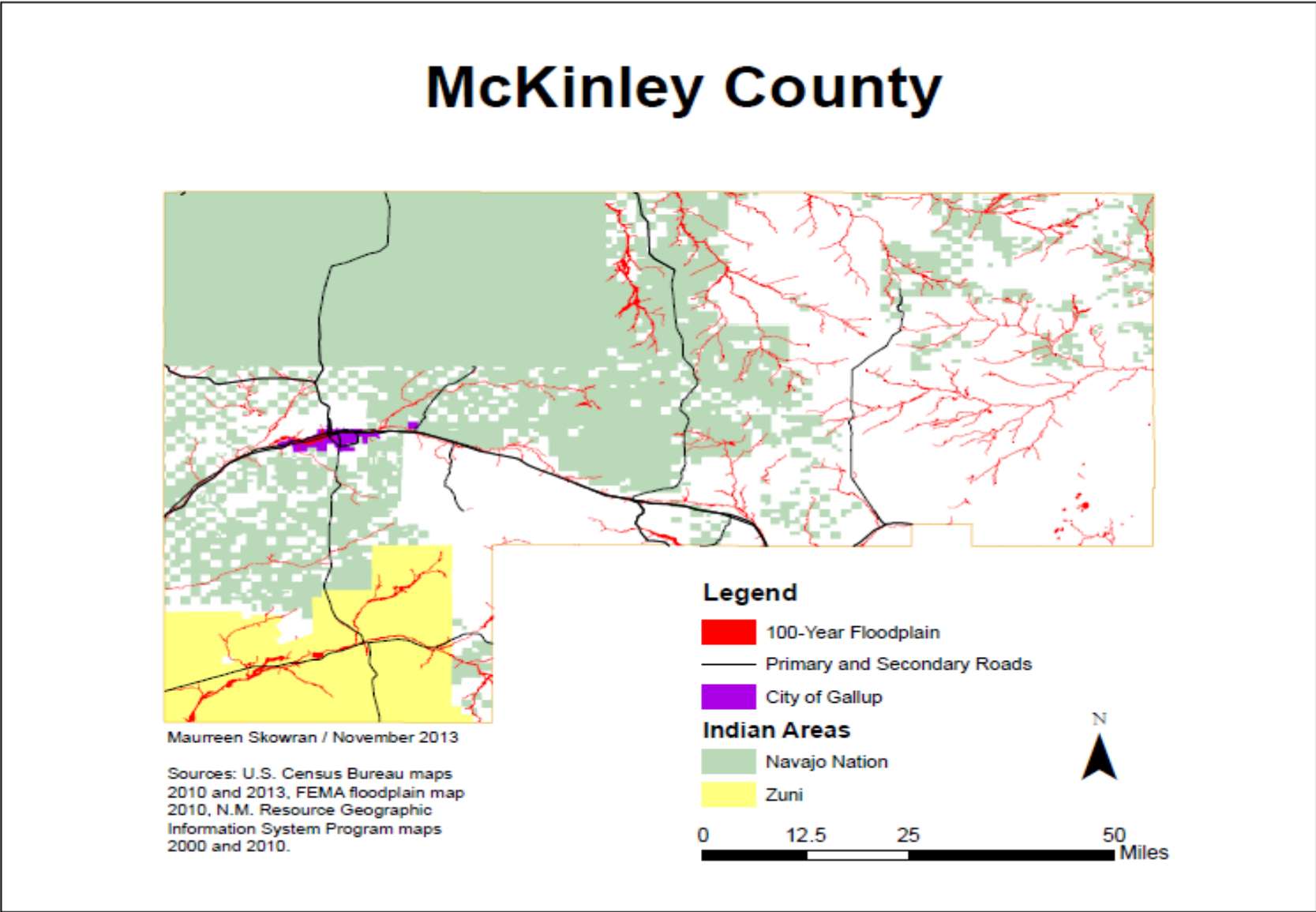


Source: New Mexico Department of Transportation

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Figure 40: McKinley County / City of Gallup 100-Year Floodplain Map



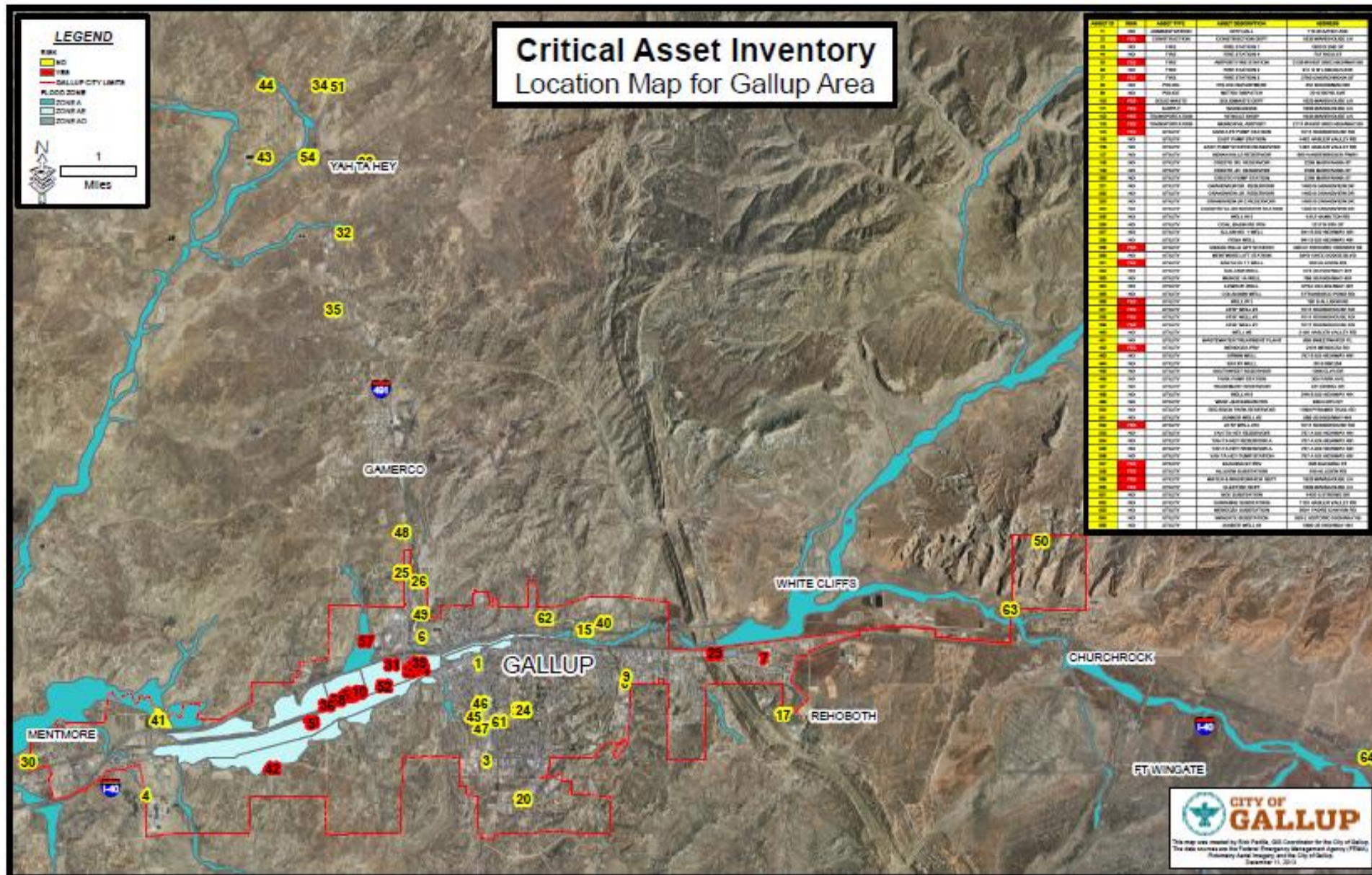
Source: Sources: U.S. Census Bureau maps 2010 and 2013, FEMA floodplain map 2010, N.M. Resource Geographic Information System Program maps 2000 and 2010.



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Figure 41: City of Gallup Critical Asset Inventory

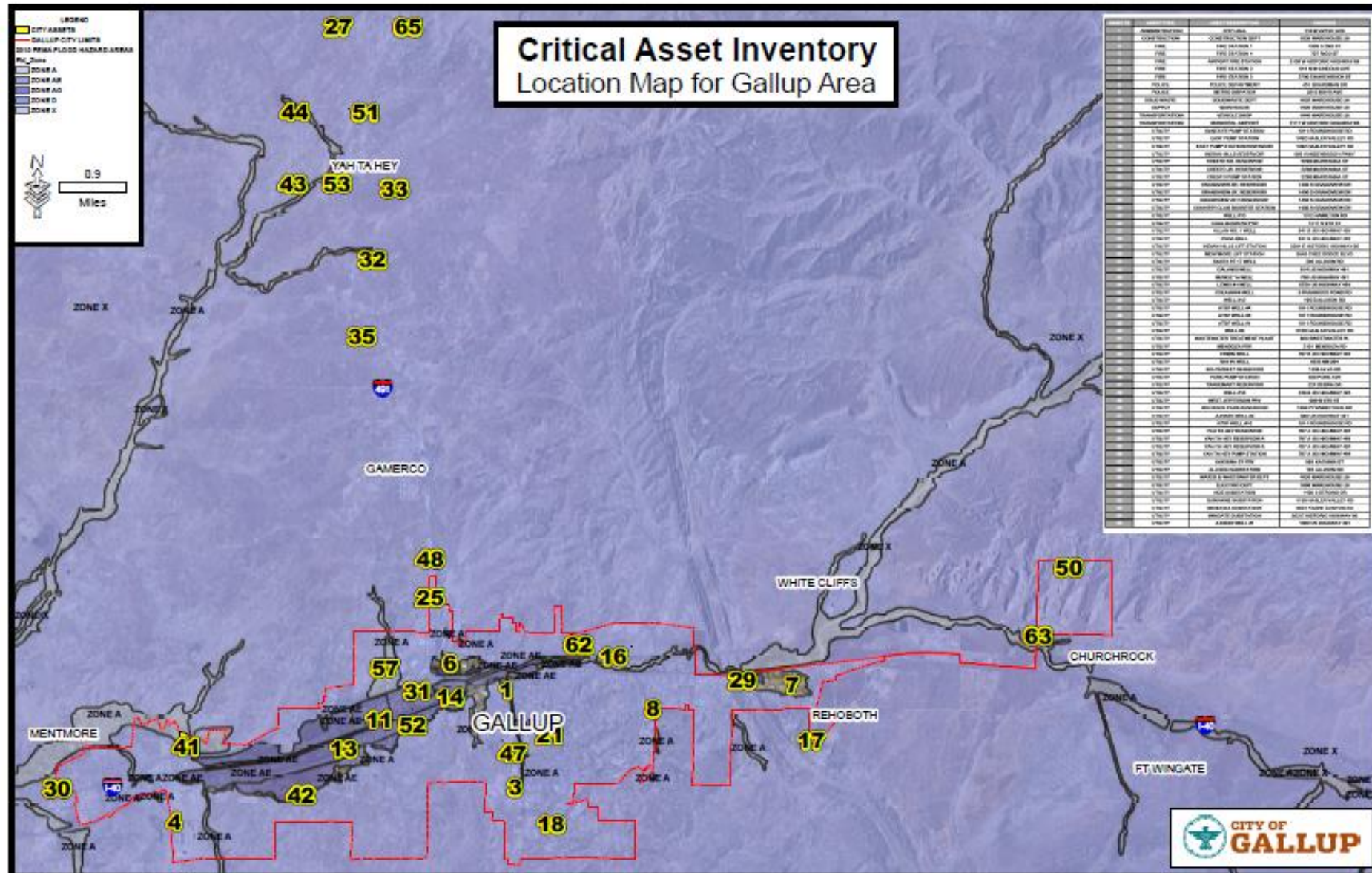


Source: City of Gallup GIS Department

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Figure 42: City of Gallup Asset Inventory



Source: City of Gallup GIS Department

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Appendix D – STAPLE+E Worksheets

McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
Wildfire	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.	Reduce the exposure to critical facilities in high or extreme wildfire hazard areas.	Identify, create and maintain defensible space around critical facilities located in high or extreme wildfire hazard areas, such as schools, fire stations, etc.									
			Conduct assessment of County/City-owned critical facilities vulnerable to wildfire and replace roofs with fire resistant materials.									
		Reduce the exposure of residential structures to wildfires.	Reduce fuel loads and create defensible space around structures in the wildland - urban interface areas. • Expand Chipping Program • Expand Fuel Thinning Program									
			Develop dependable sources of water for fire suppression in all residential areas of the City.									
		Educate the public in defensible space and other preventative measures to minimize wildfire risk.	Make educational materials available through the Land Use Department to inform citizens about Best Management Practices (BMPs) for defensible Space.									
			Apply for and Create Firewise Communities in high risk subdivisions.									
			Educate the public on evacuation routes and evacuation procedures. Build upon existing evacuation routes.									
			Educate the public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures.									
Flooding	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.	Ensure that all floodplains in McKinley County are identified and that building/zoning codes are enforced in the construction of all new structures and the modification of all existing structures in the floodplain.	Review all present floodplain related building/zoning codes for McKinley County to ensure that future construction projects will not create the potential for loss due to flooding.									



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
		Reduce exposure of structures and roads to flooding	Conduct flash flooding hydrology studies in flood prone areas of the city.									
			Enhance and/or develop drainage in flood prone areas of the county/city.									
			Conduct studies and update floodplain and Floodway maps in the County/City.									
			Continue to meet the compliance requirements outlined in the NFIP.									
			Inspect county road system for the possibility of roadway collapse potential due to the erosion of waterway banks.									
			Inspect county road system for flood-prone crossings and develop safety crossings for county transportation use.									
		Build and support local capacity to enable the public to prepare for, respond to and recover from disasters	Expand and disseminate GIS and other hazard information on the Internet.									
			Develop, support and fund Citizen Corps Programs, to include Community Emergency Response Teams (CERT) that also includes a mitigation component.									
			Create a virtual and physical library that contains all technical studies, particularly natural resources.									
			Develop and Flood Hazard Education/Outreach Plan.									
			Work with County/City officials to increase awareness among property owners including information mailings to property owners in the 100-year floodplain; and sponsoring a series of workshops about costs and benefits of acquiring and maintaining flood insurance coverage for property owners in the 100-year floodplain.									



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
Severe Weather (Thunderstorms, high wind, extreme heat)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to severe weather.	Develop a comprehensive approach to reducing the possibility of damage and loss of function to identified vulnerable buildings and critical facilities, due to the effects of severe weather hazards.	Conduct non-technical evaluation process for critical facilities to determine relative severe weather vulnerability and gather information for subsequent refinements of this mitigation plan.									
		Address identified data limitations regarding lack of detailed information about characteristics of individual structures such as construction type, age, condition, compliance with current building codes, etc.	Complete structure data records in the County/City Geographic Information System to allow future revisions of this plan to more easily incorporate information about property values, construction types, etc.									
	Reduce possibility of injury and death due to severe weather.	Increase public awareness of actions to take during all types of severe weather.	Increase number of radios/televisions with warning capabilities in public buildings, parks, and recreational areas to announce alerts from the Emergency Alert System and National Weather Radio.									
			Purchase NOAA radio for public buildings.									
		Increase participation in and number of storm watcher programs throughout the County/City	Increase number of National Weather Service's SKYWARN on the ground storm spotters; recruit and train additional storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions.									



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
		Identify critical facilities and buildings that are vulnerable to severe weather events.	Establish a County/City Storm Ready Community to enhance preparedness for the impacts of severe weather through better planning, education, and awareness.									
			Utilize existing critical facility data records in the County/City Geographic Information System to target City-Owned structures in need of updating.									
			Conduct a survey of all manufactured homes in the County/City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).									
			Determine the number of emergency generators to power essential buildings and seek acquisition.									
	Reduce possibility of severe damage, injury and death due to High Wind.	Identify critical facilities and buildings that are vulnerable to high winds.	Utilize existing critical facility data records in the County/City Geographic Information System to target structures in need of updating.									
			Conduct a survey of all manufactured homes in the County/City to gather data on location, age, and condition to determine appropriate mitigation action (anchoring structures, relocation, and acquisition).									
	Reduce possibility of injury and death due to Extreme Heat.	Increase public awareness of actions to take during extreme heat events.	Review existing extreme heat emergency response plans for enhancement opportunities									
			Work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities during heat emergencies.									
	Drought	Educate the population on damage and loss due to drought	Publish and distribute educational materials on water conservation techniques and drought management strategies.									
			Conduct public meetings with local and visiting subject matter experts to educate the public on how to decrease their risk to drought.									



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
			Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictions and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.									
			Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.									
		Continue efforts to encourage residents to use water-saving landscaping techniques.	Enforce existing zoning and building regulations on water use.									City
			Expand County/City water conservation incentive program.									City
			Implement projects to use treated effluent for non potable uses.									City
Human Caused Hazards (Hazard Material Releases)	Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to human-caused hazards.	Develop a comprehensive approach to reducing the possibility of injury and loss of life for residents and occupants of existing structures and critical facilities with the highest relative vulnerability to the effects of hazardous material releases from discrete locations.	The Mitigation Planning Team should work with facility owners and operators identified in Section One of this plan as having the greatest potential impact (based on population in the immediate vicinity) to ensure: <ul style="list-style-type: none"> Facilities are in compliance with all relevant local, state and federal requirements; Neighboring property owners understand the potential extent of the risk; and Alert and warning systems are appropriate to the situation. Pursue the installation of warning systems around hazardous material facilities if it is determined that existing warning systems are inadequate for the purposes of alerting neighboring property owners.									
		Protect the public water system and other critical facilities from contamination from hazardous materials incidents	Assess need to and methods to harden critical facilities against the effects of human-made hazards, e.g., the accidental or intentional release of chemical, biological, or radioactive material; the accidental or intentional detonation of explosives; or acts of random violence or terrorism.									



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions													
Project Data				STAPLE+E									Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total		
		Protect the general population and special populations from hazardous materials incidents.	Maintain and update equipment used to respond to hazardous materials incidents.										
			Ensure the Emergency Operations Plan meets or exceeds current state and federal hazardous materials emergency planning requirements.										
		Increase awareness of hazards and actions to take during an emergency.	The Mitigation Planning Team should seek opportunities to inform individuals and business owners regarding recommendations for how to prepare for hazardous material releases. The recommendations will advise taking some of the same actions to prepare for earthquakes, floods, and fires, i.e., store a multi-day supply of food and water, make sure flashlights, portable radios, and spare batteries are on hand; and identify out-of-town contacts and a place to reunite if separated from family members. All residents can be better prepared by becoming more aware of surroundings and reporting suspicious activity to local officials.										
Public Awareness	Promote disaster-resistant development.	Encourage and facilitate the development or revision of comprehensive plans and zoning ordinances to limit development in high hazard areas and improve the ability to identify vulnerable structures.	Distribute and promote the inclusion of the vulnerability analysis information as part of periodic plan review and revisions at the City level.										
			Utilize a GIS for identifying "sensitive area" properties in the County/City.										



McKinley County and City of Gallup, NM HMP Planning Team STAPLE+E Final Prioritization of Actions

Hazard Mitigation Goals, Objectives & Actions												
Project Data				STAPLE+E								Agency or Dept Responsible
Hazard	Goal	Objective	Actions	Social	Technical	Admin	Political	Legal	Economic	Environ.	Total	
	Develop a unified approach to hazard mitigation that will include all residents of the County – including the Navajo Nation and Zuni Pueblo	Provide adequate and consistent enforcement of ordinances and codes within and between jurisdictions.	Work with the State, County, City and municipal building inspectors to consistently enforce the building code from jurisdiction to jurisdiction.									
		Provide public education to increase awareness of hazards and opportunities for mitigation.	Identify and publicize success stories as part of an overall consistent public relations program.									
			Develop opportunities for community participation in emergency preparedness programs, to include citizen advisory committees and Citizen Corps Programs.									
		Promote partnerships to continue the development of a Countywide approach to identifying and implementing mitigation actions.	Convene regular meetings with the Mitigation Planning Team to discuss issues and progress related to the implementation of the plan.									
			Promote partnerships among the County/City departments, non-profit organizations, and the private sector to develop a citywide approach to mitigation activities.									
			Incorporate hazard mitigation concepts into all applicable County/City operations.									
			Coordinate with Navajo and Zuni governments to identify areas of concern and projects that will benefit all residents of McKinley County									
			Identify Emergency Alerts Systems to notify and provide emergency information to McKinley County residents.									



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APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

Appendix E – Critical Facilities Estimated Loss By Natural Hazard

McKinley County Critical Facilities Estimated Loss – Flood/Flash Flood

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ²	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Fire – HazMat	\$800,000	x	100%	=	\$800,000	\$300,000	x	100%	=	\$300,000	
Law Enforcement	\$200,000	x	100%	=	\$200,000	\$100,000	x	100%	=	\$100,000	
Education	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Hospitals	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Utilities	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Transportation	\$0	x	100%		\$0	\$0	x	100%		\$0	
Total Loss to Structures					\$800,000	Total Loss to Contents					\$400,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$)⁴	x	Functional Downtime (# of days)⁵	+	Displacement Cost per Day (\$)⁴	x	Displacement Time (# of Days)⁵	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Police Dept	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0		\$0.00	\$0	x	100%	\$0.00
Total Loss to Structure Use & Function									\$0.00

1. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
2. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
3. Replacement value of Contents from Asset Inventory.
4. Annual Operating Budget divided by 365 days (when available).
5. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
6. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$800,000
\$400,000
\$0
\$0
\$0
\$0
\$0
\$0
\$1,280,000
Total Loss for Hazard event



APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

McKinley County Critical Facilities Estimated Loss – Wildfire

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ²	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Fire – HazMat	\$3,000,000	x	100%	=	\$3,000,000	\$1,500,000	x	100%	=	\$1,500,000	
Law Enforcement	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Education	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Hospitals	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Utilities	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Transportation	\$0	x	100%		\$0	\$0	x	100%		\$0	
Total Loss to Structures					\$3,000,000	Total Loss to Contents					\$1,500,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	+	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0		\$0.00	x	0		\$0.00
Total Loss to Structure Use & Function									\$0.00

1. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
2. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
3. Replacement value of Contents from Asset Inventor.
4. Annual Operating Budget divided by 365 days (when available).
5. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
6. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$3,000,000
\$1,500,000
\$0
\$0
\$0
\$0
\$0
\$0
\$4,500,000
Total Loss for Hazard event



APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

McKinley County Critical Facilities Estimated Loss – Severe Weather

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ²	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$12,700,000	x	69%	=	\$8,763,000	\$2,000,000	x	69%	=	\$1,380,000	
Fire – HazMat	\$12,600,000	x	69%	=	\$8,694,000	\$2,000,000	x	69%	=	\$1,380,000	
Law Enforcement	\$5,800,000	x	69%	=	\$3,864,000	\$1,000,000	x	69%	=	\$690,000	
Education	\$2,800,000	x	69%	=	\$1,932,000	\$800,000	x	69%	=	\$552,000	
Hospitals	\$7,000,000	x	69%	=	\$4,830,000	\$3,000,000	x	69%	=	\$2,070,000	
Utilities	\$1,900,000	x	69%	=	\$1,311,000	\$1,000,000	x	69%	=	\$690,000	
Transportation	\$0	x	69%	=	\$0	\$0	x	69%	=	\$0	
Total Loss to Structures					\$23,982,000	Total Loss to Contents					\$6,762,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	+	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

1. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
2. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
3. Replacement value of Contents from Asset Inventory.
4. Annual Operating Budget divided by 365 days (when available).
5. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
6. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$23,982,000
\$6,762,000
\$0
\$0
\$0
\$0
\$0
\$0
\$30,744,000
Total Loss for Hazard event



APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

McKinley County Critical Facilities Estimated Loss – Drought

Structure Loss						Contents Loss					
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ¹	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ¹	=	Loss to Contents (\$)	
Government	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Fire – HazMat	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Law Enforcement	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Education	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Hospitals	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Utilities	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Transportation	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Total Loss to Structures					\$0.00	Total Loss to Contents					\$0.00

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$)⁴	x	Functional Downtime (# of days)⁵	+	Displacement Cost per Day (\$)⁴	x	Displacement Time (# of Days)⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

1. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
2. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
3. Replacement value of Contents from Asset Inventor.
4. Annual Operating Budget divided by 365 days (when available).
5. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
6. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$0
\$0
\$0
\$0
\$0
\$0
\$0
\$0
\$0
Total Loss for Hazard event



APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

McKinley County Critical Facilities Estimated Loss – Human Hazard

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ²	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$11,200,000	X	100%	=	\$11,200,000	\$2,500,000	X	100%	=	\$2,500,000	
Fire – HazMat	\$2,400,000	X	100%	=	\$2,400,000	\$1,000,000	X	100%	=	\$1,000,000	
Law Enforcement	\$2,400,000	X	100%	=	\$2,400,000	\$1,000,000	X	100%	=	\$1,000,000	
Education	\$2,100,000	X	100%	=	\$2,100,000	\$1,000,000	X	100%	=	\$1,000,000	
Hospitals	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Utilities	\$1,500,000	X	100%	=	\$1,500,000	\$750,000	X	100%	=	\$750,000	
Transportation	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Total Loss to Structures					\$19,600,000	Total Loss to Contents					\$6,250,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$)⁴	x	Functional Downtime (# of days)⁵	+	Displacement Cost per Day (\$)⁴	x	Displacement Time (# of Days)⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

1. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
2. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
3. Replacement value of Contents from Asset Inventory.
4. Annual Operating Budget divided by 365 days (when available).
5. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
6. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$19,600,000
\$6,250,000
\$0
\$0
\$0
\$0
\$0
\$0
\$25,850,000
Total Loss for Hazard event



APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

City of Gallup Critical Facilities Estimated Loss – Flood/Flash Flood

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ¹	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$2,200,000	x	100%	=	\$2,200,000	\$1,000,000	x	100%	=	\$1,000,000	
Fire – HazMat	\$2,700,000	x	100%	=	\$2,700,000	\$1,000,000	x	100%	=	\$1,000,000	
Law Enforcement	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Education	\$3,100,000	x	100%	=	\$3,100,000	\$1,500,000	x	100%	=	\$1,500,000	
Hospitals	\$0	x	100%	=	\$0	\$0	x	100%	=	\$0	
Utilities	\$8,700,000	x	100%	=	\$8,700,000	\$3,000,000	x	100%	=	\$3,000,000	
Transportation	\$1,000,000	x	100%		\$1,000,000	\$600,000	x	100%		\$600,000	
Total Loss to Structures					\$17,700,000	Total Loss to Contents					\$7,100,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	+	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Police Dept	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	100%	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

13. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
14. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
15. Replacement value of Contents from Asset Inventory.
16. Annual Operating Budget divided by 365 days (when available).
17. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
18. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$17,700,000
\$7,100,000
\$0
\$0
\$0
\$0
\$0
\$24,800,000
Total Loss for Hazard event



City of Gallup Critical Facilities Estimated Loss – Wildfire

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	+	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Police Dept	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0		\$0.00	\$0	x	100%	\$0.00
Total Loss to Structure Use & Function									\$0.00

7. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
8. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
9. Replacement value of Contents from Asset Inventor.
10. Annual Operating Budget divided by 365 days (when available).
11. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
12. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

City of Gallup Critical Facilities Estimated Loss – Severe Weather

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ²	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ²	=	Loss to Contents (\$)	
Government	\$3,700,000	x	72%	=	\$2,664,000	\$1,000,000	x	72%	=	\$720,000	
Fire – HazMat	\$5,100,000	x	72%	=	\$3,672,000	\$1,500,000	x	72%	=	\$1,080,000	
Law Enforcement	\$1,000,000	x	72%	=	\$720,000	\$500,000	x	72%	=	\$360,000	
Education	\$14,750,000	x	72%	=	\$10,620,000	\$5,800,000	x	72%	=	\$4,176,000	
Hospitals	\$7,000,000	x	72%	=	\$5,040,000	\$3,000,000	x	72%	=	\$2,160,000	
Utilities	\$24,700,000	x	72%	=	\$17,784,000	\$5,000,000	x	72%	=	\$3,600,000	
Transportation	\$1,000,000	x	72%	=	\$720,000	\$500,000	x	72%	=	\$360,000	
Total Loss to Structures					\$41,220,000	Total Loss to Contents					\$12,456,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$)⁴	x	Functional Downtime (# of days)⁵	+	Displacement Cost per Day (\$)⁴	x	Displacement Time (# of Days)⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

7. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
8. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
9. Replacement value of Contents from Asset Inventor.
10. Annual Operating Budget divided by 365 days (when available).
11. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
12. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$41,220,000
\$12,456,000
\$0
\$0
\$0
\$0
\$0
\$53,676,000
Total Loss for Hazard event



City of Gallup Critical Facilities Estimated Loss – Drought

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	+	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁶	=	Structure Use & Function Loss (\$)
Government	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Fire – HazMat	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Law Enforcement	\$0.00	x	5	+	\$0.00	x	30	=	\$0.00
Education	\$0.00	x	5	+	\$0.00	x	45	=	\$0.00
Hospitals	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Utilities	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Transportation	\$0.00	x	0	+	\$0.00	x	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

Structure Loss + Contents Loss + Functional Loss (\$)	
\$0	
\$0	
\$0	
\$0	
\$0	
\$0	
\$0	
Total Loss for Hazard event	

7. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
8. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
9. Replacement value of Contents from Asset Inventor.
10. Annual Operating Budget divided by 365 days (when available).
11. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
12. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

APPENDIX E – CRITICAL FACILITIES ESTIMATED LOSS BY NATURAL HAZARD

City of Gallup Critical Facilities Estimated Loss – Human Hazard

Structure Loss					Contents Loss						
Name Description of Structure	Structure Replacement Value (\$)	x	Percent Damage (%) ⁷	=	Loss to Structure (\$)	Replacement Value of Contents (\$) ³	x	Percent Damage (%) ⁷	=	Loss to Contents (\$)	
Government	\$0.00	X	100%	=	\$0.00	\$2,500,000	X	100%	=	\$0.00	
Fire – HazMat	\$0.00	X	100%	=	\$0.00	\$1,000,000	X	100%	=	\$0.00	
Law Enforcement	\$0.00	X	100%	=	\$0.00	\$1,000,000	X	100%	=	\$0.00	
Education	\$3,400,000	X	100%	=	\$3,400,000	\$750,000	X	100%	=	\$750,000	
Hospitals	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Utilities	\$0.00	X	100%	=	\$0.00	\$750,000	X	100%	=	\$0.00	
Transportation	\$0.00	X	100%	=	\$0.00	\$0.00	X	100%	=	\$0.00	
Total Loss to Structures					\$3,400,000	Total Loss to Contents					\$750,000

Structure Use and Function Loss									
Name/Description of Structure	Average Daily Operating Budget (\$) ⁴	x	Functional Downtime (# of days) ⁵	=	Displacement Cost per Day (\$) ⁴	x	Displacement Time (# of Days) ⁵	=	Structure Use & Function Loss (\$)
Government	\$0.00	X	0	+	\$0.00	X	0	=	\$0.00
Fire – HazMat	\$0.00	X	5	+	\$0.00	X	30	=	\$0.00
Law Enforcement	\$0.00	X	5	+	\$0.00	X	30	=	\$0.00
Education	\$0.00	X	5	+	\$0.00	X	45	=	\$0.00
Hospitals	\$0.00	X	0	+	\$0.00	X	0	=	\$0.00
Utilities	\$0.00	X	0	+	\$0.00	X	0	=	\$0.00
Transportation	\$0.00	X	0	+	\$0.00	X	0	=	\$0.00
Total Loss to Structure Use & Function									\$0.00

7. Replacement Value of the Structure from Asset Inventory, scenario is several large thunderstorms that threaten with high winds, hail, and produces flash flooding
8. Estimated damage from event per FEMA How-to-Guide 386-2, p.4-13 plus assumptions based on previous occurrences.
9. Replacement value of Contents from Asset Inventor.
10. Annual Operating Budget divided by 365 days (when available).
11. Estimated days nonfunctional per FEMA's How-To-Guide 386-2, P. -14 plus assumptions based on previous occurrences
12. Estimated days nonfunctional per FEMA's How-to-Guide 386-2, p4-15.

Structure Loss + Contents Loss + Functional Loss (\$)
\$3,400,000
\$750,000
\$0
\$0
\$0
\$0
\$0
\$0
\$4,150,000
Total Loss for Hazard event



Appendix F– FEMA Approval Letter and Review Tool

U.S. Department of Homeland Security
Region VI
800 N. Loop 288
Denton, TX 76209-3698



FEMA

December 9, 2014

Ms. Wendy Blackwell
New Mexico DHS and Emergency Management, Preparedness Bureau
Office of Emergency Management
P.O. Box 27111
Santa Fe, NM 87502-1628

RE: Approval of Multi-Jurisdictional Hazard Mitigation Plan for McKinley County, New Mexico.

Dear Ms. Blackwell:

This office has concluded its review of the referenced plan, in conformance with the Final Rule on Mitigation Planning (44 CFR Part 201.6). We are pleased to provide our approval of this plan in meeting the criteria set forth by the Agency. Receiving this approval, eligibility for the Hazard Mitigation Assistance Grants is ensured to remain for five years from the date of this letter, expiring on December 2, 2019.

This approval does not demonstrate approval of projects contained in this plan. This office has provided the enclosed Local Hazard Mitigation Planning Tool with reviewer's comments, to further assist the communities listed in Enclosure A in refining the plan going forward. Please advise the referenced community of this approval.

If you have any questions, please contact Bart Moore, Community Planner, at (940) 898-5363.

Sincerely,

Gary Zimmerer
Risk Analysis Branch Chief

Enclosures

cc: Brianne Schmidke, R6-MT-HM

AL-McKinleyCo-NMi.docx.doc

www.fema.gov



Enclosure A

**McKinley County, New Mexico
Multi-Jurisdictional
Hazard Mitigation Plan Participants**

Attached is the list of approved participating governments included in the December 9, 2014 review of the referenced Hazard Mitigation plan

1. McKinley County
2. Gallup, City of



Susana Martinez
Governor



M. Jay Mitchell
Cabinet Secretary Designate

**DEPARTMENT OF HOMELAND SECURITY
AND EMERGENCY MANAGEMENT**

December 15, 2014

Richard Kontz, County Manager
McKinley County
P.O. Box 70
Gallup, NM 87305

SUBJECT: Approval of the McKinley County Multi-Jurisdictional Hazard Mitigation Plan

Dear Mr. Kontz;

Congratulations to McKinley County on the FEMA approval of your Hazard Mitigation Plan. As mentioned in the attached FEMA Approval Letter, through December 2, 2019 the County is eligible to apply for FEMA mitigation grant funding to implement projects identified in the Plan.

I would like to recognize the efforts of Anthony Dimas, Emergency Manager, for his hard work. His commitment and perseverance was instrumental in securing the final approval of the Plan. Mr. Dimas coordinated and facilitated the entire effort; his "can do" approach was what made the project a success. The entire planning team should also be commended. Their time and effort helped to create a useful and realistic Multi-Jurisdictional Hazard Mitigation Plan.

Again, congratulations on the accomplishment! If you have any questions, please contact me at 505-476-7696 or at wendy.blackwell@state.nm.us

Sincerely,

Wendy M. Blackwell, CFM
State Hazard Mitigation Officer

CC: Anthony Dimas

Attachment

P.O. Box 27111 • Santa Fe • New Mexico • 87502
Office: 505-476-9600 • Fax: 505-476-9650



LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: McKinley County	Title of Plan: Hazard Mitigation Plan for McKinley County	Date of Plan: May 2014
Local Point of Contact: Anthony Dimas, Jr.	Address: 2221 East Boyd Gallup, NM 87301	
Title: Emergency Manager		
Agency: McKinley County Office of Emergency Management		
Phone Number: 505-722-4248	E-Mail: adimas@co.mckinley.nm.us	

State Reviewer: Wendy Blackwell	Title: State Hazard Mitigation Officer	Date:
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FEMA Reviewer: Cheryl Copeland Debbie Frazier	Title: HM Community Planner HM Community Planner	Date: July 17, 2014 September 22, 2014
Date Received in FEMA Region 6	July 29, 2014	
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved	December 9, 2014	



APPENDIX F – FEMA APPROVAL LETTER AND REVIEW TOOL

SECTION 1: REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT A. PLANNING PROCESS				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Executive Summary; Acknowledgements; xiii-xvii, 19-26; Appendix A	X		
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	xiv and xvii, 19 – 26, 181, 182, 183, 184, 185 and 186 Appendix A	X		
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	xiv, 20, 21, 23, 113, 181 - 187 Appendix A and B	X		
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	22-24, 29, 31, 113-116, 181 Appendix F 242-243	X		
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	183 - 187	X		
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	183 - 187	X		
ELEMENT A: REQUIRED REVISIONS				

A-2

Local Mitigation Plan Review Tool (FEMA, October 1, 2011)



APPENDIX F – FEMA APPROVAL LETTER AND REVIEW TOOL

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	<u>Wildfire</u> : xiv-xvi; 37-42 <u>Flood</u> : xiv-xvi; 61-66 <u>Severe Weather</u> : xiv-xvi; 45-55 <u>Drought</u> : xiv-xvi; 75-77	X		
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	<u>P35, Wildfire</u> : 41-42 <u>Flood</u> : 66-73 <u>Severe Weather</u> : 55-59 <u>Drought</u> : 77-81	X		
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	<u>Wildfire</u> : 99; 103, 106, <u>Flood</u> : 99; 103, , 106-108 <u>Severe Weather</u> : 99; 103, 114, 110-111 <u>Drought</u> : 99; 103, 108-110	X		
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	70-72, 115	X		
ELEMENT B: REQUIRED REVISIONS				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	113-116	X		
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	70-72, 114	X		
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	117-118 135 -160	X		
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(iii))	117-118 135 -160	X		
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	117-118 161-179	X		
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	xvi, 114, 183	X		
ELEMENT C: REQUIRED REVISIONS				

Local Mitigation Plan Review Tool (FEMA, October 1, 2011)

A-3



APPENDIX F – FEMA APPROVAL LETTER AND REVIEW TOOL

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
Regulation (44 CFR 201.6 Local Mitigation Plans)				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	17; <u>Wildfire</u> : 40-41, 89-97, 99, 100-101, 103-106, 106-107 <u>Flood</u> : 69, 89-97, 99, 100-101, 103-106 <u>Severe Weather</u> : 89-97, 99, 100-101, 103-106, 110-111 <u>Drought</u> : 89-97, 99, 100-101, 103-106, 108-110	X		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	17; 127-133	X		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	17; 118-126	X		
<u>ELEMENT D: REQUIRED REVISIONS</u>				
ELEMENT E. PLAN ADOPTION				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	iii; resolution will be inserted once the plan is adopted.	X		
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	iii and vii; both the city and county have been involved throughout the update effort. Section 5 of the plan pertains to both County and City with the city county taking the lead in managing the HMP effort.	X		
<u>ELEMENT E: REQUIRED REVISIONS</u>				
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)				
F1.	N/A			
F2.	N/A			
<u>ELEMENT F: REQUIRED REVISIONS</u>				



SECTION 2: PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.



A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Element B: Hazard Identification and Risk Assessment

Element C: Mitigation Strategy

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

B. Resources for Implementing Your Approved Plan

FEMA Mitigation grants are available to eligible applicants. Search <http://www.grants.gov/> for additional resources for implementing mitigation actions.



SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1	McKinley County	County	Anthony Dimas, Jr.	2221 East Boyd Gallup, NM 87301	adimas@co.mckinley.nm.us	505-722-7248	Y	Y	Y	Y	N	
2	City of Gallup	City	JM DeYoung	110 West Aztec Ave, Gallup, NM 87301	jdeyoung@gallupnm.gov	505-726-6102	Y	Y	Y	Y	N	



Appendix G– References

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- Bureau of Business and Economic Research, University Of New Mexico;
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- Google Maps, <https://maps.google.com/>
- McKinley County Comprehensive Plan Update, 2012
- McKinley County, New Mexico Comprehensive Plan Update;
http://www.theprosperitycollaborative.com/uploads/1/2/8/7/12873976/mckinley_compplan_final_9.28.12.pdf
- McKinley County Economic Department
http://www.co.mckinley.nm.us/mced/mced_site_pages/communityprofile.html
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- National Weather Service, Hydrologic Outlook, Accessed October 2013,
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- New Mexico Fire Plan <http://www.emnrd.state.nm.us/FD/FireMgt/Fire.htm>
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- Occupational Health and Safety Administration;*
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- McKinley County Community Wildfire Protection Plan, Updated September 2013
- U.S. Army Corps of Engineers
- US. Census Bureau, 2010. *Profile of General Demographic Characteristics: 2000*, Geographic Area: McKinley County and City of Gallup, New Mexico from the American Fact Finder website



(<http://censtats.census.gov/data/NM/05035053.pdf>). August 2013

US Census Bureau; <http://quickfacts.census.gov/qfd/states/35/35031.html>

USDA Publication "Forest Structure and Fire Hazard in Dry Forest of the Western United States," PNW-GTR-628.

USGS; Floods – Recurrence intervals and 100-year floods; USGS
<http://ga.water.usgs.gov/edu/100yearflood.html>

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http://en.wikipedia.org/wiki/New_Mexico_locations_by_per_capita_income

