ALAMOGORDO, NM

LOCAL HAZARD MITIGATION PLAN

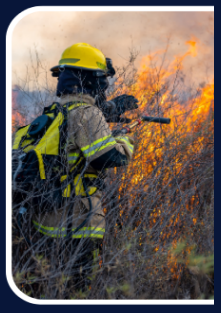
202X













Alamogordo, New Mexico
Local Hazard Mitigation Plan Update

Insert Date 202X

Encompassing the Jurisdictions of:
City of Alamogordo, New Mexico

Prepared and submitted by:

480 Duke Drive, Suite 130
Franklin, Tennessee 37067

James Woulfe, CBCP, PCP
Manager, Global Solutions

Emily Long, MA PCP, Level 1
Mitigation Project Lead

Table of Contents

SECTION PAGE

Table of Contents 3
List of Commonly Used Acronyms 7
Section 1 – Hazard Mitigation Program and Requirements 1
1.1 Hazard Mitigation Planning 1
1.2 Local Mitigation Planning Requirement 2
1.3 Hazard Mitigation Plan Description 2
1.4 Grant Programs with Mitigation Plan Requirements 3
1.4.1 Stafford Act Grant Programs 3
1.4.2 National Flood Insurance Act Grant Programs 4
1.4.3 Other Funding Sources 5
Section 2 – Introduction, Planning Process, and Plan Maintenance Procedures 7
2.1 Introduction 7
2.2 Plan History 7
2.3 Plan Background, Purpose, and Authority 8
2.4 Assurances 9
2.5 Adoption Resolutions 9
2.6 202X Plan Update 9
2.7 Planning Process Description 10
Project Timeline 10
2.8 What's New in this Plan Update? 11
Section 3 – Planning Area (Critical Facilities Summary) 11
Section 4 – Hazard Analysis and Risk Assessment 12
Section 5 – Capabilities Assessment 13
Section 6 – Mitigation Strategy 13
2.9 Mitigation Planning Team 13
2.10 Hazard Mitigation Planning Equity 15
2.11 Planning Team Activities 16
2.12 Stakeholder Participation 17
2.13 Community Involvement 18
2.14 Incorporation into other Planning Mechanisms 18
2.15 Reference and Document 18
2.15.1 Planning Resource Documents 18
2.15.2 Technical Resources 20
2.16 Plan Maintenance 21
2.16.1 Plan Monitoring and Situational Change 22
2.16.2 Plan Evaluation 23
2.16.3 Plan Updates 24
2.16.4 HMP Incorporation 26

Section 3 – Planning Area 28
3.1 Introduction to the Planning Area 28
3.2 Rivers and Watershed 28
3.3 Climate 29
3.4 Government 29
3.5 Demographics & Vulnerable Population 30
3.5.1 Demographics 30
3.5.2 Vulnerable Populations 30
3.6 Social Vulnerability and Community Resilience 32
3.7 At Risk Individuals with Access and Functional Needs 35
3.8 Economy 35
3.8.1 Economically Disadvantaged Communities 36
3.9 Land Use and Development Trends 40
3.9.1 Demographics and Hazard Vulnerabilities 44
3.9.2 Agriculture Data 45
3.10 Critical Facilities 47
3.11 Other Assets 48
3.11.1 School Data 48
3.12 Climate Change 53
Section 4 – Hazard Analysis and Risk Assessment 55
4.1 Introduction 55
4.2 Declared Federal Disasters 56
4.3 Identified Potential Hazards 58
4.4 Hazard Planning Significance 61
4.5 Hazard Profiles 64
Hazard Description 65
Location and Extent 65
Previous Occurrence 65
Methodology 65
Probability of Future Events 65
Vulnerability and Impact 66
Repetitive Loss Structures 66
HAZUS® Models 66
4.6 Drought 67
4.6.1 Hazard Description 67
4.6.2 Location & Extent 67
4.6.3 Previous Occurrences 73
4.6.4 Probability of Future Events 77
4.6.5 Vulnerability and Impact 77
4.6.6 Repetitive Loss Structures 85
4.6.7 HAZUS® Models 85
4.7 Flooding 86
4.7.1 Hazard Description 86
4.7.2 Location & Extent 87
4.7.3 Previous Occurrences 100

4.7.4 Probability of Future Incidents....114
4.7.5 Vulnerability and Impact....115
4.7.6 Repetitive Loss Structures....134
4.7.7 HAZUS® Models....134

4.8 Wildfire....135
4.8.1 Hazard Description....135
4.8.1 Location & Extent....136
4.8.3 Previous Occurrences....143
4.8.4 Probability of Future Events....145
4.8.5 Vulnerability and Impact....145

4.9 Wind....154
4.9.1 Hazard Description....154
4.9.2 Location & Extent....154
4.9.3 Previous Occurrence....157
4.9.4 Probability of Future Events....196
4.9.5 Vulnerability and Impact....198
4.9.6 Repetitive Loss Structures....206
4.9.7 HAZUS® Models....206

4.10 Winter Storms....207
4.10.1 Hazard Description....207
4.10.2 Location & Extent....207
4.10.3 Previous Occurrence....211
4.10.4 Probability of Future Events....216
4.10.5 Vulnerability and Impact....217
4.10.6 Repetitive Loss Structures....225
4.10.7 HAZUS® Models....225

Hazard Risk Summary....226

Section 5 – Capability Assessment....227
5.1 Introduction....227
5.2 Capabilities....227
5.3 National Flood Insurance Program Participation....234
5.4 Planning Integration....237
5.5 Challenges and Opportunities for Capability Improvement....240

Section 6 – Mitigation Strategy....242

6.1 Introduction....242

6.2 Identification of Goals....242

6.3 Mitigation Actions/Projects Strategy....244
6.3.1 Previous Mitigation Actions/Project Assessment....244

6.4 Mitigation Projects....248
6.4.1 STAPLE+E....252
6.4.2 Benefit-Cost Analysis....254
6.4.3 Mitigation Project Prioritization Tables (Proposed and Carry-Over Projects) for the City of Alamogordo, NM 258
Table 103: Mitigation Action Project Prioritization - City of Alamogordo, NM (Proposed and Carry-over Projects)....259

6.5 Mitigation Action Implementation and Monitoring....274

Section 7 – Plan Approval and Adoption....276
Resolution, City of Alamogordo....276
State of New Mexico Approval Letter....276
FEMA Approval Letter....276

Appendix A – FEMA Local Plan Review Tool 277

Appendix B – Mitigation Planning Team Documentation 278

Reference Documents: 278

Data Sources: 278

Quantitative Data Sources 278

Geographic Data Sources 280

Mitigation Planning Team Meetings: 280

Appendix C – Public Survey Data 288

LHMP Planning Process Survey Links 288

Community Surveys: May-June 2024: 288

Open Comment Survey: September 2-20, 2024 288

LHMP Planning Process Survey Forms 289

City Officials Survey 289

Community Survey 294

Open Public Comment 298

Survey Results – City Officials, Community Survey, and Public Comment 304

City Official Survey 304

Community Survey 342

Public Open Comments Survey 389

Appendix D – Critical Facilities and Infrastructure 390

Appendix E – FEMA Maps (Declaration Maps and FEMA FIRM Maps) 395

Declaration Maps 395

FEMA Repetitive Loss Information from NM DHSEM 399

FEMA FIRM Maps 400

Appendix F – Mitigation Action Prioritization Table 410

List of Commonly Used Acronyms

Acronym	Meaning
AFD	Alamogordo Fire Department
ASCE	American Society of Civil Engineers
BRIC	Building Resilient Infrastructure and Communities
COPD	Chronic Obstructive Pulmonary Disorder
CDBG	Community Development Block Grant Program
CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
COOP	Continuity of Operations Plan
DMA 2000	Disaster Mitigation Act of 2000
EAL	Expected Annual Loss
EOP	Emergency Operations Plan
FP&S	Fire Prevention & Safety Grant
FEMA	Federal Emergency Management Agency
DFIRM	FEMA Digital Flood Insurance Rate Maps
NRI	FEMA National Risk Index Maps
FMA	Flood Mitigation Assistance Grant
HMA	Hazard Mitigation Assistance Grant
HMGP-PF	Hazard Mitigation Program Post Fire Grant
LDP	Land Disturbance Permit
LHMP	Local Hazard Mitigation Plan
MPT	Mitigation Planning Team
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PDA	Preliminary Damage Assessment
PNM	Public Service Company of New Mexico
USDA	United States Department of Agriculture
USSFA-WFAS	United States Forest Service Wildland Fire Assessment
RL	Repetitive Loss
RFC	Repetitive Flood Claims Program
SFHA	Special Flood Hazard Area
WUI	Wildland Urban Interface

Section 1 – Hazard Mitigation Program and Requirements

The City of Alamogordo, New Mexico, prepared the 202X Local Hazard Mitigation Plan (LHMP) to guide hazard mitigation planning to better protect the people and property of the City of Alamogordo from the effects of natural hazard events. The 202X LHMP represents a community-wide commitment to create a safer, more resilient community by taking actions to reduce risk and committing resources to lessen the effects of hazards on people and property. The purpose of this LHMP is to identify policies, actions, and strategies that will help reduce risk and prevent future losses. Hazard mitigation is best realized when community leaders, businesses, citizens, and other stakeholders come together to undertake a process to develop a strategy for reducing damage. Hazard mitigation is the most effective when it is based on a comprehensive long-term plan that is developed prior to a disaster occurring.

The plan compiles with the Federal Disaster Mitigation Action (2000), Federal Register 44 CFR Parts 201 and 206, which modified the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 – Mitigation Planning. This law, as of November 1, 2004, requires local governments to develop and submit hazard mitigation plans as a condition of receiving the Hazard Mitigation Grant Program (HMGP) and other mitigation project grants. This plan demonstrates the City's commitment to reducing risk from hazards and serves as a tool to help decision-makers direct mitigation and resources. This plan was also developed to make the City eligible for certain disaster assistance, specifically, The Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance (HMA) grants, including the HMGP, Flood Mitigation Assistance (FMA), and the Building Resilient Infrastructure and Communities (BRIC) program. The Planning Group has coordinated the preparation of the LHMP in cooperation with the State of New Mexico, various city departments, community stakeholders, partner agencies, and members of the public.

This LHMP section briefly describes hazard mitigation planning, local mitigation plan requirements, and an outline of the 202X LHMP. There is also an overview of the Federal Emergency Management Agency (FEMA) programs and grants related to hazard mitigation.

1.1 Hazard Mitigation Planning

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. As noted by FEMA, there is a critical link between hazard mitigation planning and sustainability. In general, hazard mitigation is work done to minimize the impact of a hazard event before it occurs, with the goal of reducing losses from future disasters. 44 CFR § 201.1(b) describes the purpose of mitigation planning is for local governments to identify the hazards that impact them, to identify actions and activities to reduce losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. The actions the City of Alamogordo plans to take to reduce the impacts of hazards will help prevent injury, loss of life, and damage to homes, businesses, and neighborhoods. The City can use the threat of disaster as a catalyst to act and develop a plan to recover more quickly following a disaster.

For the Planning Team, hazard mitigation planning is a process that will:

- Identify and profile hazards that affect the planning area.
- Analyze the population and facilities at risk from those hazards.
- Develop mitigation strategies and actions to lessen or reduce impacts of profiled hazards.
- Implement the strategy and actions that may involve planning, policy changes, programs, projects, and other activities.

The Planning Team's implementation of mitigation actions, which may be short-term or long-term strategies, is the primary objective of the planning process. This type of planning will supplement the other comprehensive planning and emergency management programs.

1.2 Local Mitigation Planning Requirement

Hazard mitigation planning is governed by the Stafford Act, as amended by the Disaster Mitigation Act of 2000 (DMA 2000), and by federal regulations implementing the Stafford Act. DMA 2000 revised the Stafford Act to require state, local, and tribal governments to develop and submit to FEMA a mitigation plan that outlines processes for identifying the jurisdiction's natural hazards, risks, and vulnerabilities. Plan approval by FEMA is a prerequisite to receiving federal hazard mitigation grant funds (see 42 USC § 5165(a).

To implement the mitigation planning requirements of the Stafford Act, FEMA promulgated 44 CFR Part 201, the federal regulations governing the planning process, plan content, and the process for obtaining approval of the plan from FEMA. The planning requirements set forth in the CFR are identified throughout this plan mirroring the order of the FEMA Regulation Checklist in the Local Mitigation Plan Review Tool.

FEMA has produced a *Local Mitigation Plan Review Tool,* which has been tailored by FEMA Region VI as an appendix to the *Local Mitigation Planning Handbook (2023),* to demonstrate how the mitigation plan meets the regulation in 44 CFR § 201.6 and offers State and FEMA Mitigation Planners an opportunity to provide feedback to the jurisdiction. The Plan Review Tool has a regulation checklist that provides a summary of FEMA's evaluation of whether the plan has addressed all requirements. Local planners can also use the checklist prior to submitting the plan for approval to ensure they have addressed all the requirements. The Local Mitigation Plan Review Tool Regulation Checklist is provided in **Appendix A** of this document.

1.3 Hazard Mitigation Plan Description

The 202X LHMP consists of the section and appendices described below:

Table 1: Plan Sections, Appendices, and Descriptions

Plan Section	Description
Section 1: Hazard Mitigation Program and Requirements	Includes background on hazard mitigation planning, lists the LHMP planning requirements, provides a description of the plan, and discusses grants related to hazard mitigation.
Section 2: Introduction, Planning Process and Plan Maintenance Procedures	Introduces the update to the LHMP and describes the planning process for the 2023 LHMP, including an overview of how the LHMP was prepared, identification of the LHMP Planning Team, involvement of outside agencies and communities, the inclusion of related plans, reports and information, and stakeholder and public outreach activities. This section also describes the procedures for updating the LHMP to keep it current and for continuance of public engagement in the planning process.
Section 3: Planning Area Descriptions	Includes a description of the natural and built out state of the Planning Area, including climate, geography, demographics, and economic conditions.
Section 4: Hazard Analysis and Risk Assessment	Provides a list of the hazards identified in the 202X, a profile of each hazard and hazard summary, and a risk assessment of the planning area.
Section 5: Capabilities Assessment	Identifies and evaluates the resources available to the City for hazard mitigation.
Section 6: Mitigation Strategy	Identifies and evaluates the current, ongoing, and completed mitigation projects and programs within city departments and lists their mitigation strategies for reducing potential losses.
Section 7: Plan Approval and Adoption	Includes documentation of NVDHSEM and FEMA review process and documentation of LHMP adoption by the elected leadership.
Appendix A	Contains the FEMA Local Mitigation Plan Review Tool, which documents compliance with the LHMP planning requirements of 44 CFR Part 201.
Appendix B	Contains documentation of the planning process for the Planning Team, including meetings, presentations, emails, etc.

Table 1: Plan Sections, Appendices, and Descriptions	
Plan Section	**Description**
Appendix C	Contains documentation of the planning process including meetings, presentations held for the stakeholders and public, and other stakeholder/public outreach efforts.
Appendix D	Contains list of critical facilities and infrastructure for the City
Appendix E	Mitigation Action Prioritization
Appendix F	FEMA FIRM Maps

1.4 Grant Programs with Mitigation Plan Requirements

Currently, four FEMA grant programs provide funding to local entities that have a FEMA-approved local mitigation plan that meets federal hazard mitigation plan requirements. Two of the grant programs are authorized under the Stafford Act.

1.4.1 Stafford Act Grant Programs

Funding is provided to state, local, and tribal governments that have an approved HMPs through the following programs.

Hazard Mitigation Grant Program (HMGP)

The HMGP provides grants to implement long-term hazard mitigation measures after declaration of a major disaster. Its purpose is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. To qualify for HMGP funding, projects must provide a long-term solution to a problem and the project's potential savings must exceed the cost of implementing the project.

Hazard Mitigation Grant Program (HMGP) Post Fire (HMGP-PF)

The HMGP- Post Fire provides assistance to help communities implement hazard mitigation measures after wildfire disasters in any areas that receive a Fire Management Assistance Grant (FMAG) declaration. Section 1204 of the Disaster Recovery Reform Act of 2018 Stafford Act to allow FEMA to provide HMGP Post Fire assistance for hazard mitigation measures that substantially reduce the risk of future damage, hardship, loss or suffering in any area affected by a fire for which assistance was provided under Section 420 of the Stafford Act.31 amended Section 404 of the 32. Therefore, unlike HMGP, the availability of HMGP Post Fire assistance is not contingent on a major disaster declaration and is instead triggered by an FMAG declaration. 33 Eligible activities may be outside of the declared area as long as the risk reduction benefits include the declared county or counties (e.g., watershed mitigation). HMGP-PF is managed by FEMA and administered by the New Mexico Department of Homeland Security and Emergency Management (NVDHSEM).

The Building Resilient Infrastructure and Communities (BRIC) Program

The new BRIC grant program is for pre-disaster mitigation activities and replaces FEMA's existing Pre-Disaster Mitigation program. The BRIC priorities are to:

- Incentivize public infrastructure projects.
- Incentivize projects that mitigate risk to one or more lifelines.
- Incentivize projects that incorporate nature-based solutions.
- Incentivize the adoptions and enforcement of modern building codes.

BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability and capacity-building, encouraging, and enabling

innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency. The federal government provides up to 75% of the cost of projects approved under the program.

Fire Prevention & Safety Grant (FP&S)

The Fire Prevention and Safety Grant (FP&S) are a part of the Assistance to Firefighters Grant (AFG) and support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to reduce injury and prevent death among high-risk populations. Fire departments, local governments, and recognized community organizations are eligible to receive this funding.

1.4.2 National Flood Insurance Act Grant Programs

Flood Mitigation Assistance Program

The goal of the Flood Mitigation Assistance (FMA) Grant Program is to reduce or eliminate flood insurance claims under the National Flood Insurance Program (NFIP). This program emphasizes mitigating repetitive loss (RL) properties. The primary source of funding for the FMA program is the National Flood Insurance Fund. Grant funding is available for planning, projects, and technical assistance. Project grants are awarded to local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2021, FMA funding totaled $160 million. The cost-share for this grant is 75% federal and 25% nonfederal. However, a cost-share of 90% federal and 10% nonfederal is available in certain situations to mitigate severe repetitive loss (SRL) properties.

Repetitive Flood Claims Program

The Repetitive Flood Claims (RFC) Program provides funding to reduce or eliminate the long-term risk of flood damage to residential and non-residential structures insured under the NFIP. Structures considered for mitigation must have had one or more claim payments for flood damages. All RFC grants are eligible for up to 100% federal assistance.

The remaining two programs are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act.

The following figure summarizes HMA grants programs:

Figure 1: HMA Grant Program Summary

HMA Program Comparison	HMGP	HMGP Post Fire	BRIC	FMA
Program Type	Post-disaster	Post-disaster	Pre-disaster	Pre-disaster
Funding Availability	Presidentially declared disaster	FMAG-declared disaster	6% set aside from federal post-disaster grant funding	Annual appropriations
Competitive?	No	No	Yes	Yes
Eligible Applicants	States, federally recognized tribes, territories and the District of Columbia (DC)	States, federally recognized tribes, territories and DC	States, federally recognized tribes, territories and DC	States, federally recognized tribes, territories and DC
Eligible Subapplicants	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments and tribes	State agencies, local governments and tribes
Hazard Mitigation Plan Requirement	Yes	Yes	Yes	Yes
NFIP Participation	Communities with projects in Special Flood Hazard Areas (SFHAs)	Communities with projects in SFHAs	Communities with projects in SFHAs	Subapplicants and properties

Source: FEMA

1.4.3 Other Funding Sources

Community Block Grant Program

The Community Development Block Grant (CDBG) Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974, Public Law 93-383, as amended 42 U.S.C. 5301 et seq. This grant is for Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.

Public Assistance Program

The mission of FEMA's Public Assistance program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the Public Assistance program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations. The Public Assistance Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-Federal share (up to 25%) is split with the eligible applicants.

Individual Assistance Program

After a disaster, the federal government determines if any county in the state meets the criteria for individual disaster assistance. The decision is based on damage related to the severity and magnitude of the event. When a county receives an Individual Assistance declaration from the President of the United States, anyone who lives in that county can apply for assistance.

Small Business Administration Disaster Loans

The Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Small Business Administration disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

The Housing and Urban Development Agency

Provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.

Section 2 – Introduction, Planning Process, and Plan Maintenance Procedures

2.1 Introduction

Mitigation is commonly defined as sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. Hazard mitigation planning provides communities with a roadmap to aid in the creation and revision of policies and procedures and the use of available resources to provide long-term, tangible benefits to the community. A well-designed hazard mitigation plan provides communities with realistic actions that can be taken to reduce potential vulnerability and exposure to identified hazards.

The requirements for documentation of the LHMP planning process are described below. This section summarizes the Planning Team's hazard mitigation planning efforts in 202X. In addition, the section describes public and stakeholder outreach efforts inclusive of outreach to vulnerable populations as part of the LHMP planning process. The section also summarizes the review and incorporation of existing plans, studies, and reports used to develop the LHMP. Documentation of the 2023 LHMP planning process for the Planning Team is provided in **Appendix B**, and documentation of the planning process for the public and stakeholders is found in **Appendix C**. These appendices document the planning meetings and outreach and include meeting agendas, presentations, materials, and other documentation used to conduct the planning process.

FEMA Regulation Checklist: Planning Process	
Documentation of Planning Process	
44 CFR §201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.	
Elements:	
A1.	Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? 44 CFR §201.6(c)(1)
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? 44 CFR 201.6(b)(2)
A3.	Does the Plan document how the public was involved in the planning process during the drafting stage? 44 CFR 201.6(b)(1) and 201.6(c)(1)
A4.	Does the Plan document the review and incorporation of existing plans, studies, reports, and technical information? 44 CFR 201.6(b)(3)
Source: *FEMA, Local Mitigation Planning Policy Guide, Released April 19,2022, Effective April 19, 2023*	

The planning process began with the Planning Team establishing the planning area and inviting stakeholders within the area, including representatives from vulnerable populations, to participate. In addition, the Planning Team identified the financial and technical resources required to update the LHMP. Once all the Planning Team's financial and technical resources were identified, the Planning Team established a schedule for the process.

2.2 Plan History

The initial basis for this plan was the 2019 LHMP Update. As noted within that document, the 2019 LHMP was a revision of an updated official adopted plan in 2012. This version of the LHMP underwent a comprehensive update in 202X in fulfillment of the five-year update requirement to the 2019 City of Alamogordo LHMP. It contains the updated status of previous mitigation activities, new hazards, new mitigation actions, new capabilities, and updates to the risk assessment and vulnerability analysis.

This update brings the LHMP into compliance with recent legislation related to climate change and addresses new natural hazards and emerging concerns.

This update identifies resources, information, and strategies for reducing risk from natural hazards. The plan's elements and strategies were selected because they meet program requirements and the needs of planning partners and community members. This LHMP will help guide and coordinate mitigation activities throughout the planning area.

The City of Alamogordo contracted BOLDplanning, Inc., to facilitate the planning process. Sections 2.3, 2.4, and Appendix B discuss the process in full detail.

2.3 Plan Background, Purpose, and Authority

Each year, disasters kill hundreds of people and injure thousands more in the United States. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. However, these monies only partially reflect the true cost of disasters because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as “any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event.” A 2019 cost-benefit analysis on hazard mitigation, the most in-depth available to date, concluded that adopting the latest building code requirements is affordable and saves $11 per $1 invested, the above-code design could save $4 per $1 cost, private-sector building retrofit projects could save $4 per $1 cost, lifeline retrofit saves $4 per $1 cost, and Federal grants save $6 per $1 cost. The findings provide evidence that mitigation activities are highly cost-effective, in addition to saving lives and preventing injuries.[1]

Examples of hazard mitigation measures include, but are not limited to, the following:

- Development of mitigation standards, regulations, policies, and programs.
- Land use/zoning policies.
- Strong building code and floodplain management regulations.
- Dam safety program, seawalls, and levee systems.
- Acquisition of flood-prone and environmentally sensitive lands.
- Retrofitting/hardening/elevating structures and critical facilities.
- Relocation of structures, infrastructure, and facilities out of vulnerable areas.
- Public awareness/education campaigns.
- Improvement of warning and evacuation systems.

Hazard mitigation planning is the process through which hazards that threaten the City are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This Plan documents the planning process employed by the Planning Team. The LHMP identifies relevant hazards and risks and identifies the strategy that will be used to decrease vulnerability and increase resiliency and sustainability.

[1] National Institute of Building Science Multi-Hazard Mitigation Council, 2019, Natural Hazard Mitigation Saves: 2019 Report

This LHMP was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 and the implementing regulations set forth in the Federal Register (hereafter, these requirements will be referred to collectively as the DMA 2000). While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that hazard mitigation plans must meet in order to be eligible for certain Federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act.

The information in this LHMP will help guide and coordinate mitigation activities and decisions for future land use. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the City and its property owners by protecting structures, reducing exposure, and minimizing overall City impacts and disruption. The City has been affected by hazards in the past and is thus committed to reducing future disaster impacts and maintaining eligibility for Federal funding.

This is a local plan that geographically covers the areas within the City limits (hereinafter referred to as the Planning Area.

2.4 Assurances

The City of Alamogordo certifies that they will comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes.

This hazard mitigation plan was prepared to comply with all relevant requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the DMA 2000. This plan complies with all the relevant requirements of:

- Code of Federal Regulation (44 CFR) pertaining to hazard mitigation planning
- FEMA planning directives and guidelines
- Interim final, and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives
- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

2.5 Adoption Resolutions

FEMA approval documentation may be found in Section 7 – Plan Adoption and Approval.

2.6 202X Plan Update

In 202X, the City of Alamogordo began the process to update the City's LHMP. It was determined that the Alamogordo Fire Department (AFD) Fire Chief would serve as the project manager, directing this plan update and acting as the primary point of contact throughout the project. The Fire Chief's primary roles included:

- Coordinating meetings and interviews
- Collecting data for the consultants to utilize
- Reviewing deliverables
- Monitoring the overall development of the plan

The City of Alamogordo contracted with BOLDplanning to assist in updating their 2017 LHMP. BOLDplanning's roles included:

- Facilitate planning meetings with the City of Alamogordo during the planning process
- Ensure that the hazard mitigation plan meets all regulatory requirements
- Assist with the determination and ranking of hazards

- Assist with the assessment of vulnerabilities to identified hazards
- Assist with capability assessments
- Identify and determine all data needs and solicit the information from relevant sources
- Assist with the revision and development of the mitigation actions
- Development of draft and final planning documents

The City of Alamogordo LHMP has undergone significant revision and upgrading since its last edition. Not only has the City made significant efforts to improve the functionality and effectiveness of the plan itself, but it has significantly improved its hazard mitigation program. Additionally, the level of analysis and detail included in this risk assessment is greater than in the previous edition of the plan. This grants all participating jurisdictions a better base to further mold and improve their mitigation strategy over the next five years.

Each section of the previous mitigation plan was reviewed and completely revised as part of this planning effort. The sections were reviewed and revised against the following elements:

- Compliance with the current regulatory environment
- Completeness of data
- Correctness of data
- Capability differentials
- Current state environment

During this process, and after a thorough review and discussion with all participating city departments and stakeholders, it was determined that the overall community's priorities regarding hazard mitigation planning had changed during the five years of the previous planning cycle. More information about the changes can be found in the “What’s New in the Plan Update” section of this plan.

While the City of Alamogordo’s hazard mitigation programs have matured over the years, an unfortunate lack of funding and grant opportunities has prevented the completion of any major hazard mitigation projects. As such, this revised plan reflects the static state of proposed mitigation actions.

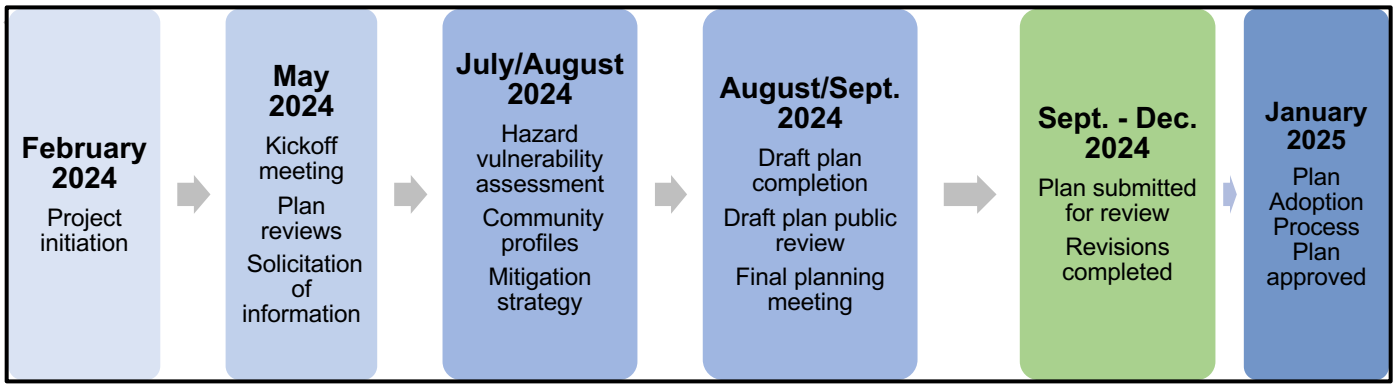
2.7 Planning Process Description

In February 2024, the planning process for the City of Alamogordo 202X LHMP Update officially began. Select staff from various local government departments were invited to participate in the LHMP Planning Team for the purpose of developing the 202X LHMP update. Members of the Mitigation Planning Team (hereinafter referred to as the MPT) actively participated in meetings, solicited input from community members, and ensured that all departmental hazard mitigation information was reflected in the plan.

Project Timeline

The following represents the HMP project timeline.

Chart 1: Project Timeline



If a planning team member could not attend a meeting, they were contacted via phone or email to receive all documentation from the meeting. This correspondence consisted of a brief overview of the meeting along with time for the planning team member to offer his/her suggestions or comments. A complete list of planning team participation can be found in Section 2.9—Mitigation Planning Team.

During the plan review phase, feedback was requested from the public and neighboring jurisdictions via online postings. See **Appendix B** for documentation of this engagement.

2.8 What's New in this Plan Update?

FEMA Regulation Checklist: Plan Update	
Documentation of Planning Process	
44 CFR §201.6(d)(3): was this plan revised to reflect changes in development and was the plan revised to reflect changes in priorities and progress in local mitigation efforts?	
Elements:	
E1.	Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved? 44 CFR § 201.6(d)(3)
E2-a.	Does the Plan describe how it was revised due to changes in community priorities? 44 CFR § 201.6(d)(3)
E2-b.	Does the Plan include a status update for all mitigation actions identified in the previous mitigation plan? 44 CFR § 201.6(d)(3)
E2-c.	Does the Plan describe how jurisdiction integrated the mitigation plan, where appropriate, into other planning mechanisms? 44 CFR § 201.6(d)(3)
Source: *FEMA, Local Mitigation Planning Policy Guide, Released April 19,2022, Effective April 19, 2023*	

This plan update involved a comprehensive review of the previous plan (2017) to perform a gap analysis, a specific process for evaluating each plan section and determining which portions require updating. Each section was reviewed in detail to identify all areas requiring re-evaluation and subsequent data needs.

Certain elements of the 2017 LHMP update have been retained as part of the 202X LHMP update, while outdated information has either been updated or removed. The current version focuses particularly on updating the risk assessment, providing status for mitigation actions listed in the 2017 plan, identifying new mitigation actions, and describing meetings and presentations held as part of the plan update.

Section 3 – Planning Area (Critical Facilities Summary)
The City of Alamogordo Mitigation Planning Team, in conjunction with the Alamogordo Fire Department and Alamogordo GIS Division, assessed the list of critical facilities used throughout the LHMP update and is based on the vulnerability assessment and loss estimated. The complete list is available in Appendix D –

Critical Facilities & Infrastructure. The Alamogordo Fire Department staff updated this list to produce to the Alamogordo GIS Division to update GIS maps located within the planning area for this update.

Section 4 – Hazard Analysis and Risk Assessment

The Mitigation Planning Team (MPT) assessed the hazards addressed in the City's 2019 LHMP Update and the State of New Mexico 2023 Hazard Mitigation Plan. After assessing these documents, a final decision was made regarding which hazards would be included in the Probability of Future Events and analyzed in the 202X plan update. A comparison of the hazards along with the final decision is shown in the proceeding table.

Summary of Hazards for 202X Update, City of Alamogordo, NM

Hazards	Alamogordo Local Hazard Mitigation Plan 2019	Included in the State of New Mexico Hazard Mitigation Plan 2023 for Preparedness Area 6	Alamogordo Local Hazard Mitigation Plan 202X
Dam Failure	Excluded – Manmade risk	Included	Excluded – Manmade risk
Drought	Included	Included	Included – Disaster History
Earthquake	Excluded	Included	Excluded
Extreme Heat	Included in Drought	Included in Drought	Included in Drought – Disaster History
Expansive Soils	Excluded	Included	Excluded
Flooding	Included	Included	Included – Disaster History
High Wind	Excluded	Included	Included – Disaster History
Landslide	Excluded	Included	Excluded
Land Subsidence	Excluded	Excluded	Excluded
Severe Winter Weather	Included	Included as Severe Winter Storms	Included – Disaster History
Thunderstorms	Included in Flood	Included	Included in Flood – Disaster History
Tornado	Excluded	Excluded	Excluded
Volcano	Excluded	Excluded	Excluded
Wildfire	Included	Included	Included – Disaster History

Note: *Preparedness Area 6 is mentioned because it categorizes the counties within the state in preparedness areas. These preparedness areas are for NM DHSEM to provide technical assistance for local emergency management programs. Otero County, where the City of Alamogordo resides, is located in Preparedness Area 6 and is mentioned in the above summary as the hazards identified that affect that Preparedness Area within the State.*

Data Source: *City of Alamogordo Local Hazard Mitigation Plan (December 2019); State of New Mexico Hazard Mitigation Plan (2023)*

Regarding the addition of Wind to this LHMP update. While most wind events are limited in their impact, duration, and spatial extent, they remain hazards of concern in the State of New Mexico and the entire planning area. In recent years, wind (high wind, strong wind, and thunderstorm wind) has become an increased hazard of concern for the City of Alamogordo. With this shift in mitigation efforts, the Mitigation Planning Team has identified this as a hazard of concern. It has been added to the plan update to include previous occurrences and future probability to identify future mitigation actions related to wind in the planning area.

Climate Change also influences the occurrence of many natural hazards, including drought, flood, and wildfire. This plan includes a discussion of climate change within each respective hazard.

Section 5 – Capabilities Assessment
A capability assessment of the City of Alamogordo's authorities, policies, programs, and resources was conducted. Based on the assessment, goals and mitigation actions were developed.

The City of Alamogordo and the participating departments' capabilities (planning and regulatory, administrative, technical, financial, and education and outreach) were reviewed and updated to provide any changes that reflect their current capabilities as described in the 2017 LHMP plan update. The MPT was provided with a Capabilities Assessment Worksheet by BOLDplanning to review their capabilities to be included in this plan update. All information that was provided and available was included in the worksheet. The Yes/No column is denoted if the City has that specific capability.

Section 6 – Mitigation Strategy
The 202X LHMP update contains a risk assessment of identified hazards for the planning area and a mitigation strategy to address these hazards' risks and vulnerabilities. Accordingly, individual MPT input during the planning phase was gathered to determine the current mitigation action/priorities to be included in this plan. The Alamogordo Fire Department (AFD) solicited participation from MPT and stakeholders in order to help identify mitigation activities/goals/projects for plan inclusion. Typically, mitigation activities/goals/projects focus on strengthening infrastructure and facilities. A mitigation planning team meeting held in March 2023, focused on the mitigation strategy update. Facilitated by Alamogordo Fire Department and BOLDplanning, MPT was provided with information on how to offer valuable insight related to the hazards within Torrance. The MPT learned how Alamogordo Fire Department and BOLDplanning would assist them in providing input to update the mitigation projects from the previous plan as well as how and when to offer any new/proposed projects to include in the current LHMP update.

Following this meeting, representatives from BOLDplanning worked with the Alamogordo Fire Department and the respective MPT departments to provide updates relevant to previous mitigation projects (2017), including the current status (completed, deferred, or carryover). The MPT was also tasked with identifying any new mitigation projects for this plan update and completing a new mitigation action worksheet created specifically from Alamogordo. During the planning process, MPT members were able to update these worksheets with mitigation projects from the 2017 plan, along with the new/proposed projects for the next five-year plan cycle.

STAPLE+E
The City of Alamogordo's primary hazard risks, and thus priorities, are drought, flooding, wildfire, wind, and winter storms. A composite evaluation matrix was used to prioritize the City of Alamogordo's mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each participating jurisdiction. All priorities were re-assessed using STAPLE+E for this plan update to ensure that the projects reflect current priorities. The composite evaluation matrix is comprised of the three factors detailed further in Section 6 in the STAPLE+E section of this plan update.

2.9 Mitigation Planning Team
Project initiation began with a selection and meeting of the primary stakeholders to establish the Mitigation Planning Team (MPT). The core members of the MPT then established and wrote the project's operating procedures, established expectations, solidified the plan development timeline, and created project milestones. Additionally, the team reviewed and discussed how the plan would incorporate FEMA requirements and other emergency management planning efforts. The following participants were selected for the MPT.

Table 2: Mitigation Planning Team

Name	Organization	Position	Associated FEMA Lifeline	Collaboration/Invitation
Principal Plan Developers				

Table 2: Mitigation Planning Team

Name	Organization	Position	Associated FEMA Lifeline	Collaboration/Invitation
Emily Long	BOLDplanning, Inc	Project Manager		Mitigation Specialist, Principal Plan Writer
Matt Eyer	BOLDplanning, Inc	Project Support		Provided additional support
Janey Camp, PhD, PE, GISP, CFM, F. ASCE	BOLDplanning, Inc	GIS Specialist		Provided additional support; Provided HAZUS report
Local Government				
Chief Jerry Ramirez	Alamogordo Fire Department	Fire Chief	Safety and Security, Communications	Mitigation Planning Team Chair, represented jurisdiction, and provided additional support and input
Amanda Renner	Alamogordo Fire Department	AFD Executive Assistance	Safety and Security, Communications	Mitigation Planning Team Co-Chair, represented jurisdiction, and provided additional support and input
Liam Lashley	Alamogordo Fire Department	Deputy Fire Chief	Safety and Security, Communications	Represented jurisdiction, provided additional support
Tim Black	City of Alamogordo	IT Support	Communications	Represented jurisdiction
Rachel Hughes	City of Alamogordo	City Clerk	Safety and Security, Communications	Represented jurisdiction
Rick Holden	City of Alamogordo	City Manager	Safety and Security, Communications	Represented jurisdiction
David Kunihiro	City of Alamogordo Police Department	Police Chief	Safety and Security, Communications	Represented jurisdiction, provided additional support
Ashley Smith	City of Alamogordo	City Attorney	Safety and Security, Communications	Represented jurisdiction
Kim Torres	City of Alamogordo	HR Director	Safety and Security, Communications	Represented jurisdiction
Erik Marion	City of Alamogordo	Parks Supervisor	Safety and Security, Food, Water, Shelter	Represented jurisdiction
David Nunnelley	City of Alamogordo Public Works	Acting Public Works Director	Food, Water, Shelter, Transportation	Represented jurisdiction, provided additional support
Stella Rael	City of Alamogordo Planning and Zoning	City Planner	Safety and Security, Communications	Represented jurisdiction, provided additional support
Tony Pistilli	City of Alamogordo Utilities Department	GIS/Land Management	Safety and Security, Communications	Represented jurisdiction, provided additional support
Hector Vazquez	City of Alamogordo	Community Affairs Manager	Safety and Security, Communications	Represented jurisdiction
Matt Clark	Otero County NM Emergency Services	Emergency Services Director	Safety and Security, Communications	Represented jurisdiction, provided additional support
Jennifer Schaffer	Otero County NM Emergency Services	Emergency Services Assistant	Safety and Security, Communications	Represented jurisdiction, provided additional support
State Agencies				
Heath Dobrovolny	New Mexico Department of Homeland Security and Emergency Management	State Floodplain Coordinator	Safety and Security, Food Water, Shelter, Communications	Represented agency, provided additional support and input

Each MPT member was thoroughly interviewed regarding their jurisdiction's mitigation-related activities. These interviews were invaluable in fully integrating the resources necessary to produce this plan, document mitigation activities, and document the mitigation resources available to better increase resiliency.

In general, all MPT members were asked to participate in the following ways:

- Attend and participate in meetings
- Assist with the collection of data and information
- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms
- Facilitate agency coordination and cooperation
- Assist with the revision and development of mitigation actions

MPT members who could not attend meetings due to budgetary or personnel constraints were contacted via email or phone to discuss hazard mitigation planning, including the process, goals, mitigation actions, local planning concerns, and plan review.

2.10 Hazard Mitigation Planning Equity

Planning equity refers to the principle of fairness and justice in planning and development processes. It emphasizes the equitable distribution of resources, opportunities, and benefits among all members of a community, particularly those who have historically been marginalized or disadvantaged. The concept of planning equity recognizes that planning decisions can have significant impacts on different groups of people and aims to ensure that these decisions promote social justice and inclusivity. It involves addressing spatial inequalities, such as disparities in access to housing, transportation, public services, green spaces, and employment opportunities.

Planning equity entails involving diverse stakeholders in decision-making processes, including community members, advocacy groups, and underrepresented populations. It seeks to empower marginalized communities by giving them a voice in shaping the development and planning policies that directly affect their lives.

Planning equity and hazard mitigation planning are closely related, as both aim to create more resilient and inclusive communities. As part of this planning effort, the following intersections were considered between planning equity and hazard mitigation planning:

- **Vulnerability assessment**: Planning equity recognizes that certain communities, particularly marginalized and disadvantaged populations, may be more vulnerable to hazards due to social, economic, and environmental factors. When conducting a vulnerability assessment as part of hazard mitigation planning, it is important to consider equity issues and identify areas or groups that may experience disproportionate impacts.
- **Engaging marginalized communities**: Planning equity emphasizes the inclusion and participation of diverse stakeholders, including marginalized communities, in decision-making processes. In hazard mitigation planning it is crucial to engage these communities to understand their unique needs, concerns, and perspectives regarding hazards.
- **Addressing social disparities**: Hazard mitigation planning can help address social disparities by considering the unequal distribution of resources and opportunities in the context of hazards. This can involve implementing mitigation measures that specifically target vulnerable populations, such as affordable housing in safer areas or improved access to emergency services and transportation for underserved communities.
- **Equitable distribution of resources**: Planning equity promotes the equitable distribution of resources, and this principle can be applied to hazard mitigation planning. It involves ensuring that

mitigation measures and investments are allocated fairly, with consideration given to communities that have historically received less attention or investment. This can help reduce existing disparities and enhance the resilience of marginalized communities.

By integrating planning equity into hazard mitigation planning, it becomes possible to develop strategies and actions that not only reduce the risks associated with hazards but also promote social justice, inclusivity, and resilience for all members of the community.

As part of this planning process, the MPT considered potential inequities within the county and encouraged the participation of potentially vulnerable citizens and communities. This process began with recognizing that disparities exist within the county, including health outcomes and living conditions for people of color, people with disabilities, and historically disadvantaged communities. It was recognized that these populations may be at greater risk to the hazards identified in this plan and may be limited in their ability to adapt, respond, and recover if an event were to occur.

As recommended in FEMA's "Guide to Expanding Mitigation," the City of Alamogordo took a whole community approach to this planning effort, including:

- Inviting historically underserved populations to participate in the planning and decision-making processes
- Inviting faith-based and community organizations, nonprofit groups, schools, and academia to be plan stakeholders

2.11 Planning Team Activities

Five (5) meetings/activities were held with the Planning Team. Representatives from the City Departments shared the responsibility of chairing the Planning Team. Alamogordo Fire Department also copied documents for review and sent out meeting notices. Table 3 lists milestone Planning Team activities. A full description of Planning Team activities with documentation is contained in Appendix B.

Table 3: Planning Activities

Date	Activity/Meeting	Purpose	Registration Links
February 23, 2024	City of Alamogordo LHMP Update – Client Kick off Meeting	An introductory call with BOLDplanning and the City of Alamogordo to discuss the LHMP planning process and next steps.	N/A
May 9, 2024	City of Alamogordo LHMP Kickoff Meeting – City Officials	The City of Alamogordo, NM, hosted the LHMP update kickoff meeting with City Officials to gather feedback and critical information regarding hazards, vulnerabilities, and critical mitigation strategies to reduce the loss of life and property.	https://www.eventbrite.com/e/city-of-alamogordo-nm-local-hazard-mitigation-plan-kick-off-meeting-1-tickets-872185669817?aff=eemailordconf&ref=eemailordconf&utm_campaign=order-confirm-bcc&utm_medium=email&utm_source=eventbrite&utm_term=viewevent
May 16, 2024	City of Alamogordo LHMP Public Kickoff Meeting	The City of Alamogordo, NM, hosted the LHMP update kickoff meeting for the Public to gather feedback and	https://www.eventbrite.com/e/alamogordo-nm-local-hazard-mitigation-plan-public-kick-off-meeting-

Table 3: Planning Activities

Date	Activity/Meeting	Purpose	Registration Links
		critical information regarding hazards, vulnerabilities, and critical mitigation strategies to reduce the loss of life and property.	tickets-872218568217?aff=oddtdtcreator
June 24, 2024	City of Alamogordo LHMP Mitigation Strategy Update Meeting	The Mitigation Strategy Update Meeting is a way to learn how you can represent your city in the Mitigation Strategy phase of the LHMP draft. This meeting will also show how BOLDplanning will assist the City in providing input to update the mitigation projects included in this plan update.	https://us06web.zoom.us/meeting/register/tZMvc--vrTgtE9cpKidet8ghDS3FbMSL2IpK
September 2-20, 2024	City of Alamogordo LHMP Update Open Comment Period		

Other planning events included conference phone calls with jurisdiction officials who could not attend scheduled meetings. Additionally, monthly situation reports and calls were provided to the City of Alamogordo to provide updates concerning the phases of plan development and to review plan data. These situations report calls/bi-weekly project update meetings were issued and held at the beginning of each month and were facilitated by BOLD planning via Zoom.

2.12 Stakeholder Participation

Alamogordo MPT is made up of stakeholders working together to develop and maintain this plan update. The participants are grouped into actively participating representatives from the planning area.

- **Mitigation Planning Team (MPT)**: This group consists of local government departments assigned mitigation duties and responsibilities for the planning area and BOLDplanning.
- **Outreach to Vulnerable Communities:** There were members of this group that serve and support vulnerable residents and community members in the City, such as the City of Torrance Community Services, Alamogordo School District, and local faith-based organizations.
- **Other Stakeholders**: This group consists of interested parties from the local community. This plan was developed with the support and input from various commercial interests.
- **Members from the public-at-large**: FEMA requires the planning effort to be open to constant input from interested citizens in compliance with Sunshine Laws. In New Mexico, all public meetings must comply with the Open Meetings Act[2].

Multiple additional organizations were engaged and participated in the planning process. They were invited to the meetings via emails sent via an MS Outlook calendar invitation. Appendix B, Planning Team meetings notes, documents their engagement.

As documented in Appendix C, copies of the draft LHMP were provided to the Planning Team, Local Emergency Planning Committee, City utility providers, and neighboring cities/jurisdictions for review during the Open Comment Period.

[2] New Mexico Department of Justice – Open Meetings Act (https://nmag.gov/wp-content/uploads/Open-Meetings-Act-Compliance-Guide.pdf)

2.13 Community Involvement

As part of the overall planning process, members of the community (the public) were provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. As well, in-person efforts were made to reach those within vulnerable populations. Members attended and/or held meetings with different stakeholders in the Alamogordo Community to inform them about the LHMP update, share emergency preparedness, and listen to community concerns regarding hazards local to our area. These opportunities included:

- Advertised meeting invitations
- Comment period upon completion of the draft plan
- Online surveys

The public was notified of open meetings via the City's Local Hazard Mitigation Plan website at and print media. Further, online HMP surveys were created for the City of Alamogordo. The City of Alamogordo, NM Local Hazard Mitigation Plan Update City Official Survey (https://form.jotform.com/241216344689158) and City of Alamogordo Local Mitigation Plan Update Community Survey (https://form.jotform.com/241212116578047) allowed all plan stakeholders and the public to provide feedback and input on the LHMP update prior to its submission to NMDHSEM and FEMA. Comments from this survey are included in Appendix C.

During the Public Open Comment period, the draft of the updated LHMP was placed on the City's website and physical copies were available at various government facilities in the City. An online survey was linked with the draft to allow for open comment and input. Specific details and examples of the Open Comment community engagement are presented in Appendix C. Upon adoption by the Alamogordo City Council, the final updated version of the LHMP will be available on the City website.

Input from the general public provided the MPT with a clearer understanding of local concerns, increased the likelihood of citizen buy-in concerning proposed mitigation actions, and provided elected officials with a guide and tool to set regional ordinances and regulations. This public outreach effort was also an opportunity for adjacent jurisdictions and entities to be involved in the planning process. Relevant feedback from community members, including hazard occurrence, impacts felt by the community, and mitigation actions, was used in the formation of this plan. Additionally, as citizens were made more aware of potential hazards and the local process to mitigate against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

2.14 Incorporation into other Planning Mechanisms

The LHMP planning process provided the Planning Team with an opportunity to review and expand on policies contained in other plans, such as the Otero County or City Comprehensive Plan. The Planning Team views their general plans and the LHMP as complementary documents that work together to reduce risk exposure to their residents.

2.15 Reference and Document

The hazard mitigation plan is an overarching document that comprises and contributes to various other jurisdictional plans. In creating this plan, all the planning documents identified below were consulted and reviewed, often extensively. In turn, when each of these other plans is updated, it will be measured against the contents of the hazard mitigation plan.

2.15.1 Planning Resource Documents

Below is a list of the various planning efforts, sole or jointly administered programs, and documents reviewed and included in this hazard mitigation plan. While each plan can stand alone, their review and functional

understanding were pivotal in the development of this plan and further strengthened and improved the City of Alamogordo's resilience to disasters.

- **City of Alamogordo Local Hazard Mitigation Plan Update (2019)**
  The previous LHMP has been reviewed and incorporated throughout this plan per FEMA requirements.
- **City of Alamogordo, NM Comprehensive Plan, 2018:**
  This plan helps the jurisdiction set policies that help address critical issues facing the community, achieve goals based on priority, and coordinate public and private efforts for mutual success. This plan also provides the historical context, background, and current data necessary to understand issues and choose solutions as well as seek various forms of funding.
- **City of Alamogordo Critical Facilities List, 2024**
  The MPT compiled a list of critical facilities and pertinent information on those facilities. This list is used throughout the plan and is the basis for the vulnerability assessments and loss estimates. The complete list is posted in Appendix D.
- **City of Alamogordo, NM Economic Development Plan, 2018:**
  This plan is a key policy document that establishes an overall vision for the community's future growth, development and character with a planning horizon of 20 years. It provides an integrated approach to all aspects of the City's physical growth and development and related economic and social issues. The plan provides policies on both natural and manmade hazards and can be used to implement mitigation actions.
- **City of Alamogordo, NM Infrastructure Capital Improvement Plan (ICI), 2019:**
  This plan provides information for financing infrastructure improvements, and equipment acquisitions for the City of Alamogordo and can be used to implement mitigation actions.
- **Otero County, NM Community Wildfire Protection Plan, 2020**
  Otero County, NM developed this plan to develop to take a comprehensive look at the communities, like the City of Alamogordo in Otero County. This document is evidence of local communities working together to address wildfire risk and mitigation.
- **State of New Mexico Hazard Mitigation Plan, 2023**
  The State of New Mexico Hazard Mitigation Plan is intended to provide the framework for hazard mitigation. This plan set a baseline for standards and practices for hazard mitigation planning and was used as a resource for information and data.
- **New Mexico Hazard Climate & Adaption Resilience Plan, 2023**
  The State of New Mexico Hazard Climate & Adaptation Resilience Plan is an annex in the State Hazard Mitigation Plan. This plan provides resilience strategies and first steps for implementation in five themes: Community and Culture, Ecosystems and Natural Resources, Health and Wellness, Infrastructure, and Local Economies. It also outlines cross-cutting principles that express how the state will approach climate change resilience initiatives across New Mexico.
- **City of Alamogordo Planning and Zoning Documents and Ordinances**
  The City of Alamogordo provided a host of planning, zoning, and development related documents. These documents were reviewed, assessed, and cataloged to compile each participating jurisdiction's capabilities.

Information from each of these plans and programs is utilized within the applicable hazard sections to provide data and fully inform decision-making and prioritization.

2.15.2 Technical Resources

The City of Alamogordo MPT employed various technical resources in its plan development. These resources were instrumental in completing an accurate vulnerability and risk assessment.

- **BOLDplanning Inc.:** With over 18 years of experience in hazard mitigation planning, BOLDplanning was the principal plan writer.
- **ESRI ArcGIS v10:** Assisted with the development of maps for this plan, along with the HAZUS® models.
- **FEMA Digital Flood Insurance Rate Maps (DFIRM**s): FEMA's National Flood Hazard Layer data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.
- **FEMA National Risk Index (NRI):** An online mapping application that identifies communities most at risk to natural hazards. The mapping service visualizes natural hazard risk metrics and includes data about expected annual losses from natural hazards, social vulnerability, and community resilience. The NRI's interactive web maps are at the county and Census tract level and are made available via geographic information system services for custom analyses.
- **National Oceanic and Atmospheric Administration (NOAA)/ National Centers for Environmental Information (NCEI):** Weather data and historical events were primarily provided by NCEI.

In addition, relevant federal, regional, state, local, and any private and non-profit entities were also invited to provide input and utilized for information and technical expertise. The following table indicates these entities.

Table 4: Partner Involvement by Entity

Entry Classification	Entity	Entity Input
Federal Agencies	U.S Census Bureau, Center for Disease Control and Prevention, National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NOAA/NCEI), U.S. Army Corps of Engineers (USACE), U.S. Department of Homeland Security (DHS), United Stated Department of Agriculture (USDA), U.S. Forestry Service, U.S Environmental Protection Agency, Drought Monitor/Drought.gov, FEMA HAZUS® Database, FEMA National Risk Index, FEMA Flood Map Service Center; The National Weather Service	Provided census data, weather data, and land use data.
State Agencies	New Mexico Department of Homeland Security & Emergency Management (NMDHSEM), New Mexico Department of Justice, New Mexico Finance Authority, New Mexico Department of Homeland Security & Emergency Management (NMDHSEM),- Fire Marshall, New Mexico Department of Transportation, New Mexico Climate Risk Map, New Mexico Gas Company, New Mexico Fire Information	Provided oversight and technical assistance; provided hazard record and provided land use data.
Local Government	City of Alamogordo, Alamogordo Fire Department, City of Alamogordo Housing Authority, City of Alamogordo Planning and Zoning Department, Alamogordo Utilities Department, Otero County, NM Emergency Services, Village of Ruidoso, 100% Otero County Initiative	Provided input as MPT members/principal subjects; provided GIS maps; Provided hazard records and data; provided land use data; provided input from various interests

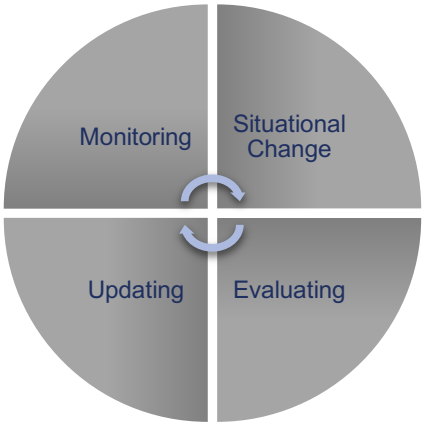
Table 4: Partner Involvement by Entity

Entry Classification	Entity	Entity Input
Private Organizations	BOLDplanning, Inc, American Society of Civil Engineers (ASCE), National Institute of Building Science Multi-Hazard Council, Science Sparks, Bluehill.org, USA Today, Bestplaces.net, Gerald Champion Regional Medical Center, KVIA.com, U.S News, Alamogordo Daily News, Data USA	Directed planning efforts as principal mitigation planners; provided input from various interests; Provided input – HAZUS report
Vulnerable Population Data	FEMA Risk Map, CDC/ATSDR Social Vulnerability Index Map, 100% Otero County Initiative, Alamogordo Housing Authority, FEMA – Climate and Economic Justice Screening Tool, New Mexico Climate Risk Map, USDA U.S Forestry Service Wildfire Risk to Communities; New Mexico Finance Authority	Provided input from various interest

2.16 Plan Maintenance

FEMA Regulation Checklist: Planning Process	
Documentation of Planning Process	
44 CFR §201.6(c)(1): The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.	
Elements:	
D1.	Is there discussion on how the community will continue public participation in the plan maintenance process? 44 CFR § 201.6(c)(4)(iii)
D2.	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)? 44 CFR § 201.6(4)(i)
D3.	Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, where appropriate? 44 CFR § 201.6(c)(4)(ii)
Source: *FEMA, Local Mitigation Planning Policy Guide, Released April 19,2022, Effective April 19, 2023*	

Plan maintenance is the ongoing effort to monitor and evaluate plan implementation and to update the plan as required or as progress, roadblocks, or changing circumstances are recognized. Implementation and maintenance of the LHMP is critical to the overall success of hazard mitigation planning. This section details the process that the City within the five-year cycle.



Elements of this section include:

- Monitoring, evaluating, and updating the LHMP.
- Incorporation into existing plans and procedures.
- Continued public participation

The format of the plan aligns with the regulation checklist and is divided into sections of information. When it is time to maintain or revise the LHMP, data can be easily located and incorporated, resulting in an easy method to keep the plan current and relevant. The table below illustrates the Plan Maintenance Schedule:

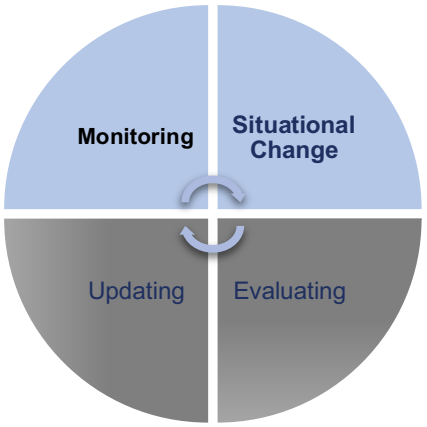
Table 5: HMP Maintenance Schedule

Plan Maintenance Step	When	How	Who
Monitoring	Twice Per Year	Get status updates on mitigation actions, compile progress reports and identify mid-course corrections.	Fire Chief
Evaluating	Once a year or after a disaster event	Use the Alamogordo LHMP Evaluation Progress Report to review how the plan has been carried out so far and record lessons learned.	Fire Chief, Mitigation Planning Team Members
Updating	Every 5 years, or after a disaster event	Review the plan and update it as necessary	Fire Chief, Mitigation Planning Team Members

Note: *Table X lists the positions of member that make up the Mitigation Planning Team.*

2.16.1 Plan Monitoring and Situational Change

Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.



A monitoring report will be written following the quarterly MPT meeting or when triggered by situational change. The monitoring report answers the following questions:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in the City's capabilities which impact the LHMP plan?
- Are there any changes in hazard risk?
- Has the mitigation project/action has been initiated or its initiation planned?
- Is the current process of prioritizing mitigation projects/actions appropriate and accurate?
- Has the current method of incorporating mitigation project/actions yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action's collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?
- If any, what plan updates occurred, why they occurred, and what is their impact?

The plan maintenance process cyclical and maintenance items can operate simultaneously within the process.

Local Emergency Planning Committee
Multi-Jurisdictional Natural Hazard Mitigation Plan
Evaluation Report

Pre-Disaster Mitigation Plan Sub-Committee Chair: _____
Meeting Date: _____
Plan Approval Date:_____
Plan Expiration Date: _____
Have there been any disasters or training event since the last report? If so, list them below:

Disaster Number/ Training Event	Hazard Type(s)	Was the hazard expected or unforeseen?	Is a plan update required?
Example: DR-1000	*Volcanic Eruption*	*Unforeseen*	*Yes*
Example: Annual Training	*Flash Flooding*	*Expected*	*No*

Mitigation Projects:

Mitigation Project	Participating Jurisdictions	Proposed/Scheduled /In Progress/ Completed	Behind/Ahead/ On-Schedule	Estimated Completion Date
Example: Tornado Safe Room	*Cash*	*In Progress*	*On-Schedule*	*1/1/2021*

Miscellaneous Notes:

2.16.2 Plan Evaluation

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making. An evaluation report will be written and submitted to the MPT when the situation dictates.



The following situations are typical examples of when an evaluation will be necessary.

- Post hazard event
- Post training event
- Post tabletop or drill exercise

Significant change or completion of a mitigation project/action (e.g., funding source, responsible party, estimated timeline, and cost estimate)

- An evaluation report will ask the following questions to the previously listed events.
- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?
    - Alamogordo Fire Department and LHMP Planning Team will review and assess any and all mitigation projects/actions to ensure vulnerable populations are included in those updates.
- Does a change in the mitigation strategy demand a change of or addition of mitigation actions/projects?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Was the public engaged (including agencies that support vulnerable populations) to the point where they were satisfied with current engagement strategies?
- Did the public participate in a number that produced a positive yield on the plan, action, or project?
- Are there coordination problems?

2.16.3 Plan Updates

Typically, an HMP update is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. A plan update also occurs every five years per FEMA guidelines. Additionally, when new hazard data becomes available, it will be added to the HMP. New data will be confirmed or denied at quarterly MPT meetings.



For whatever reason, a HMP update can be written any time it is deemed necessary by Alamogordo Fire Department.

According to FEMA/DMA 2000 guidelines for mitigation planning, the City of Alamogordo will begin the update process biannually following from this plan's adoption. It will be done under the direction of the Alamogordo Fire Department Fire Chief. Alamogordo Fire Department will coordinate and facilitate quarterly meetings within the five-year cycle with stakeholders within the MPT and City LEPC. These meetings will allow Alamogordo Fire Department and MPT members to gather relevant information needed for the next plan update. These meetings will ensure the appropriate status of certain goals (mitigation activities and projects) identified in mitigation strategy are up to date, as required by FEMA, in the next five-year plan update (202X)

The following indicates the tasks to be performed during this plan update period:

- **2026 Fall Meeting:** The MPC will begin updating the risk assessment portion of the plan. Hazards will be analyzed to determine if they are still relevant, if location should be updated, and if new hazards should be added. Previous occurrences will be reviewed to help determine the probability of future events.
- **2027 Spring Meeting:** The MPC will begin updating the vulnerability assessment. The MPC will update the vulnerability assessment portion of the plan. Data will need to be gathered for assets, critical facilities, building stock values, jurisdictional damages, etc.
- **2028 Fall Meeting:** The MPC will review information received and determine if the goals and objectives are still relevant and if new ones should be added. Actions will be reviewed to determine if they should remain in the plan, have been completed, or are no longer relevant. The MPC will review the potential funding sources for each action.
- **2029 Spring Meeting:** The MPC will evaluate the policies, programs, capabilities, and funding sources from the previous plan to determine if they are still accurate and if any new items should be added.
- **2029 Fall Meeting:** The MPC will review the draft copy of the mitigation plan and make comments and updates if necessary. Formal submittal to FEMA for re-approval will follow.

In general, the following steps will be taken to complete the next LHMP revision:

- Evaluate and update the planning process.
- Review the stakeholder contact list and identify new stakeholders.
- Initiate plan outreach and discussion, including a stakeholder meeting.
- Consider the addition, removal, or modification of hazards identified in the plan.
- Update and revise membership of the MPT.
- Evaluate risk assessment methodologies and data sources.
- Evaluate and update critical facility inventory information.

- Evaluate and update the hazard profiles.
- Evaluate and update the risk assessment summary.
- Evaluate and update the mitigation strategy, including proposed mitigation actions.
- Evaluate and update the mitigation implementation system.
- Integrate new and updated local plans.
- Evaluate and update other plans sections.
- Identify and add any additional sections or information needed.
- Review updated plan in its entirety.
- Conduct updated plan outreach, including public information, comment period, and meetings.
- Integrate additional comments received.
- Finalize plan document.
- Complete crosswalk and submit final plan to FEMA for review and approval.
- Make additional modifications as required.
- Obtain jurisdictional adoption resolutions.

2.16.4 HMP Incorporation

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county, and local plans. Under the leadership of the MPT, it is hoped that when future revisions occur to these other plans, they will be measured against the contents of this LHMP. Plan integration will help:

- Align community goals, objectives, and prime concerns
- Avoid lost opportunities
- Eliminate duplication of effort

In cooperation with the MPT, the City of Alamogordo will be actively courted on incorporating elements of this hazard mitigation plan for any relevant plan, code or ordinance revision or creation. Each participating jurisdiction has committed to actively encourage all departments to implement actions that minimize loss of life and property damage from hazards. Whenever possible, each participating jurisdiction will use existing plans, policies, procedures, and programs to aid in the implementation of identified hazard mitigation actions. Potential avenues for implementation may include:

- Operation plans
- General or master plans
- Ordinances
- Capital improvement plans
- Budget revisions or adoptions
- Hiring of staff
- Stormwater planning
- Land use planning

Plan incorporation and integration is crucial for creating a cohesive and coordinated approach to address various aspects of hazard mitigation. While stakeholders and city departments will utilize their internal procedures for plan incorporation and integration, the following represent commonly utilized methods:

- **Cross-Referencing**: Identify and cross-reference relevant sections of different plans and policies. This involves explicitly noting connections between the goals, strategies, and actions outlined in one plan with those in others.
- **Consistency Checks**: Conduct consistency checks to ensure that the language, objectives, and strategies in different plans and policies align with each other. This involves reviewing documents side by side to identify any conflicting or contradictory elements that need to be addressed.
- **Joint Planning Committees**: Establish joint planning committees or task forces that involve representatives from different departments or agencies responsible for various plans (for example, the MPT). These committees facilitate communication, collaboration, and the coordination of planning efforts across sectors.
- **Collaborative Workshops and Meetings**: Organize collaborative workshops and meetings to bring together stakeholders involved in different planning processes (as seen in the planning meetings for the HMP). These forums provide an opportunity for stakeholders to share information, discuss common goals, and identify areas of overlap or potential conflict.
- **Alignment with State and Regional Plans**: Ensure that local plans align with broader regional and state plans. This involves considering regional and state priorities and incorporating them into local planning efforts to create a harmonized approach to development.
- **Data Sharing and Analysis**: Share relevant data among planning efforts and conduct joint data analysis. This helps create a common understanding of the challenges and opportunities and facilitates evidence-based decision-making across different plans.
- **Unified Implementation Strategies**: This involves identifying common actions and initiatives that contribute to the achievement of multiple goals outlined in various plans.

The City of Alamogordo ha good working relationships with both each other, the State of New Mexico, and FEMA indicating great potential for plan incorporation and integration across the planning area. Where appropriate, City of Alamogordo Fire Department will take the lead in integrating this LHMP into overarching plans, codes, ordinances and any other relevant documents, policies, or procedures.

2.6 Continued Public Involvement

The City of Alamogordo is dedicated to involving the public in the continual shaping of the LHMP and in the development of its mitigation projects and activities.

The City of Alamogordo MPT will continue to keep the public informed about its hazard mitigation projects and activities through the City's LHMP website. The public will also be invited to participate in regular MPT meetings to review and discuss the mitigation-related events of the past year. Additionally, participating jurisdictions will present to public and tribal officials in a public forum concerning the progress of mitigation actions identified in this plan as progress is made.

Copies of the City of Alamogordo LHMP will be available online at the City's website, distributed to all the participating jurisdictions, and made available to the public.

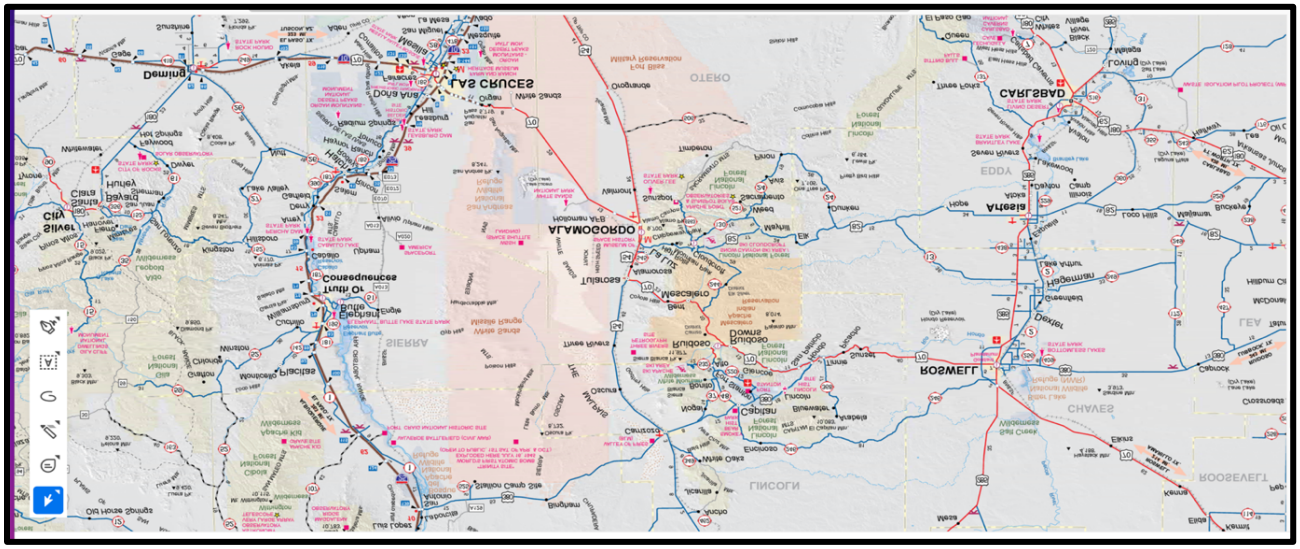
Section 3 – Planning Area

3.1 Introduction to the Planning Area

Alamogordo is a city nestled in the Tularosa Basin, which includes White Sands National Monument, which is a portion of the basin that is a 275-square-mile dune field that is nearly as soft and as white as snow. It is the county seat and economic center of Otero County in south-central New Mexico, United States. Bordered on the east by the majestic Sacramento Mountains and to the west by the ethereal White Sands National Monument, Alamogordo offers a stunning juxtaposition of rugged peaks and pristine dunes. It is the City nearest to Holloman Air Force Base and shares its borders with the charming small towns of La Luz, Mountain Park, Boles Acre, and Omlee. The major cities near Alamogordo are Las Cruces, NM, to the southwest, El Paso, TX, to the South, and Albuquerque to the North. The following map details the planning area. The Otero County Hazard Mitigation Plan (2011) mentions that the major Union Pacific route originates in El Paso and parallels U.S. Highway 54 through Alamogordo. No commuter services are provided, and Union Pacific no longer stops in Alamogordo. Still, railways are occasionally used to transport hazardous materials, a significant concern for populated areas along the rails.

The following map details the City of Alamogordo planning area.

Map 2: Alamogordo, New Mexico



Map Source: *New Mexico Department of Transportation – State Map 2022 (https://www.dot.nm.gov/travel-information/maps/)*

Alamogordo, with a population of 31,284 as of the 2020 U.S. Decennial Census, is a city steeped in history. It is renowned for its connection with the Trinity test, marking the first explosion of an atomic bomb, and the 1983 Atari video game burial. The area has been inhabited by humans for over 11,000 years. The present settlement, established in 1898 to support the El Paso and Northeastern Railroad construction, is an early example of a planned community. The City was incorporated in 1912. The creation of the White Sands National Monument in 934 marked a turning point, as tourism became a significant economic factor. During the 1950s-60s, Alamogordo was an unofficial center for research on pilot safety and the developing United States space program.

3.2 Rivers and Watershed

The City of Alamogordo's rivers and watersheds are unique. The City of Alamogordo, NM Downtown MRA Plan (2019) mentions the major watersheds from the north to the south are the Dry, Beeman, Marble, and Alamo Canyons. Alamogordo borders with Dry and Beeman Canyons to the north, Marble Canyon to the

east, and the Alamo Canyon to the south-southeast part, all flowing through the City. Also, The City of Alamogordo Utilities Department – Water Production indicates, "The City of Alamogordo differs from most municipalities in the State of New Mexico in that, historically, most of its water supply (approximately 70%) has come from surface water. These surface water sources in the Sacramento Mountains north and east of the City and Bonito Lake".

3.3 Climate

Alamogordo enjoys a moderate climate (Otero County, NM Hazard Mitigation Plan, 2001). Summers are warm with temperatures ranging from 80-100°F, pleasant lows ranging in the 50s and 60s to low below freezing and approaching 0°F, particularly in the mountains. The City basks in an average of 258 days of sunshine, making it a perfect destination for tourists who love the outdoors. Precipitation is light throughout the year, averaging about ten (10) inches annually. Humidity levels are relatively low, creating a pleasant environment for those who enjoy arid climates. (https://www.bestplaces.net/climate/city/nm/alamogordo).

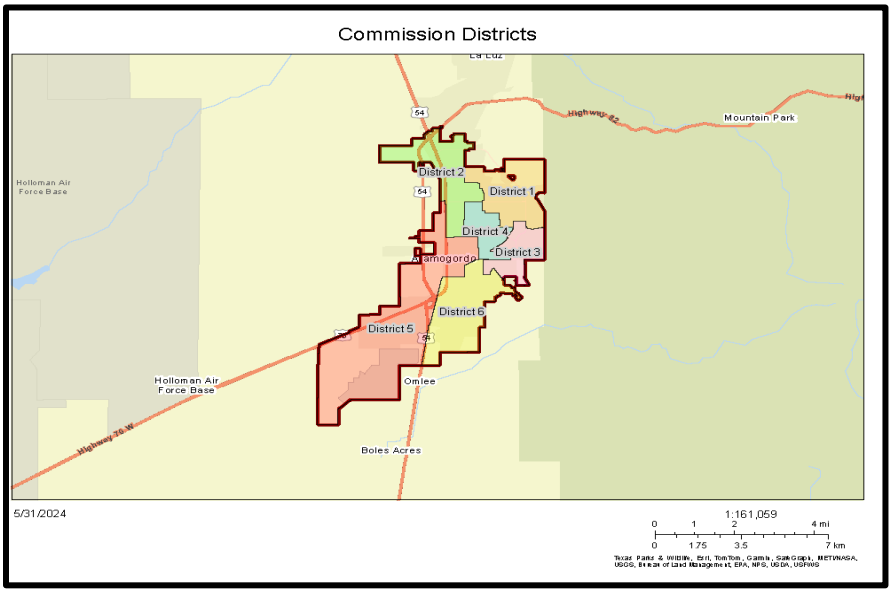
Table 6: Average Climate Data for Alamogordo

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg High (°F)	55	61	67	75	84	94	93	90	85	76	64	56
Avg Low (°F)	29	33	39	46	55	63	66	64	58	48	36	29
Avg Precipitation (Inches)	0.79	9.51	0.47	0.31	0.63	0.98	2.17	2.32	1.85	1.42	0.79	0.98

Source: U.S. Climate Data website, May 2024

3.4 Government

Alamogordo is a charter city with a commission-manager form of government. The City's official website indicates that voters elect a Mayor-at-large and six Commissioners. The Commission meets twice a month to set forth City policy. All City Commission Meeting's Agenda, Agenda Books, and Minutes are available online for public view at https://ci.alamogordo.nm.us/336/City-Commission. The Commission appoints a City Manager to oversee the daily operations of the City. The map below delineates the Commissioners & Districts within the Planning Area.



***Map Source**: City of Alamogordo, NM GIS Department*

Also, the city government provides many recreational and leisure facilities for its citizens, including a large park in the center of the City, many smaller parks scattered throughout the City, a golf course, Alameda Park Zoo, a network of walking paths, Alamogordo Public Library, and a senior citizens' center. Gerald Champion Regional Medical Center is a nonprofit shared military/civilian facility that is also the hospital for Holloman Air Force Base.

3.5 Demographics & Vulnerable Population

3.5.1 Demographics

According to the U.S. Census Bureau, the population of the City of Alamogordo increased from 27,596 in 1990 to an 35,582 in 2000. This represents a 28.94% increase over a 10-year period. In 2020, the U.S. Census Bureau, Decennial Census reported the population of the City to be 30,898. The following table details the population demographics specific to the City of Alamogordo.

Table 7: Population Census Data for Alamogordo

Jurisdiction	Size (Sq. Mi.)	Population					Population Change			
		1990	2000	2010	2020	2023 estim.	1990-2000	2000-2010	2020-2023	1990-2023
Alamogordo	21.39	27,596	35,582	30,403	30,898	31,284	28.94%	-13.16%	0.951%	-12.07%

***Source:** U.S. Census Quick Facts, Alamogordo City, NM, U.S Census 2000 – New Mexico 2000: Population and Housing Units; U.S. Census 2010 – New Mexico; Population and Housing Units; Percent of Population Change Calculator: https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change*

3.5.2 Vulnerable Populations

Each participating jurisdiction has socially vulnerable and at-risk populations. These populations include those that may have difficulty with medical issues, poverty, extremes in age, and communication difficulties due to language barriers. Several principles may be considered when discussing potentially at-risk populations, including:

- Not all people who are considered at risk are at risk
- Outward appearance does not necessarily mark a person as at risk
- The hazard event will, in many cases, affect at-risk populations in differing way

Factors such as age, physical and/or mental conditions, socioeconomic status, access to key services, and many other factors affect the ability of people to prepare for and protect themselves and their property from a hazard event. Even though some hazard events may impact all parts of Alamogordo with equal severity, different people may experience the impacts differently. For example, higher-income households are more likely to be able to afford the cost of retrofitting their homes to resist flooding or, alternatively, move to a location less prone to flooding than a lower-income household. As a result, the higher-income household is less likely to experience significant damage during a flood event than the lower-income household, even if the same amount of rain falls on both.

A social threat analysis examines how hazard events are likely to impact different demographic populations in Alamogordo and where these different demographic populations live in the City. This includes assessing whether the people in an area of elevated hazard risk are more likely to be considered a threatened population than the average person. The social threat analysis uses the following criteria to assess the threat to vulnerable populations:

- **Disability status**: Persons with disabilities may often have reduced mobility and experience difficulties living independently. As a result, they may have little or no ability to prepare for and mitigate hazard considerations without assistance from others.
- **Income levels**: Lower-income households are less likely to have the financial resources to implement mitigation activities on their residences. They may also struggle with having the necessary time to find and access educational resources discussing hazard mitigation strategies. Furthermore, lower-income households are less likely to be able to move to safer areas that are less at risk of being impacted by a hazard. The national poverty limit standard for the U.S. for a four-person family is approximately an income of $26,500 or less. According to the New Mexico Mortgage Finance

Authority the FY 2024 the low-income limit [3]for Otero County which includes the City of Alamogordo is $78,600.

- **Seniors (individuals at least 65 years of age)**: Seniors are more likely to have reduced mobility, physical and/or mental disabilities, and lower-income levels, all of which may decrease their ability to prepare for and mitigate a hazard event.

The National Response Framework defines at-risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care." For example, people experiencing homelessness or people without access to lifelines (vehicles or communication networks) may experience greater hardships in evacuating or recovering from a disaster. Since data for these groups are not readily available, there is no definitive way to determine the amount of these persons in areas of elevated risk, so this assessment will discuss how these other threatened groups may be affected on a general level. The following tables present information on potentially at-risk populations within the City of Alamogordo.

Table 8: Alamogordo Demographics

Demographics	2024
White	70.8%
Black or African American	5.5%
Native Hawaiian or Other Pacific Islander	15.1%
Asian	0.0%
Two or More Races	32.3%
White, non-Hispanic or Latino	55.4%
Foreign Born Persons (2018-2022)	5.8%
Veterans (2018-2022)	4,337
In Civilian Labor Force Age 16+ (2018-2022)	49.1%
Persons under 5 Years	5.9%
Persons under 18 Years	21.3%
Persons 65 Years and Over	19.2%
Mean Travel Time to Work (Minutes)	18.2
Persons in Poverty	18.3%
Households with Internet (2018-2022)	87.3%
Language other than English Spoken at Home	16.1%
***Source**: U.S. Census Quick Facts, Alamogordo City, NM*	

Table 9: Alamogordo Threatened Populations

Threatened Population	Community Wide Data
Population	30,898
Households	13,022
Median Household Income	
Renter Occupied-Housing Units	5,271(39.7%)
Percentage estimate of population with disability	22%
Percentage estimate of population under the poverty level	18.3%
Foreign Born Persons (2018-2022)	5.5%
Food Stamps/Supplemental Nutrition Assistance Program (SNAP)	13,022

3 New Mexico Mortgage Authority: HUD Project Based Section 8 | Rent and Income Data Report 2024

Table 9: Alamogordo Threatened Populations

Threatened Population	Community Wide Data
Units In Structure - Mobile Homes and all other types of units	15.3%
Persons 65 years and over	6,000
***Source**: U.S. Census Quick Facts, Alamogordo City, NM; U.S. Census American Community Survey Data Tables – Alamogordo City, NM*	

Related to the unhoused/homeless population within the planning area, this issue related to this crisis is working to be addressed by the 100% Otero County initiative. This initiative is a local grassroots non-profit organization dedicated to eliminating childhood trauma, with a mission to ensure that 100% of county residents have access to the ten vital services for surviving and thriving. One of the surviving services is housing. As included in the Point in Time report for Otero County which includes the City of Alamogordo, identified 49 unsheltered residents in 2023.[4]

At the time of this plan update, the current list of homeless shelters within the planning area as mentioned by Health Action New Mexico and Share New Mexico are:

- Alamogordo Housing Authority: Provides information on housing resources to the low-income residents within the planning area.

  Address: 104 Avenida Amigos, Alamogordo, NM 88310

  Phone: (575) 622-0881

- Center of Protective Environment, Inc. (COPE), Alamogordo: COPE leads the comprehensive effort to end domestic violence in Otero County. COPE has an emergency shelter within the planning area.
  Address: 909 South Florida Avenue, Alamogordo, NM 88310
  Phone: (575) 434-3622

- Runners Refuge Homeless Resource Center and Emergency Night Shelter

  Address: 601 Delaware Ave, Alamogordo, NM 88310

For more information about housing resources within the City of Alamogordo, NM, can be found in the City of Alamogordo Housing Brochure (2022).

3.6 Social Vulnerability and Community Resilience

The FEMA National Risk Index (NRI) provides data on social vulnerability and community resilience related to natural hazards. Both of these factors provide a snapshot of the overall impact and vulnerability of the larger population. FEMA National Risk Index defines social vulnerability and community as:

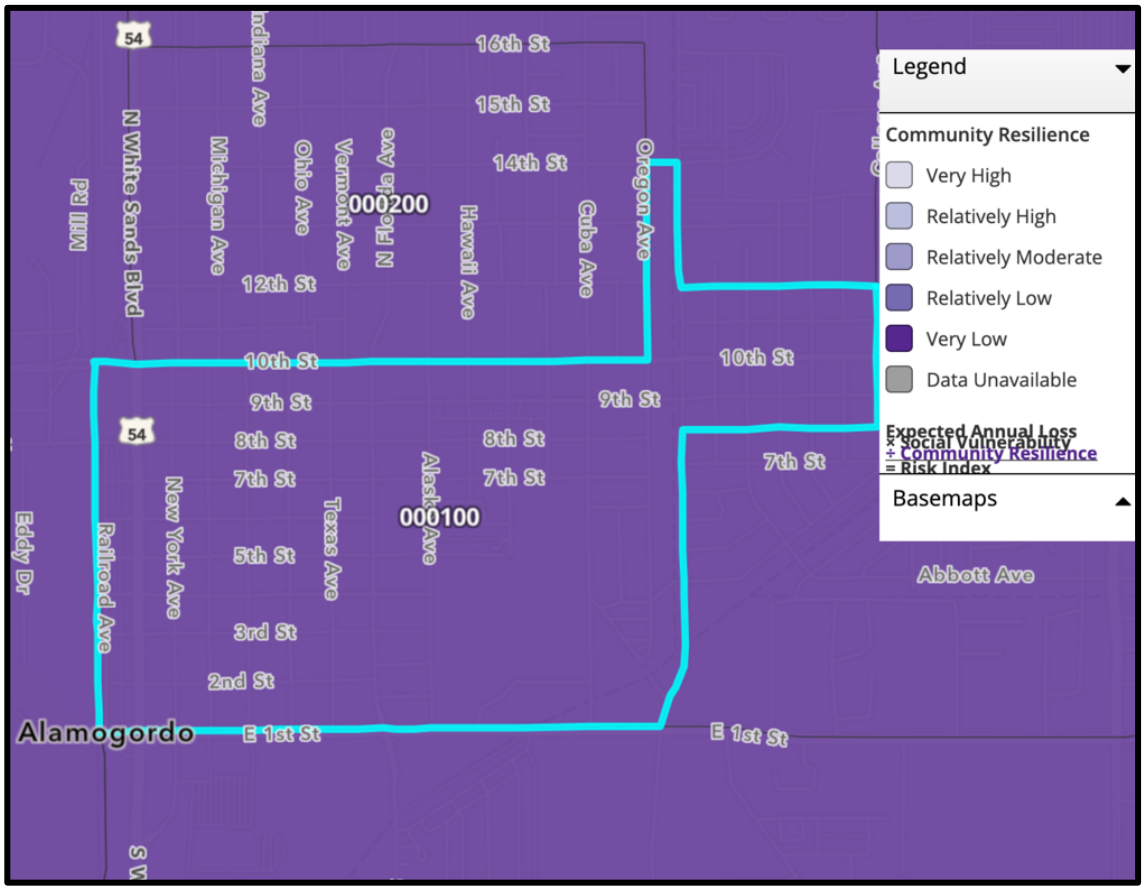
- **Social Vulnerability** as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood.
- **Community Resilience** as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption.

The scoring of these FEMA National Risk Index categories are for all hazards and are as follows: **Community Resilience**: a higher community resilience score results in a lower risk index score. The Community Resilience score for Otero County, which includes the City of Alamogordo, is 2.31, meaning communities (census tract) within the County have a very low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions as compared to the rest of the U.S.

[4] Alamogordo Daily News, Addressing the housing crisis in Otero County, October 20, 2023 (https://www.alamogordonews.com/story/opinion/2023/10/20/addressing-the-housing-crisis-in-otero-county/71238601007/)

Note: *Data concerning community resilience is reported on the county level and by census tract, which can be analogous with jurisdictions. The following maps detail community resilience by census tract for Otero County which includes the City of Alamogordo:*

Map 3: FEMA NRI Otero County, NM - Community Resilience

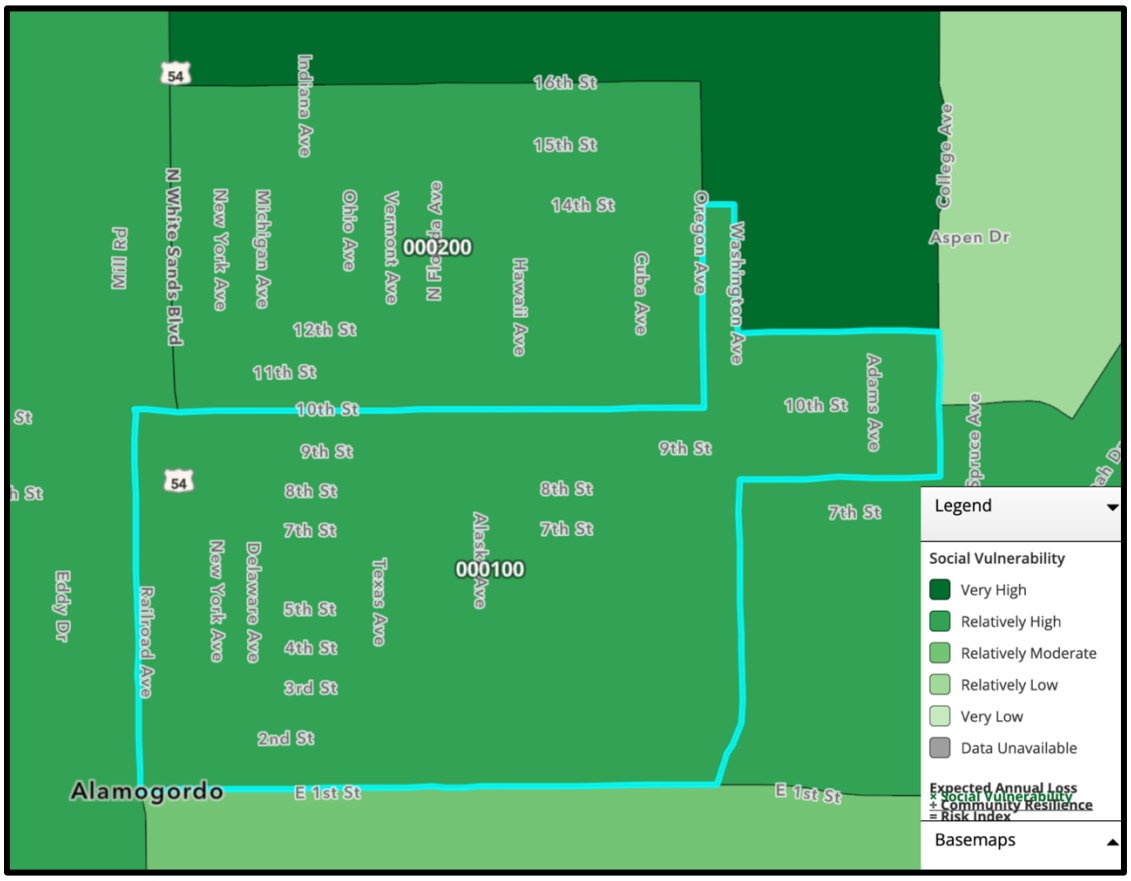


Map Source*: FEMA*

Social Vulnerability: Using data from the Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry Social Vulnerability Index, FEMA's NRI creates and maps a Social Vulnerability score. In this context, social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. This score represents the relative level of a community's social vulnerability compared to all other communities at the same level. A qualitative rating that describes the community in comparison to all other communities at the same level, ranging from "Very Low" to "Very High" is used to quantify Social Vulnerability. Census tracts where the social vulnerability score is highest qualify for designation as a community disaster resilience zone. Census tracts designated as a community disaster resilience zone may receive special technical assistance, planning assistance, and a 90% federal funding match (as opposed to the standard 75% federal match) for mitigation projects. Currently, there are no designated community disaster resilience zones in Otero County. A higher social vulnerability score results in a very high index score. Social groups in Otero County, which includes the City of Alamogordo, have a relatively high susceptibility to the adverse impacts of natural hazards as compared to the rest of the U.S. The Social Vulnerability score for the planning area is 73.24.

Note*: Data concerning community resilience is reported on the county level and by census tract, which can be analogous with jurisdictions. The following maps detail social vulnerability by census tract for Otero County, which includes the City of Alamogordo:*

Map 4: FEMA NRI Otero County, NM Social Vulnerability



Map Source: *FEMA*

For information about social vulnerability in the planning area, refer to the Community Involvement section of this plan update (202x). The MPSC was also surveyed to provide input on the growth and development of their communities. In **Appendix C**, the City Officials Survey includes a section on "Expanding and Improving Mitigation Projects" that responds to the planning area.

Table 10: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2021)	Population Over 65 (2021)	Speak a Language Other Than English (2021)	Estimated People in Poverty (2021)
Calhoun County	7,977 (5.9%)	23,659 (17.6%)	8,864 (6.6 %)	17,197 (12.8 %)

Source: United States Census Bureau
*: Data indicates total tribal population living on Tribal Reservation. Information provided by NHBP Planning Department

3.7 At Risk Individuals with Access and Functional Needs

At risk individuals with access and functional needs may require additional planning or assistance when attempting to access or receive medical care before, during, or after a disaster or emergency. The term access and functional needs refers to both "access" and "function" based needs according to the following:

- **Access** - based needs require that resources are accessible to all individuals, such as social services, accommodations, information, transportation, and medications to maintain health.
- **Function-based needs refer to restrictions or** limitations an individual may have that require assistance before, during, or after a disaster or emergency. While most individuals with access and functional needs do not have acute medical needs requiring the support of trained medical professionals, many will require assistance to maintain health and minimize preventable medical conditions. These individuals may require more time and assistance during an evacuation.

Individuals with disabilities are more likely to have difficulty responding to a hazard event than the general population. Local government is the first level of response to assist these individuals, and coordination of efforts to meet their access and functional needs is paramount to life safety efforts. It is important for emergency managers to distinguish between functional and medical needs in order to plan for incidents that require evacuation and sheltering. Knowing the percentage of a population with a disability gives emergency management personnel and first responders an opportunity to ensure that emergency

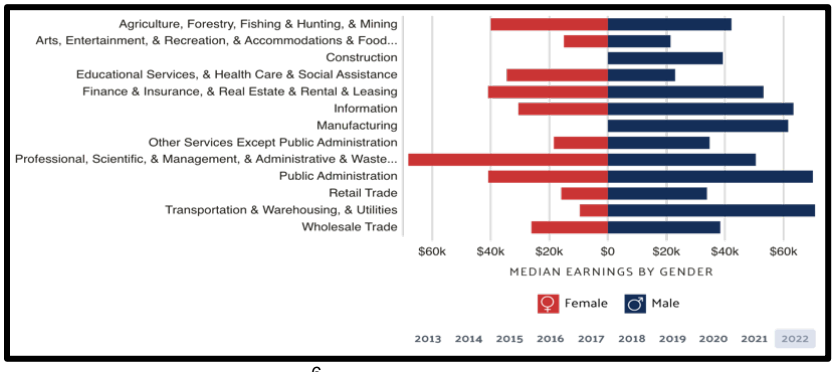
According to the US Census, about 22.0% of the population of 30,898 in the City of Alamogordo have some form of disability. Also, 5.9% are under the age of 5 years old and 19.2% are over 65 years of age.[5]

3.8 Economy

As mentioned by Data USA, as of 2022, the economy within the City of Alamogordo employed 11,5000 people. The largest industries included Health Care & Social Assistance (1,6167 people), Retail Trade (1,671 people), and Public Administration (1,616 people). The highest-paying industries included Professional, Scientific, & Technical Services. Industry Median Earnings within the City of Alamogordo are depicted in Figure 2. In 2022 industries with the best median earnings for men were Transportation & Warehousing, & Utilities ($70,774), Public Administration ($70,034), and Information ($63,403). The industries with the best median earnings for women were Professional, Scientific, & Management, & Administration, & Waste Management Services ($68,148), Finance & Insurance & Real Estate & Rental Leasing ($40,893), and Public Administration ($40,846).

Assumed impacts by the COVID-19 pandemic, employment decreased from 2019 to 2020 at an overall rate in 10.8%.

Figure 2: Alamogordo Median Earnings by Industry



Source: Data USA: Alamogordo, NM[6]

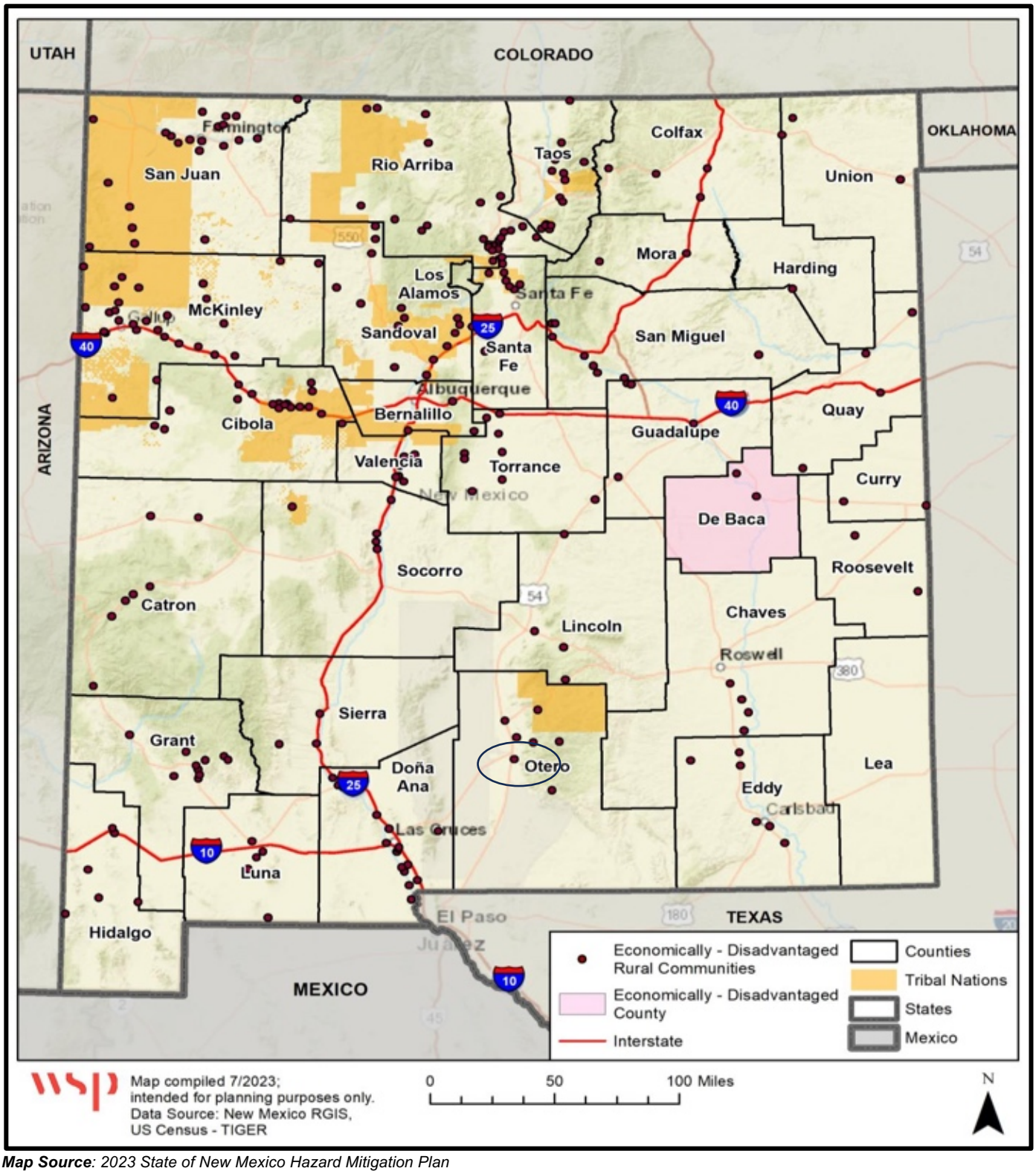
5 U.S. Census Bureau: Alamogordo city, New Mexico
6 Data USA: Alamogordo, NM (https://datausa.io/profile/geo/alamogordo-nm#economy)

3.8.1 Economically Disadvantaged Communities

The 2023 State of New Mexico Hazard Mitigation Plan states that FEMA defines an economically disadvantaged rural community as a community of 3,000 or fewer individuals identified by the applicant that is economically disadvantaged, with residents having an average per capita annual income not exceeding 80% of the national per capita income. The term replaces “small, impoverished communities as define 42 U.S.C. § 5133(a). Economically disadvantaged rural communities are eligible for an increase in cost share up to 90 percent federal / 10 percent non-federal for FEMA grants to include the BRIC program. Based on 2020 Census data, there are 267 communities in New Mexico that qualify as economically disadvantaged rural communities.

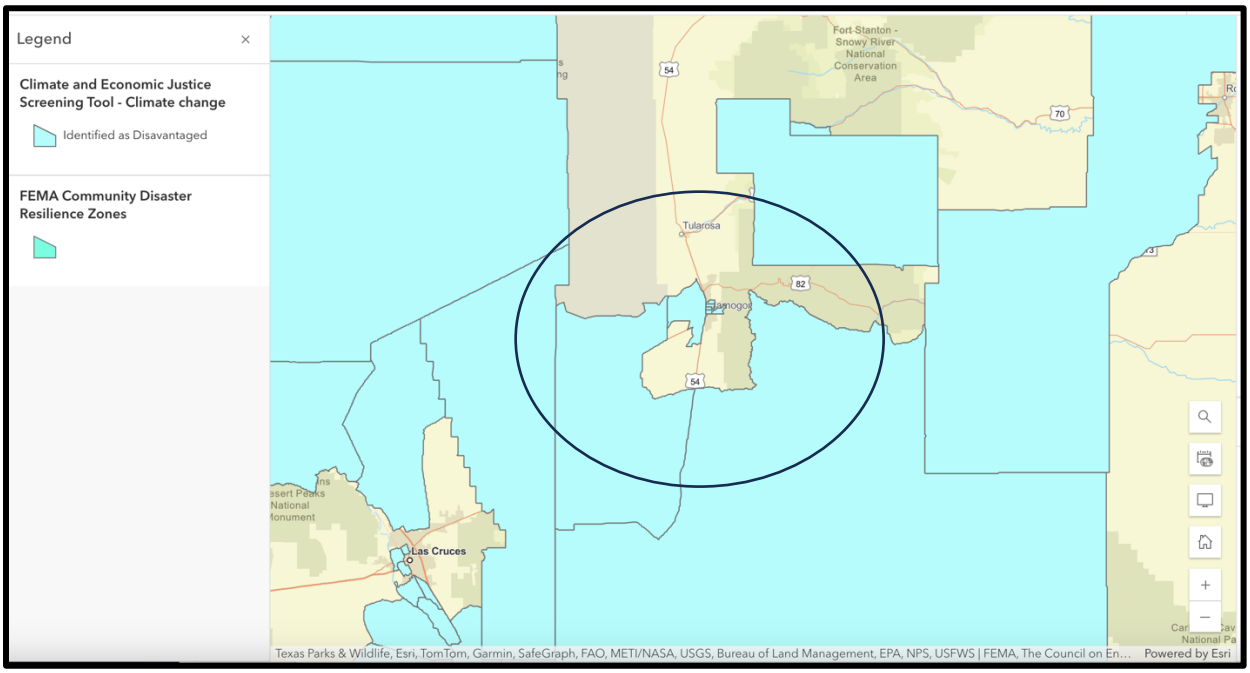
To provide a context on a local level on economically disadvantaged communities, NM Communities— An Assessment of Healthy Homes Needs provides a risk at the community level that allows each community to be evaluated on the presence and percentage of risk factors present. In addition, communities could be compared to each other and to the New Mexico average for each risk factor. Per the assessment, the City of Alamogordo, is above average the NM average in 25% of the categories, but the town has relatively low-income households and with some older housing stock. 1/3 of households have children and 26% have residents 65 and older. 24% or 3574 households are below 50% of the median income, with another 2800 between 50% and 80% of median. 39% of renters are cost burdened along with 20% of homeowners. Over 50% of the housing stock was built before 1979, with the majority of construction between 1950 and 1979. At the time of this update, the following maps show that some areas of Otero County, where the City of Alamogordo resides, are considered economically disadvantaged.

Map 5: State of New Mexico – Economically Disadvantaged Rural Communities



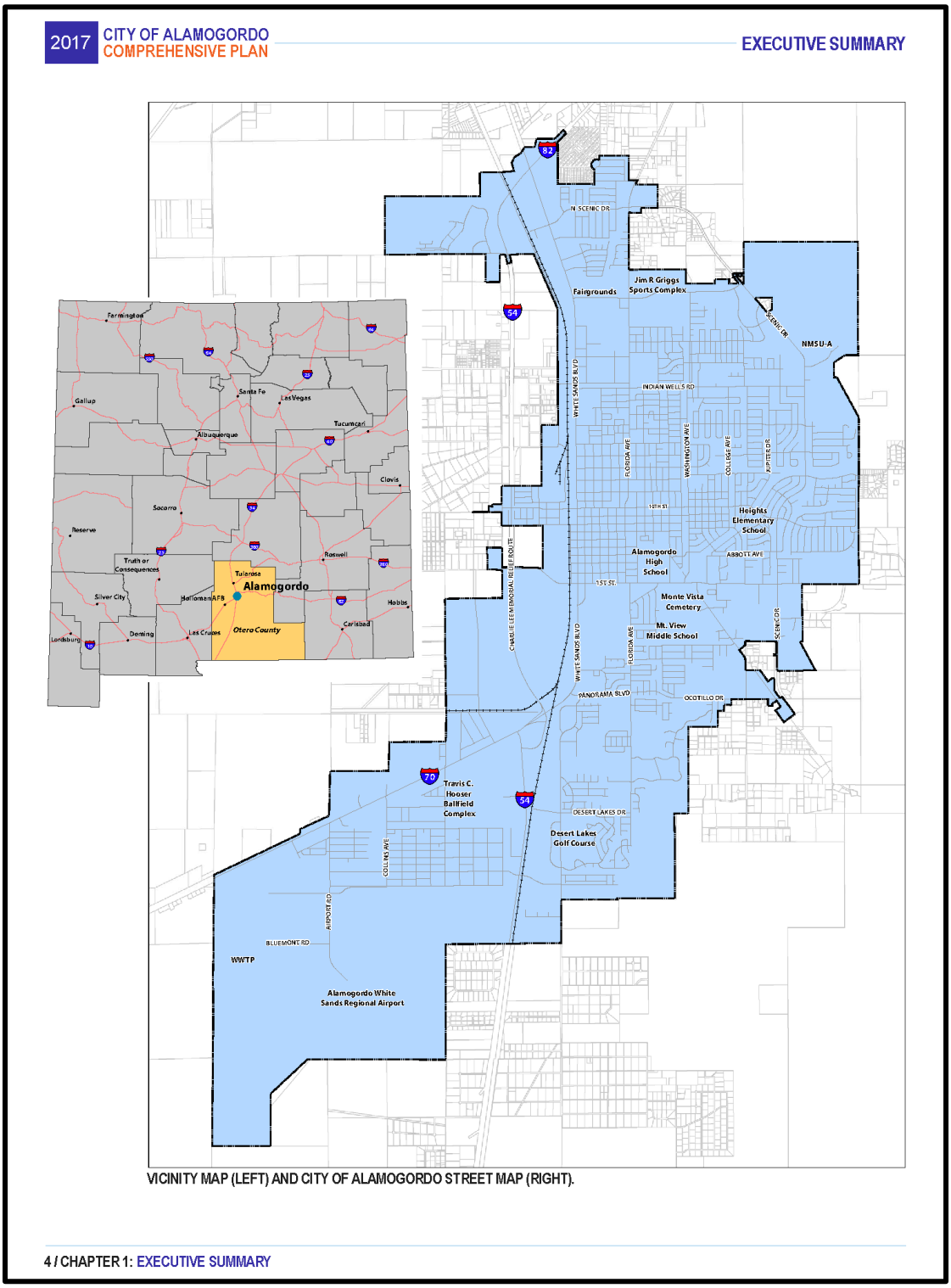
***Map Source**: 2023 State of New Mexico Hazard Mitigation Plan*

Map 6: City of Alamogordo, NM Disadvantage Communities Map



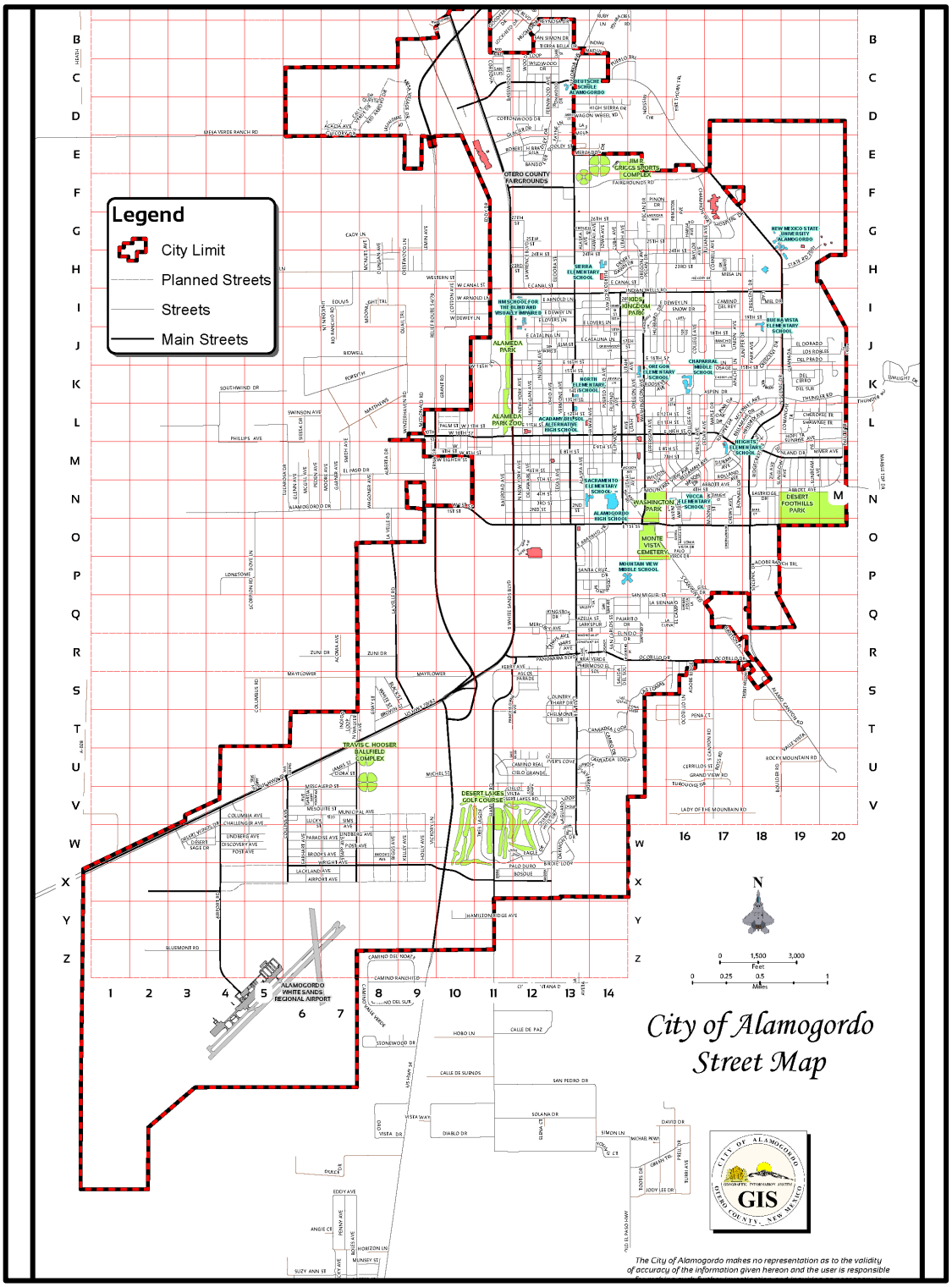
Note: *The Climate and Economic Justice Screening Tool helps Federal agencies identify disadvantaged communities that benefit from programs included in the Justice4 Initiatives. In this tool, a community is considered to be disadvantaged if they are located within a census tract that meets the tools methodology or are on land with the boundaries of Federally Recognized Tribes.*
Map Source*: The Climate and Economic Justice Screening Tool*
*(*https://fema.maps.arcgis.com/apps/mapviewer/index.html?layers=a05ccbacd1174dddac38bd75bd304d18

Map 7: Community Profile Map: City of Alamogordo, NM



Map Source: City of Alamogordo Comprehensive Plan (2018)

Map 8: Community Profile Map: City of Alamogordo, NM – Street Map



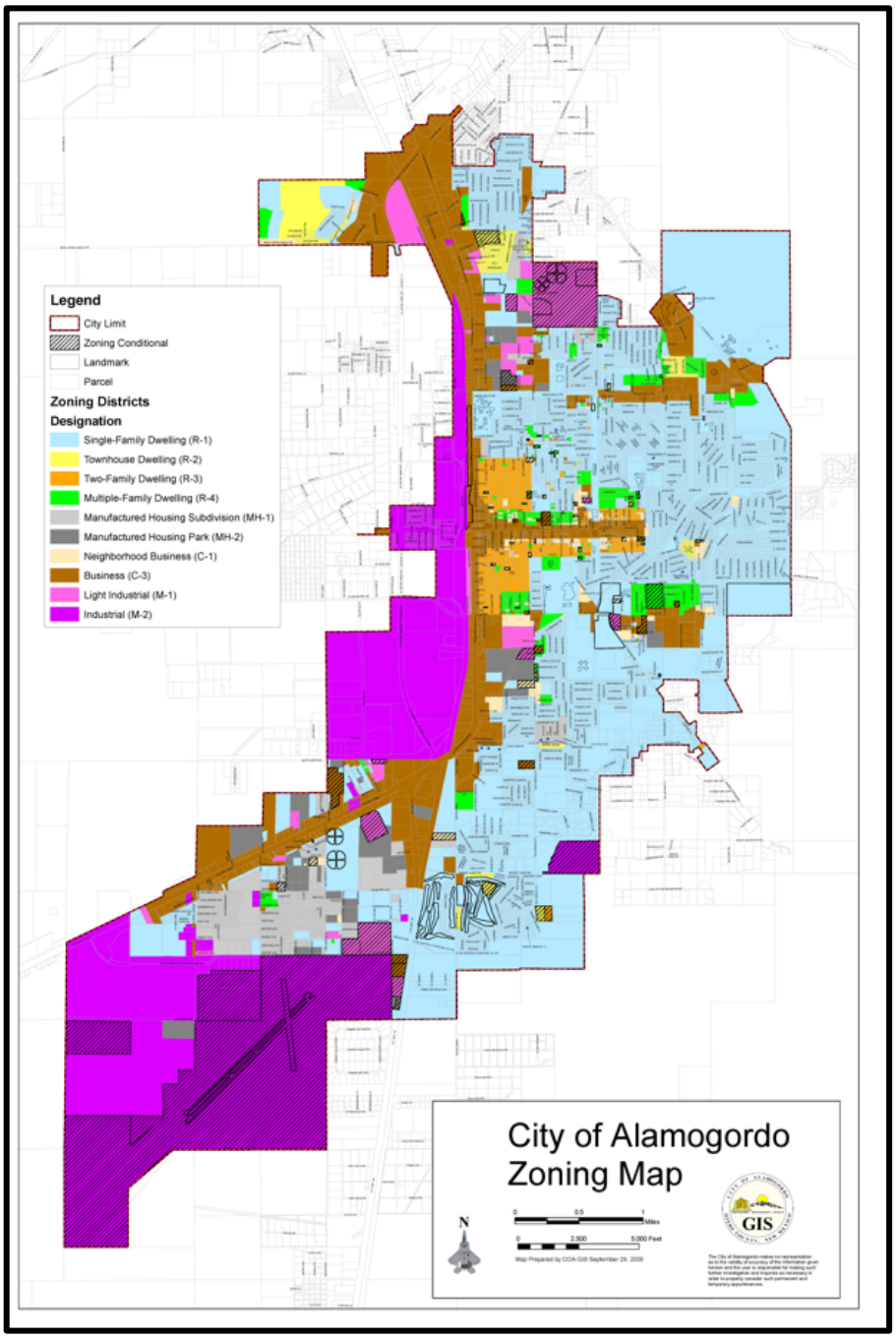
***Map Source**: City of Alamogordo GIS Department*

3.9 Land Use and Development Trends

The City of Alamogordo Planning and Zoning Department is the lead department of land use and development within the planning area. The mission of this department is to provide reasonable and

enforceable building and land use codes and ordinances that promote orderly development of our community; to enforce such ordinances in an equitable, professional and timely manner; to promote public awareness and understanding of the code of ordinances, and to continually maintain and update existing ordinances in order to maintain the health, safety and well-being of the citizens of Alamogordo; to accomplish the provisions of this mission statement in a manner that provides for optimum benefit to the citizens with the least possible intrusion into their lives.

Map 9: City of Alamogordo, NM Zoning Map



Map Source: *The City of Alamogordo, NM GIS Department*

The 2018 City of Alamogordo Comprehensive Plan is a key policy document for the community's future growth, development and character within a planning horizon. The Comprehensive Plan identified a strong

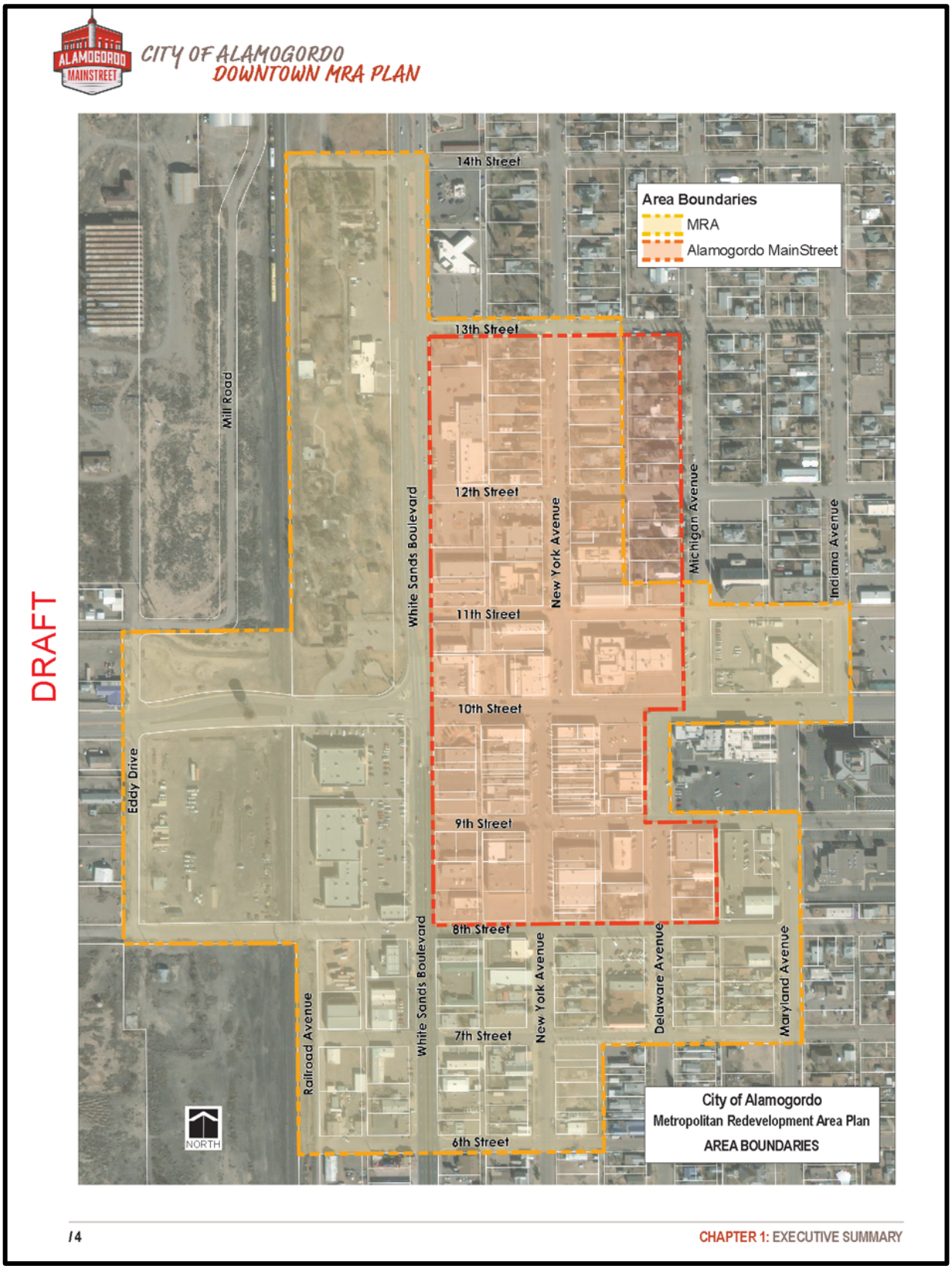
emphasis on the infill development and redevelopment of specific areas of the City, including the City Center and Downtown Alamogordo. The Building/Land Use Approval Division within the Planning and Zoning department provides the building/land use approvals for the planning area. All land use and development forms can be found on the City's Planning and Zoning website at https://ci.alamogordo.nm.us/957/Land-Use.

Also, the City of Alamogordo Downtown Metropolitan Redevelopment Area Plan (2019) provides the necessary framework and vision for the redevelopment of Downtown Alamogordo. This plan identifies specific redevelopment projects, public sector investments, and support actions necessary to support and achieve the community's vision. The goals of this vision are as follows:

- **Goal 1**: Create a destination for both residents and visitors that offers a diverse mix of small locally owned retail businesses, sit down restaurants and cafes, and cultural events and attractions.
- **Goal 2**: Encourage the restoration and preservation of Downtown buildings through redevelopment and adaptive reuse.
- **Goal 3**: Improve the New York Avenue/10th Street intersection so that it is safe for drivers and pedestrians and encourages lower traffic speeds on 10th Street.
- **Goal 4:** Enhance the pedestrian realm of Downtown through a coordinated program of street light fixtures, accessible sidewalks, benches, wayfinding signage, and public art.
- **Goal 5**: Continue to host all-ages, community events that feature local musicians, artists, and craftspeople on New York Avenue and the plaza along 10th Street.
- **Goal 6**: Work with the City Commission and Planning and Zoning on allowing mixed used zoning within the commercial areas of Downtown through revisions to the City's Zoning Ordinance.
- **Goal 7:** Encourage new residential development on the edges of the Downtown core.
- **Goal 8**: Engage with and attract Alamogordo youth to Downtown through a multi-media marketing effort online and in schools.

Map 10 below, provides an overview of the City of Alamogordo Metropolitan Redevelopment Area Plan.

Map 10: City of Alamogordo Metropolitan Redevelopment Plan Area



***Map Source**: City of Alamogordo Downtown Metropolitan Redevelopment Area Plan, March 12, 2019*

Also, with the proximity of Holloman Air Force Base in the planning area, the City of Alamogordo participates in the Southern New Mexico – El Paso Joint Land Use Study. This study is a cooperative process among the public, City, county, state, and federal government agencies. The military installations of Fort Bliss, Holloman Air Force Base, and White Sands Missile Range look at issues such as land use, economic development, infrastructure, environmental stability operational demands, and missing changes of both military and civilian entities within the six counties of Doña Ana, Lincoln, Otero (which includes the City of Alamogordo), Sierra, and Socorro in New Mexico and El Paso County in Texas. For land use planning efforts, the Southern New Mexico – El Paso Joint Land Use Study participants have created an interactive planning tool for planners and renewable energy developers who want to identify project suitability and constraints which can be found here: https://snmepjointlanduse.org/planning-tool/.

3.9.1 Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population and housing, as they, overtime, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. For example, a decrease in population and/or the number of housing units generally decreases hazard vulnerabilities for people and structures, while an increase in population and/or the number of housing units generally increases the hazard vulnerabilities of people and structures (particularly those located in hazard-prone areas, e.g., floodplains, wildland urban interface areas or WUIs, etc.). For more information on each hazard's effect on the entire planning area, see Section 4 – Hazard Risk Assessment.

It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years, for a variety of reasons (economic, political, etc.). This often results in temporary increases in population and, at the same time, temporary decreases in the number of housing units (or vice versa). While these numbers tend to self-correct over time, it is best to analyze data for longer periods of time, such as ten (10) to twenty (20) years, for mitigation planning purposes.

Table 11 details the Population Summary/Housing, 2010 vs. 2020 specific to the City of Alamogordo.

Table 11: Population Summary/Housing Summary

Jurisdiction	Population (2010 U.S. Census)	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2010 Census)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)
Alamogordo	30,403	30,898	1.623%	14,042	15,118	7.586%
Source: *U.S. Census Quick Facts, Alamogordo City, NM, U.S. Census 2010 – New Mexico; Population and Housing Units; Percent of Population Change Calculator: https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change*						

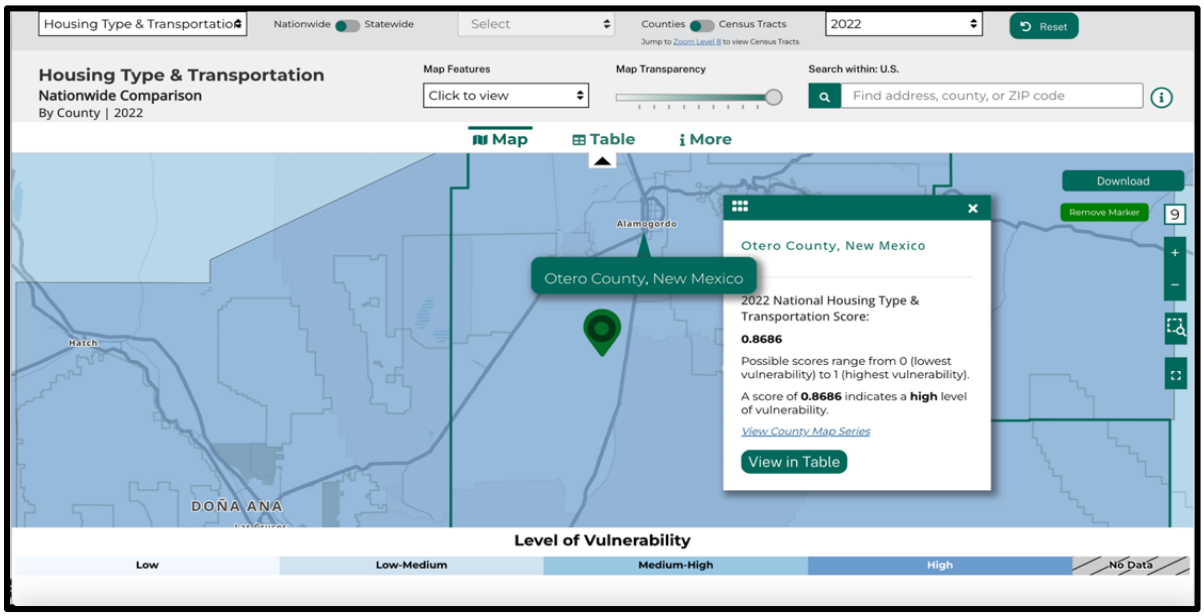
Table 12: City of Alamogordo Mobile Home Data			
Jurisdiction	**Occupied Housing Units (2010)**	**Occupied Housing Units (2020)**	**Percentage Change in Occupied Housing Units (2010-2020)**
Alamogordo	12,830	13,022	1.496%
Source: U.S Census, American Community Survey, Physical Housing Characteristics for Occupied Housing Units (S2504) *; Percent of Population Change Calculator:* https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change			

The previous LHMP update (2019) mentions the City of Alamogordo saw a gradual decrease in population in the planning area. Although there was a minor increase between 2000 and 2017, the average population for the City of Alamogordo had been declining. However, during this plan update (202x), the City of Alamogordo has seen a 1.623% increase between the 2010 and 2020 U.S. censuses. The previous plan

(2019) mentions for the sake of having a comparison, although not as accurately as desired, this plan considers any positive population growth rate; in this case, the City had a population decrease overall; therefore, the vulnerability to hazard decreased with the City of Alamogordo. However, since the 2019 plan update, the City of Alamogordo has seen an increase in population growth overall. Therefore, the vulnerability to hazards has increased within the City of Alamogordo.

Finally, related to Demographics and Hazard Vulnerabilities, the CDC/ATSDR Social Vulnerability Index (SVI), as mentioned earlier in this plan update this index includes stressors like housing, transportation, socioeconomic status, household characteristics, and racial and ethnic minority status, which could be helpful in community emergency management planning. Housing data is also beneficial in showing vulnerability, and the CDC/ATSR includes an index value related to housing and transportation vulnerability. This vulnerability can be seen in the community where individuals or households' risk being without a home. The following map provides the current housing and transportation SVI value for Otero County, which includes the City of Alamogordo at a score that makes it highly vulnerable.

Map 11: CDC/ATSDR Social Vulnerability Index (SVI) – Housing Type and Transportation Map Otero County, New Mexico



***Map Source**: CDC/ATSDR Social Vulnerability Index (https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html)*

3.9.2 Agriculture Data

Agriculture forms a very important part of the economic and social fabric of Otero County, where the City of Alamogordo is located. The Otero County Hazard Mitigation Plan (2011) mentions that at the time of that update, rangeland agriculture was quickly expanding to the City of Alamogordo. The United States Department of Agriculture (USDA) National Agricultural Statistics Service data was used to develop agricultural information for Otero County, where the City of Alamogordo is located. The following table details information from the USDA Census of Agriculture for 2007, 2012, 2017, and 2022 (the latest available data) for Otero County:

Table 13: Otero County Agricultural Data

Agricultural Census Year	Number of Farms	Farm Acreage	Cropland Acreage	Market Value of Agricultural Products Sold
2007	493	1,126,432	18,562	$15,227,000
2012	486	1,223,746	-	$14,635,000
2017	473	1,019,246	8,639	$18,160,000
2022	467	867,162	6,857	$24,666,000
Percentage Change, 2017 - 2022	**-26%**	**-23.016%**	**-63.06%**	**61.99%**

-: Not Reported
Source: United States Department of Agriculture National Agricultural Statistics Service

A hazard specific analysis, as it pertains to land use and development trends, is covered under each hazard in Section 4 – Hazard Risk Assessment.

3.10 Critical Facilities

Certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, and education and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some facilities and infrastructure are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits this definition will vary slightly from community to community, but the definition remains as a guideline for identifying critical facilities and infrastructure. The table below lists the identified critical facilities and infrastructure for the City of Alamogordo. A complete list can be found in Appendix D – Critical Facilities & Infrastructure.

Critical facility points for the City of Alamogordo include police stations, fire stations, hospitals, senior centers, childcare facilities, schools, transportation infrastructure, utilities, airports, and government buildings. Lifelines include facilities related to electrical power, liquid fuel, natural gas, and transportation routes. Table 14 below lists the identified critical facilities and infrastructure for the City of Alamogordo.

Table 14: Critical Facilities: City of Alamogordo, NM

	Airport	Child Care	City Hall	Communications	Correctional Facilities	Courthouse	Fire Stations	Government Building/Offices	Grocery Stores	Hospital	Medical Clinics	Police	Schools	Senior Centers	Shelters	Supply Stores	Tourism	Water/Sewer	Water Reservoir/Meters	Total
City of Alamogordo	1	7	1	12	1	2	8	8	4	2	6	2	32	8	2	2	1	5	86	
Total	**1**	**7**	**1**	**12**	**1**	**2**	**8**	**8**	**4**	**2**	**6**	**2**	**32**	**8**	**2**	**2**	**1**	**5**	**86**	**190**

The City of Alamogordo has identified 190 facilities that fall into 20 categories based on their function or characteristics. Table 14 shows the number of facilities in each category and examples of the type of facility in each category. **Appendix D** has a complete list of the facilities used in this HMP. Figure X shows the location of the mapped Critical Facilities in Alamogordo.

Table 15: Critical Facility Summary and Community Lifelines

Category	Number of Facilities	Examples
Communication	12	Cell Phone Tower Locations
Food, Water, Shelter	170	Schools, Senior Center, Supply Stores, and Water/Sewer
Health and Medical	5	Hospitals and Medical Clinics
Safety and Security	15	City Hall, Police Stations, Fire Stations
Transportation	1	Airport
Food, Water, Shelter/Safety and Security	10	Supply Store, Water/Sewer
Safety and Security/Communication	1	Government Building
Safety and Security/Transportation	2	Public Transportation
Source: FEMA Community Lifelines; City of Alamogordo Critical Facilities List 2024		

The potential loss values identified in subsequent tables are based on the land value where the critical facilities are located. The following table provides a structural summary by sector for the City of Alamogordo, as identified by the FEMA HAZUS® database.

Table 16: Structural Summary: City of Alamogordo

Agricultural	Commercial	Government	Industrial	Residential	Educational	Religious
$8,377	$1,226,715	$204,201	$170,400	$3,207,679	$311,001	$80,034

Source: *FEMA HAZUS® Database*

Based on the available general building stock data provided by the FEMA HAZUS® database, HAZUS® estimates there are 14,257 buildings that have an aggregated total replacement value of $5,208,407. At the time of this plan update, the total potential loss value of all City-owned and non-City-owned assets is much higher but is unknown due to data limitations.

The greatest potential for loss among City-owned assets comes from the Water and Wastewater infrastructure inventory, which includes but is not limited to, reservoirs, pump stations, pump houses, and holding tanks located throughout the City, other critical facilities with the greatest potential loss include City Hall and all Fire and Law Enforcement facilities. A complete list can be found in Appendix D – Critical Facilities & Infrastructure.

3.11 Other Assets

In addition to Alamogordo designated inventory of Critical Facilities and vulnerable populations. Hazard events could threaten other important assets in the planning area. These assets may include services, artistic or cultural landmarks, or local economic activities. The hazard analysis and risk assessment describe the potential harm to these other assets based on available information.

3.11.1 School Data

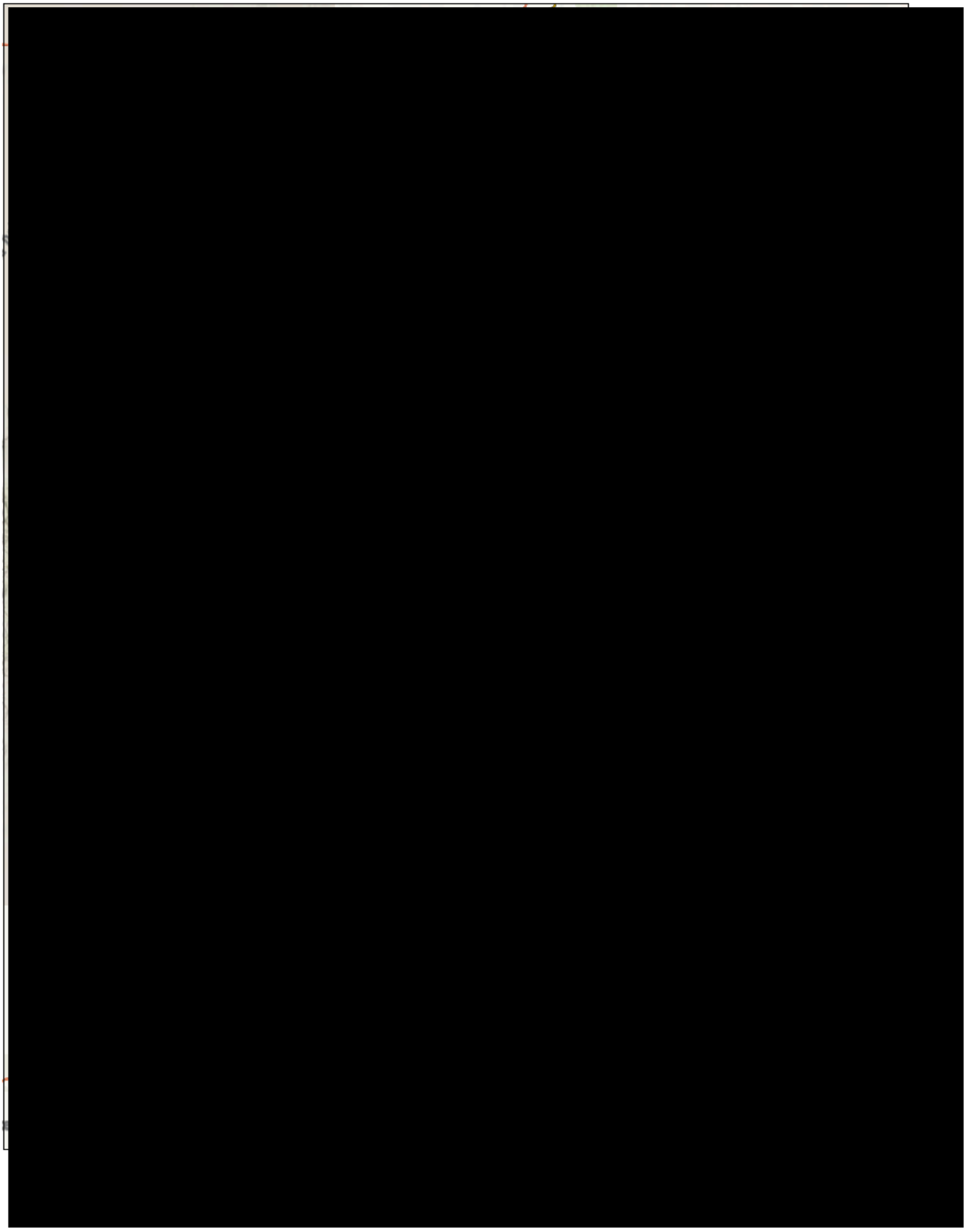
The following table and map present the 2024 enrollment information for Alamogordo Public Schools:

Table 17: City of Alamogordo Public School Enrollment Information

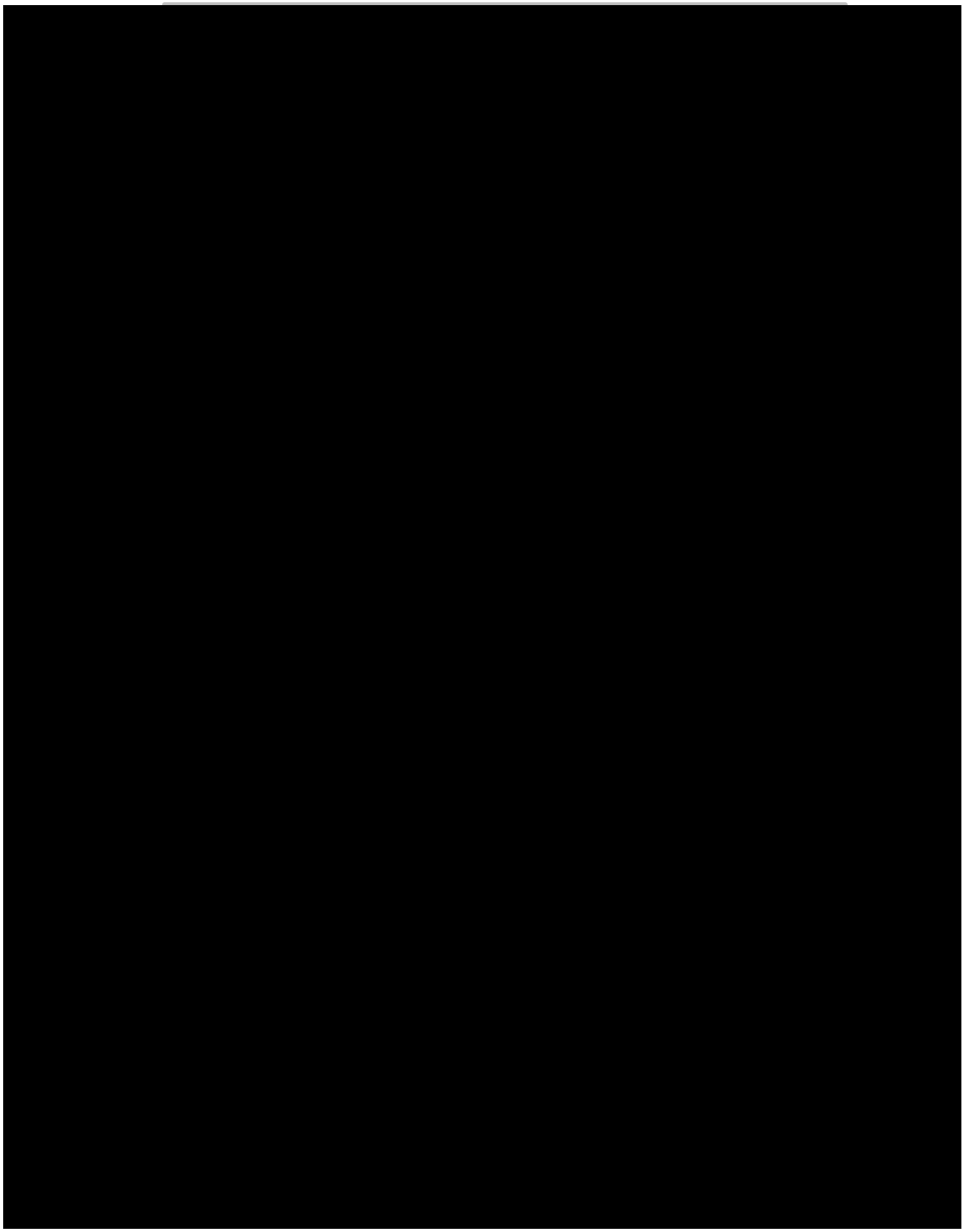
School	Type	Enrollment	Grades
Alamogordo High School	Secondary School	1,579	9-12
Buena Vista Elementary	Elementary School	242	K-5
Chaparral Middle School	Secondary School	633	6-8
Desert Star Elementary	Elementary	501	K-5
High Rolls Mountain Park Elementary	Elementary	26	K-5
Holloman Elementary School	Preschool, Elementary	480	PK, K-5
Holloman Middle School	Secondary School	194	6-8
La Luz Elementary School	Elementary	247	K-5
Mountain View Middle School	Secondary School	544	6-8
North Elementary School	Preschool, Elementary	378	PK, K-5
Sierra Elementary School	Elementary	342	K-5
Stepping Stones Pre-Kindergarten	Pre-School		PK
Sunset Hills Elementary	Elementary	413	K-5
Yucca Elementary School	Preschool, Elementary	353	PK, K-5

***Data**: U.S. News, K-12 Schools, Enrollment Data (https://www.usnews.com/education/k12/search?state=NM&district-id=100368)*
***Note:** Both Holloman Elementary School and Holloman Middle School, which are part of Alamogordo Public Schools, are located on Holloma*

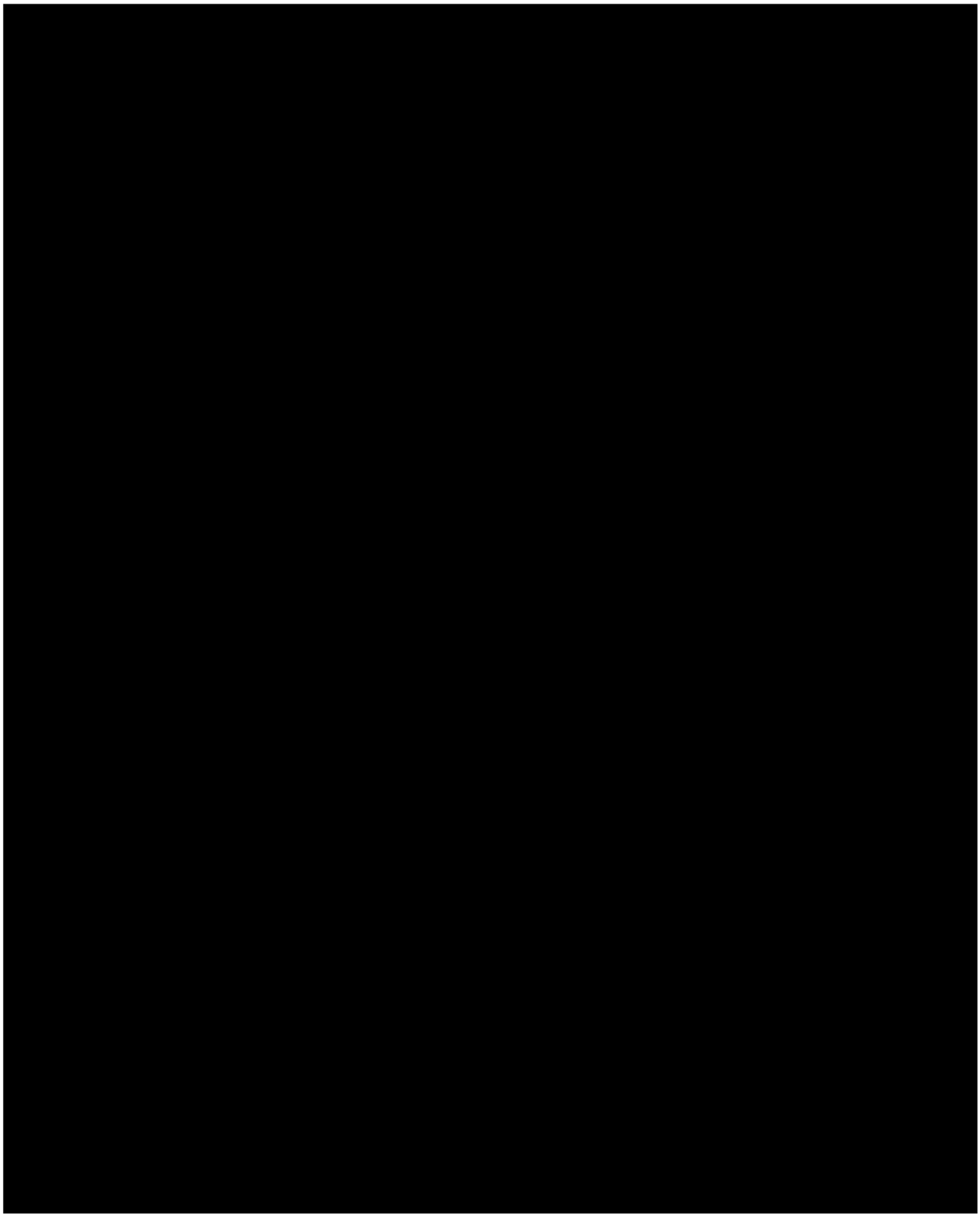
Map 12: City of Alamogordo, NM Critical Facilities and Infrastructure Map



Map 13: Alamogordo Public Schools, Elementary School Zone Map - 2022



Map 14: Alamogordo Public Schools, Middle School Zone Map - 2022



3.12 Climate Change

For hazards related to weather patterns, climate change may cause significant changes in patterns and event frequency. There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events, including:

- Longer and more intense heat waves
- An increased risk of wildfires
- Higher wind speeds
- Greater rainfall intensity
- Increased tornado activity

Specifically, according to the United States Environmental Protection Agency's "What Climate Change Means for New Mexico:"

- Changing the climate will likely increase the need for water but reduce the supply in New Mexico. Water temperatures increase the rate at which water evaporates (or transpires) into the air from soils, plants, and surface waters. The decline in snowpack could further limit the water supply for some purposes. Mountain snowpacks are natural reservoirs that collect the snow that falls during the winter and release water when the snow melts during spring and summer. Since the 1950s, the snowpack has been decreasing in New Mexico which matters because the headwaters of the Rio Grande, San Juan, Colorado, and Navajo Rivers flow within the state. The decline in snowpack could limit the supply of water for some purposes. Over the past 50 years, snowpack has been melting earlier in the year, and dams capture most meltwater and retain it for use later in the year; however, upstream of these reservoirs, less water is available during droughts for water-based recreation, and landowners who draw water directly from a flowing river.
- Climate Change may have both beneficial and harmful effects on farming. Longer frost-free growing seasons and higher concentrations of atmospheric carbon dioxide would increase yields for some crops during an average year. But increasingly hot summers are likely to reduce yields of corn and possibly soybeans. For example, seventy years from now, much of Michigan's Lower Peninsula is likely to have 5 to 15 more days per year with temperatures above 95°F than it has today. More severe droughts or floods would also hurt crop yields.
- Rising temperatures and drought are likely to increase the severity, frequency, and extent of wildfires, which could harm property, livelihoods, and human health. On average, more than two (2%) of the land in New Mexico has burned per decade since 1984. The combination of more fires and drier conditions may expand deserts and otherwise change parts of New Mexico's landscape. A warmer and drier climate would generally extend the Chihuahuan desert to higher elevations and expand its geographic range.
- Rising temperatures and drought can interfere with agriculture in New Mexico. Extreme heat can threaten the health of livestock and cause them to eat less, grow slowly, and produce less milk. Reduced water availability can also create challenges for ranchers and farmers.
- Rising temperatures can lead to warmer temperatures that can become unhealthy and dangerous. Extreme temperatures can cause heat stroke and dehydration and affect people's cardiovascular and nervous systems. Heat stress is expected to increase as climate change brings hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor.

Data from the NOAA NCEI New Mexico 2022 State Climate Summary indicates the following concerning the climate change in the state:

- Temperatures have risen approximately 2° Fahrenheit since the beginning of the 20th century.
- The summer monsoon rainfall, which provides much needed water for agriculture and ecological systems, varies greatly from year to year, and future trends in such precipitation are highly uncertain.
- Droughts are a serious threat in New Mexico due to the scarcity of water. Future events are also projected to be more intense.
- Although projections of annual precipitation are uncertain, precipitation in the spring, which is already the dry season in New Mexico, is projected to decrease across most of the state.

Section 4 – Hazard Analysis and Risk Assessment

Requirements §201.6(c)(2) (i):
The risk assessment shall include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on all previous occurrences of hazard events and on the probability of future hazard events.
Requirements §201.6(c)(2) (i):
The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph(c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008, must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of: • The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identifies hazard areas. • An estimate of the potential dollar losses to vulnerable structures identified in this section and a description of the methodology used to prepare the estimate. • Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.
Source: *FEMA, Local Mitigation Planning Policy Guide, Released April 19,2022, Effective April 19, 2023*

4.1 Introduction

The first step in developing a hazard assessment is identifying the hazards with reasonable potential to strike the City of Alamogordo. This identification allows us to take appropriate and well-planned action to mitigate a hazard event's extent and impact and facilitate emergency response and recovery operations. Not all disaster contingencies can be planned for, but our all-hazards approach to planning increases our awareness and preparedness for unforeseen hazard events. The goal of hazard mitigation is to reduce the future impacts of hazards, including deaths and injuries, property damage, and disruption to local and county economies, and to reduce further the amount of public and private funds spent to assist recovery.

The risk assessment process, a crucial part of this, estimates the potential losses in the City of Alamogordo from a hazard event. This process allows the City of Alamogordo to better understand its potential risks to natural hazards. It provides a framework for developing and prioritizing mitigation actions to reduce the risks from future hazard events in the City. The following provides a definition of the risk assessment terms used during this assessment:

- **Hazard:** An act or phenomenon that has the potential to produce harm or other undesirable consequences to a person or thing.
- **Exposure:** The people, property, systems, or functions that could be lost to a hazard. Generally, exposure includes what lies in the area the hazard could affect.
- **Vulnerability:** Vulnerability is susceptibility to physical injury, harm, damage, or economic loss. It depends on an asset's construction, contents, and economic value of its functions.
- **Risk:** A function of hazard, vulnerability, and exposure. It refers to the likelihood of an event resulting in an adverse condition that causes injury or damage.

In order to accomplish this assessment, all relevant natural hazards were considered, the risk assessment for the City of Alamogordo was performed using a City-wide, multi-departmental process, with much of the information gathering and analysis accomplished by the Planning Team. This integrated approach was employed because many hazardous events are likely to affect numerous areas within the City and are rarely relegated to a single boundary. The vulnerability analysis was performed to reflect vulnerability at a City-wide level.

4.2 Declared Federal Disasters

One method to identify hazards is to look at the events that have triggered federal and/or state disaster declarations. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. §§ 5121-5206) provides for the Federal support of State and local governments and their citizens when impacted by an overwhelming disaster. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, establishes the process for requesting a Presidential disaster declaration and defines the type of assistance available.

If it is apparent that a Presidential disaster declaration may be necessary to assist in the recovery of an impacted area, Calhoun County and FEMA Region V will conduct a Preliminary Damage Assessment (PDA). This assessment is used to determine:

- The extent of the event.
- The impact of the event on individuals and public facilities.
- The types of federal assistance that may be needed.

Once the PDA is complete, and if a determination is made that the damages exceed available resources, the Governor may submit through FEMA Region V a declaration request to the President.

A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work. Not all programs, however, are activated for every disaster. The determination of which programs are authorized is based on the types of assistance specified in the Governor's request and the needs identified during the initial and subsequent PDAs. FEMA disaster assistance programs may include:

- Individual Assistance
- Public Assistance
- Hazard Mitigation

To recognize and encourage mitigation, FEMA considers the extent to which mitigation measures contributed to the reduction of disaster damages. This could be especially significant in those disasters where, because of mitigation, the estimated public assistance damages fell below the per capita indicator.

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The MPC reviewed the historical federal disaster declarations to assist in hazard identification. In the 20-year period from 2003 to 2022, with the years 2003 and 2022 being full dataset years, Calhoun County has experienced no Presidential Disaster Declarations related to natural disasters.

The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed. Emergency Declarations supplement State and local or Indian tribal government efforts in providing emergency services, such as the protection of lives, property, public health, and safety, or to lessen or avert the threat of a catastrophe. The total amount of assistance provided for in a single emergency may not exceed $5,000,000. The following types of assistance are available under an Emergency Declaration:

- Public Assistance, Categories A (debris removal) and B (emergency protective measures)
- Individual Assistance, the Individuals and Households Program

The Governor, or the Governor's Authorized Representative, may submit a request for a fire management assistance declaration as required. FEMA will approve declarations for fire management assistance when it is determined that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster.

For the 20-year period from 2004 to 2024, Otero County has experienced five (5) fire management assistance declarations.

For this plan update, the MPT reviewed the historical federal disaster declarations to assist in hazard identification. The Planning Team was able to identify the chronology of past hazard events. Table 18 contains a history of State and Federal Disaster Declarations in Otero County, in which the City of Alamogordo resides (2004-present).

Table 18: State and Federal Disaster Declarations for Otero County (2004-Present)

Disaster Declaration	Hazard	Date	Details
New Mexico South Fork Fire and Salt Fire DR-4795-NM	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Incident Period: June 17, 2024 – continuing
New Mexico Salt Fire (FM-5498-NM)	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Fire Management Assistance Declaration declared on June 17, 2024 Incident Period: June 17, 2024 – continuing
New Mexico South Fork Fire (FM-5497-NM)	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Fire Management Assistance Declaration declared on June 17, 2024 Incident Period: June 17, 2024 – continuing
New Mexico Blue 2 Fires FM-5492-NM	Fire	May 2024	At the time of this plan update, the state declared a fire emergency for Lincoln County, NM, which neighbors the Otero County, which includes the City of Alamogordo. The City assisted Lincoln County during this disaster event. Incident Period: May 16, 2024 – continuing Fire Management Assistance Declaration Date: May 26, 2024
New Mexico COVID-19 DR-4529-NM	Pandemic	January 2020	Incident Period: Jan. 20, 2020 – May 11, 2023 Declaration Date: April 5, 2020
New Mexico COVID-19 EM-3460-NM	Pandemic	September 2020	Incident Period: Jan. 20, 2020 – May 11, 2023 Declaration Date: Mar. 13, 2020
New Mexico Soldier Canyon Fire FM-5240-NM	Fire	June 2018	Incident Period: Jun. 7, 2018 – Jun.19, 2019 Declaration Date: Jun 8, 2018

Table 18: State and Federal Disaster Declarations for Otero County (2004-Present)

Disaster Declaration	Hazard	Date	Details
New Mexico Timberon Fire FM-51342-NM	Fire	July 2016	Incident Period: Jul. 13, 2016 – Aug.8, 2016 Declaration Date: Jul. 14, 2016
Severe Storms and Flooding in New Mexico DR-4199-NM	Severe Storms/Flooding	September 2014	Incident Period: Sept. 15, 2014 – Sept. 26, 2014 Declaration Date: Oct. 14, 2014
Severe Storms and Flooding in New Mexico DR-4197-NM	Severe Storms/Flooding	July 2014	Incident Period: Jul. 27, 2014 – Aug. 5, 2014 Declaration Date: Oct. 6, 2014
Severe Storms, Flooding, and Mudslides in New Mexico DR-4152-NM	Server Storms/Flooding/Mudslides	September 2013	Incident Period: Sept. 9, 2013 – Sept 22, 2013 Declaration Date: Oct. 29, 2013
New Mexico Little Lewis Fire FM-42934-NM	Fire	June 2011	Incident Period: Jun. 28, 2011 – Jul. 13, 2011 Declaration Date: Jun. 29, 2011
Severe Winter Storms and Extreme Cold in New Mexico DR-1962-NM	Severe Winter Storms/Extreme Cold Temperatures	February 2011	Incident Period: Feb. 18, 2011 – Feb. 5, 2011 Declaration Date: Mar. 24, 2011
New Mexico Buckwood Fire FM-2818-NM	Fire	May 2009	Incident Period: May 6, 2009 – May 14, 2009 Declaration Date: May 7, 2009
New Mexico Severe Storms and Flooding DR-1783-NM	Severe Storms/Flooding	July 2008	Incident Period: Jul. 26, 2008 – Aug. 20, 2008 Declaration Date: Aug. 14, 2018
Severe Storms and Flooding in New Mexico DR-1659-NM	Severe Storms/Flooding	July 2006	Incident Period: Jul. 26, 2006 – Sept. 18, 2006 Declaration Date: Aug. 30, 2006
New Mexico Hurricane Katrina Evacuation EM-3229-NM	Hurricane	August 2005	Incident Period: Aug. 29, 2005 – Oct. 1, 2005 Declaration Date: Sept. 7, 2005

Records of Disaster Declarations found at: FEMA Disaster Information

4.3 Identified Potential Hazards

Proper identification allows for appropriate and well-planned action in order to mitigate the extent and cascading impacts of an incident. Furthermore, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process yields greater awareness and better preparedness for unforeseen hazard incidents.

The City of Alamogordo is susceptible to a number of hazards. This LHMP profiles the most significant of these hazards. The list of hazards identified in the 202X LHMP update was reviewed by the Planning Team with the goal of refining the list to reflect the hazards that pose the greatest risk. The process incorporated a

review of state, county, and local hazard planning documents. This update provides an all-hazards approach. Hazard identification included an initial Planning Team screening process to evaluate potential hazards based on the following considerations:

- Knowledge on behalf of the Planning Team about the risk associated with each hazard
- Past events (especially events that have occurred during the last plan cycle)
- The ability/desire of the Planning Team to develop effective mitigation actions for a specific hazard

Based on existing natural hazards data and input gained through planning meetings during the 2019 LHMP and 202X update, the Planning Team agreed upon a list of hazards that could affect the City of Alamogordo.

Note: At the time of this plan update, the Planning Team had the most recent Otero County, NM Hazard Mitigation Plan (2011) to use as a resource for information to include for this update. Though this plan is outdated, we are utilizing the previous City of Alamogordo LHMP (2019) and the State of New Mexico Hazard Mitigation Plan (2023) to provide more relevant information to include in the hazard of this update.

Based on existing natural hazards data and input gained through the planning team during the 2019 LHMP and 202X updates, the Planning Team agreed upon a list of hazards that could affect the City of Alamogordo. Since the last plan update, the Planning Team has seen more wind events in the planning area. Therefore, wind will be considered a hazard of concern for the first time in this plan update. The following table explains the changes in the hazards profiled in the 2019 and 202X updates.

Based on the review, this plan addresses the following hazards of concern (presented in alphabetical order; the order of listing does not indicate the hazards relative severity):

- Drought
- Flood
- Severe Winter Weather
- Wind
- Wildfire (Wildland Urban Interface Fire)

Climate Change influences the occurrences of many natural hazards, including drought, flood, and wildfire. This plan includes a discussion of climate change within each respective hazard.

Summary of Hazards for 202X Update, City of Alamogordo, NM

Hazards	Alamogordo Local Hazard Mitigation Plan 2019	Included in the State of New Mexico Hazard Mitigation Plan 2023 for Preparedness Area 6	Alamogordo Local Hazard Mitigation Plan 202X
Dam Failure	Excluded – Manmade risk	Included	Excluded – Manmade risk
Drought	Included	Included	Included – Disaster History
Earthquake	Excluded	Included	Excluded
Extreme Heat	Included in Drought	Included in Drought	Included in Drought – Disaster History
Expansive Soils	Excluded	Included	Excluded
Flooding	Included	Included	Included – Disaster History
High Wind	Excluded	Included	Included – Disaster History
Landslide	Excluded	Included	Excluded
Land Subsidence	Excluded	Excluded	Excluded

Summary of Hazards for 202X Update, City of Alamogordo, NM			
Hazards	**Alamogordo Local Hazard Mitigation Plan 2019**	**Included in the State of New Mexico Hazard Mitigation Plan 2023 for Preparedness Area 6**	**Alamogordo Local Hazard Mitigation Plan 202X**
Severe Winter Weather	Included	Included as Severe Winter Storms	Included – Disaster History
Thunderstorms	Included in Flood	Included	Included in Flood – Disaster History
Tornado	Excluded	Excluded	Excluded
Volcano	Excluded	Excluded	Excluded
Wildfire	Included	Included	Included – Disaster History

Note: *Preparedness Area 6 is mentioned because it categorizes the counties within the state in preparedness areas. These preparedness areas are for NM DHSEM to provide technical assistance for local emergency management programs. Otero County, where the City of Alamogordo resides, is located in Preparedness Area 6 and is mentioned in the above summary as the hazards identified that affect that Preparedness Area within the State.*
Data Source: *City of Alamogordo Local Hazard Mitigation Plan (December 2019); State of New Mexico Hazard Mitigation Plan (2023)*

Based on discussion with the Planning Team, a lack of identified risk or history, and geographic improbability, numerous FEMA identified hazards such as dam failure, earthquake, expansive soil, and volcanoes were not included in the scope of this plan. Additionally, six (6) natural hazards included in the State of New Mexico HMP (2023), detailed below, were not included for the enumerated reasons:

- **Dam Failure:** There are no identified high hazard dams within the City of Alamogordo. Due to the lack of potential impacts from a dam failure categorized below high hazard the Planning Team has elected not to include this hazard.
- **Earthquake**: There have been no recorded damaging earthquakes in City of Alamogordo. As mentioned in the previous LHMP (2019), earthquake does not pose a significant threat to the City or risk to the planning area. Due to the lack of documented and predicted impacts on both structures and population, and that the hazard was not included in the previous LHMP (2019), the Planning Team opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Expansive Soil**: The State of New Mexico Hazard Mitigation Plan (2023) states that Expansive Soil poses a threat to the state, however it ranks as one of the lowest hazard rankings amongst most of the communities within the State. Expansive Soil was excluded in the previous LHMP (2019) and was not mentioned as a hazard of concern with this plan update.
- **Landslide**: The 2013 and 2023 State of New Mexico Hazard Mitigation Plans do not identify the City of Alamogordo at being at risk to landslides. As such, the Planning Team opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Land Subsidence**: There have been no recorded land subsidence events in the City of Alamogordo. Also, on the State of New Mexico Hazard Mitigation Plan (2023), there is not a numerical ranking for this hazard for Preparedness Area 6, where Otero County, where the City of Alamogordo resides. This means there is no risk of the hazard within any identified risk zones.
- **Volcano**: The State of Mexico Hazard Mitigation Plan (2023) does not identify the City of Alamogordo as being at risk from Volcano. The hazard was excluded from City's previous LHMP (2019) and was not mentioned as a hazard of concern with this plan update. As such, the Planning Team opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.

4.4 Hazard Planning Significance

For the purposes of this plan, hazard planning significance refers to the relevance of the identified hazard to the jurisdictions of Otero County, where the City of Alamogordo is located, when calculating risk and vulnerability. In order to help quantify the planning significance for a hazard, data was reviewed on two levels, federal (National Risk Index data) and local (researched plan data relevant to occurrence and vulnerability on a county and local level). This allowed for a comparison between data sets for each hazard type and allowed for a summation at the county level. It is recognized that inconsistencies in methodologies and data make it difficult to make a direct comparison across all data levels. However, as possible, collected data was translated into a unified model that accounted for any variability in data and methodologies.

The result of this assessment provides a larger-scale snapshot of how the City of Alamogordo views risk and allows for the integration of hazard data into the HMP.

For natural hazards, data from this plan was vetted by Planning Team members and participating jurisdictions to ensure it matched local conditions. Additionally, the Planning Team utilized FEMA's National Risk Index (NRI) which provides a method of understating high and local level jurisdictional vulnerability. FEMA's NRI dataset and online tool was used to help determine local community risk for identified natural hazards in this HMP.

The risk equation behind the Risk Index includes three components, Expected Annual Loss (EAL), social vulnerability (previously discussed), and community resilience (previously discussed). The dataset supporting EAL provides estimates measured in 2022 U.S. dollars. The datasets supporting the social vulnerability and community resilience components have been standardized using a minimum-maximum normalization approach prior to being incorporated into the NRI risk calculation.

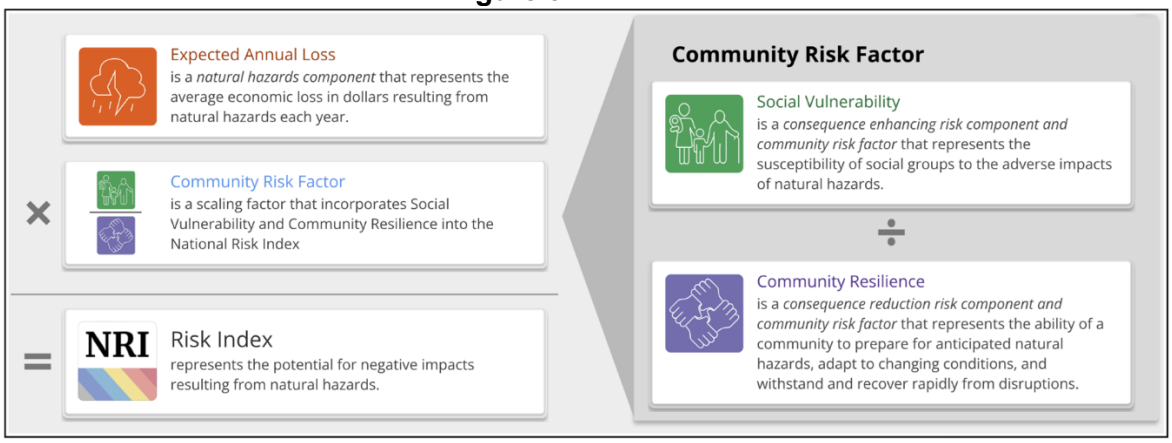
As part of the NRI, EAL represents the average economic loss in dollars resulting from a hazard each year. It quantifies loss for relevant consequence types, buildings, people, and agriculture. An EAL score and rating represent a community's relative level of expected losses each year when compared to all other communities at the same level. EAL is calculated using an equation that includes exposure, annualized frequency, and historic loss ratio risk factors. Exposure is a factor that measures the building value, population, and agriculture value potentially exposed to a natural hazard occurrence. Annualized frequency is a factor that measures the expected frequency or probability of a hazard occurrence per year. Historic loss ratio is a factor that measures the percentage of the exposed consequence type value (building, population, or agriculture) expected to be lost due to an occurrence. EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk.

To calculate Risk Index values, the NRI generates a Community Risk Adjustment to scale EAL values up or down, depending on their community risk factors, increasing with social vulnerability and decreases with community resilience. For a jurisdiction, a higher social vulnerability results in a higher Risk Index value while higher community resilience results in a lower Risk Index value.

Using these three components, Risk Index values are calculated for each jurisdiction (county and Census tract). The calculated Risk Index values form an absolute basis for measuring Risk within the NRI, and they are used to generate Risk Index percentiles and ratings across communities.

The risk equation behind the NRI is as follows:

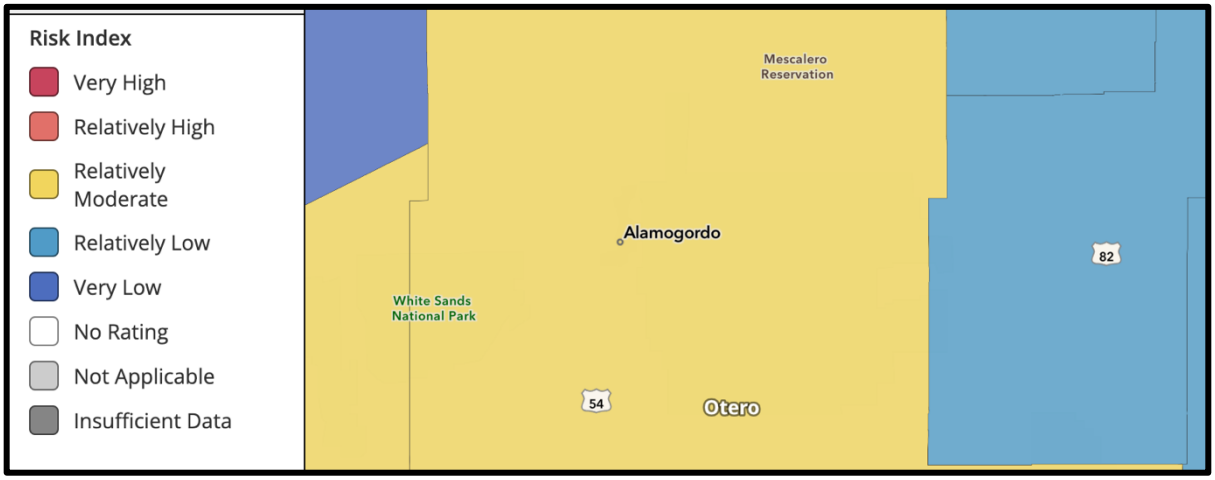
Figure 3: FEMA NRI



For both the Risk Index and EAL there is a qualitative rating that describes the nature of a community's score in comparison to all other communities at the same level, ranging from "Very Low" to "Very High." Because all ratings are relative, there are no specific numeric values that determine the rating. The following maps indicate the natural hazard composite NRI and EAL for Otero County, where the City resides.

The following maps indicate the natural hazard composite NRI and EAL for Alamogordo, NM:

Map 15: Natural Hazard Risk Index for Alamogordo, NM



Map Source: *FEMA NRI*

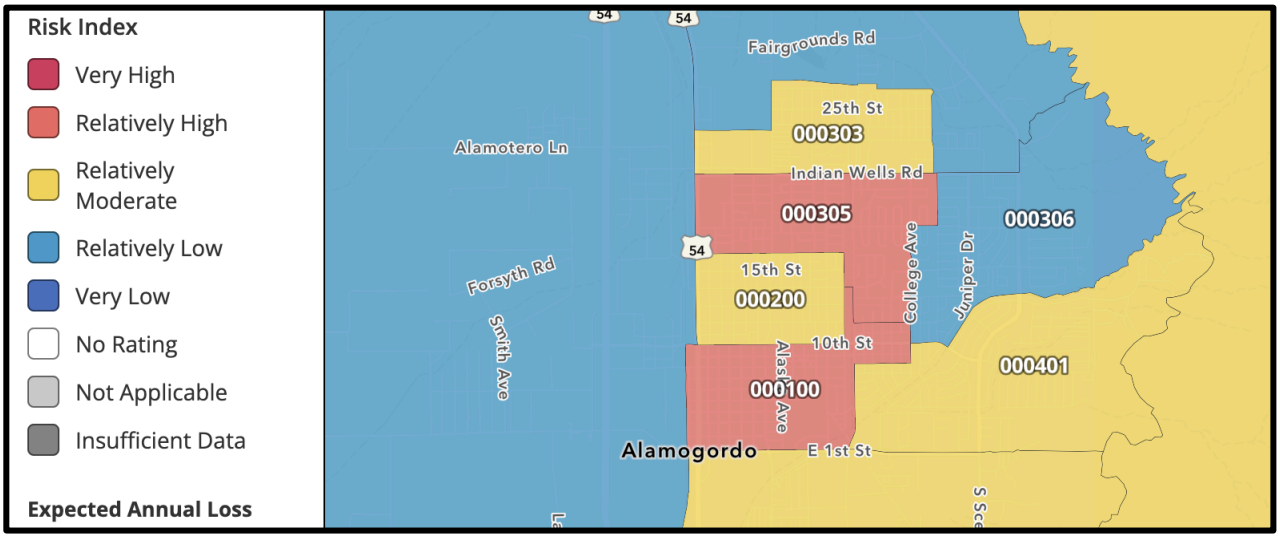
Map 16: Natural Hazard EAL for Alamogordo, NM



***Map Source**: FEMA NRI*

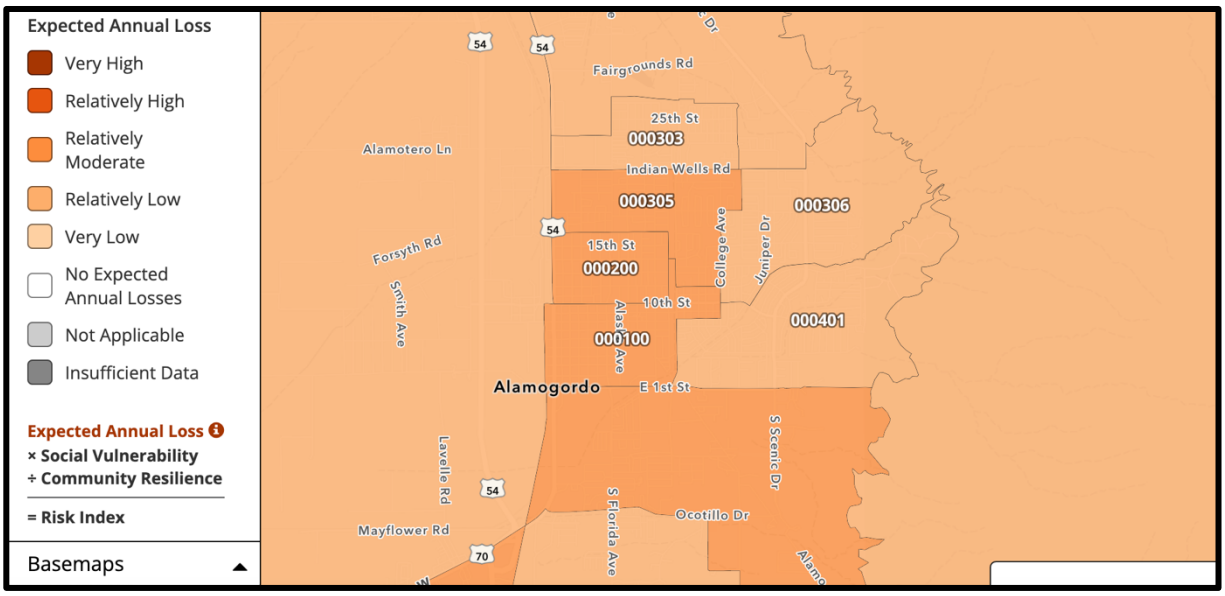
To help understand the risk and vulnerability to the identified hazards in this LHMP for participating jurisdictions, risk index and EAL mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Map 17: Natural Hazard Risk Index by Census Track for Alamogordo, NM



***Map Source**: FEMA NRI*

Map 18: Natural Hazard EAL by Census Tract for Alamogordo, NM



Map Source: *FEMA NRI*

The following table indicates the FEMA NRI and EAL analysis for Otero County, where the City of Alamogordo resides:

Table 19: City of Alamogordo FEMA NRI and EAL for All Natural Hazards

Jurisdiction	Risk Index	EAL
Alamogordo	Relatively Moderate	Relatively Moderate
Data Source: *FEMA NRI*		

Please note that participating school district mirror the risk rating of their respective jurisdictions.

To further help determine risk and vulnerability, social vulnerability, community resilience, risk index, and EAL data is presented in the following sections for each identified hazard by both county and jurisdiction. These data tables also contain the total building valuation and agricultural valuation of each census tract, allowing for an understanding of potential structural and agricultural vulnerability. Where appropriate, differences in vulnerability to identified hazards are noted in each individual hazard section.

4.5 Hazard Profiles

Each identified hazard is profiled in the subsequent sections, with the level of detail varying based on available information. Sources of information are cited in the detailed hazard profiles below.

Each hazard section provides a discussion on potentially vulnerable community lifelines. Community lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security, and include safety, health, energy, communication, transportation, and water systems.

For hazards that have a higher chance of occurrence for specific jurisdictions throughout the City of Alamogordo a discussion is provided as to the differing levels of potential vulnerability. All other hazards have been determined to have an equal chance of occurrence for the planning area.

With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards. The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference. For some hazards, the Repetitive Loss (RL) Structures and HAZUS® Models sections are left out due to the lack of applicability to the associated hazard.

Hazard Description
This section describes the general characteristics of the specified hazard.

Location and Extent
This section contains information about the location, i.e., the geographic area(s) within the planning area, that are affected by the hazard, along with the extent (strength and magnitude) of the specific hazard.

Previous Occurrence
This section contains a history of previous hazard events for the profiled hazard.

Methodology
NOAA's NCEI Storm Events Database was used as the primary source of information for previous occurrences of storm events. Where data sets were unavailable for a hazard, local reporting from participating jurisdictions was relied upon. It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or National Weather Service (NWS) office. When reporting an event, oftentimes, the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Most of the events from NCEI are not associated with a federal emergency or disaster. Suppose the event occurred at the same time as an event that was later determined to be a federal emergency or disaster. In that case, it is included with the NCEI data even if it occurred in a county not included in the federal declaration. The calculations for Previous Occurrences and the Probability of Future Events are also based on county-wide data.

Probability of Future Events
Probability of Future Events can be defined in a variety of plans to account for the long-term changes in weather patterns of the identified hazards during the hazard mitigation planning process. Calculating future probability is one of many predictors of future occurrences. This section of the 202X LHMP update will utilize Calculating Future Probability using Qualitative Data to define the probability of future events for the City of Alamogordo.

This method describes the likelihood, or probability, of the identified hazard occurring within the planning area. The probability of future occurrence, within the next planning cycle, will be derived by dividing the number of recorded events (from data from publications like the U.S. Drought Monitor and the NCEI/ NOAA Storm Events Database) by the last planning cycle's year range and multiplying that figure by 100 then taking that percentage value and dividing it by the HMP current planning cycle (5 years) do determine annual probability . For most hazards the time frame will be since the last plan update in 2019 (70 years). See the table below for additional information on the probability of future events. ***Note: Any annual probability value over 100 will be assigned a value of 100%.***

Mathematical Equation calculating Annual Probability Percentage:

$$\frac{Number\ of\ Events}{Time\ Frame\ (7\ years)} x\ 100 = \frac{Hazard\ Percentage\ over\ given\ Time\ Frame}{HMP\ Planning\ Time\ Frame\ (5\ Years)} = Annual\ Probability$$

Table 20: Probability Categories/Range Per Year

Probability Categories	Unlikely	Occasional	Likely	Highly Likely

Range (Per Year)	0%	1-10%	11-50%	51-100%

Vulnerability and Impact
This section describes the potential impacts of the hazard and provides an overall summary of the vulnerability to the hazard through structures, systems, populations, and community assets that are susceptible to damage/loss from the hazard.

Impact of Climate Change
This section provides a general description of the impact of climate change on that hazard within the planning area.

Critical Facilities & Infrastructure
When appropriate, this section details the infrastructure and facilities that are vulnerable and detail the potential impacts pertinent to the hazard.

Land Use and Development Trends
When appropriate, this section details the infrastructure and facilities that are vulnerable and detail the potential impacts pertinent to the hazard.

Jurisdictional Risk and Vulnerability
This section details the risks, vulnerabilities, and potential impacts pertinent to the hazard concerning the FEMA NRI data related to those at risk for the hazard in the planning area.

Repetitive Loss Structures
If applicable to the profiled hazard, a description of the location, types, and estimates for the number of repetitive loss properties will be provided in this section.

HAZUS® Models
If applicable to the profiled hazard, HAZUS® models using version 6.0 may be included in this section of the plan. HAZUS® is a GIS (mapping) tool that allows analysts to create a fictional scenario for the planning area using specific details to show what could happen if that scenario were to occur. This type of mapping is helpful to fill in gaps where there is a lack of historical data. It also allows jurisdictions to visualize which facilities and populations would potentially be affected

4.6 Drought



4.6.1 Hazard Description

Drought is defined as an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and or underground water supply. It is, however, a normal, seasonal, and recurrent feature of climate that occurs in virtually all climate zones—typically in late spring through early fall. The duration of drought varies widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. The hydrological imbalance can be grouped into the following non-exclusive categories:

- Agricultural: When the amount of moisture in the soil no longer meets the needs of previously grown crops
- Hydrological: When surface and subsurface water levels are significantly below their normal levels
- Meteorological: When there is a significant departure from the normal levels of precipitation
- Socio-Economic: When the water deficiency begins to significantly affect the population

With below average precipitation, little or no rain falls, soil can dry out, and plants can die. If unusually dry weather persists and water supply problems develop, the period is defined as a drought. Human activity such as over-farming, excessive irrigation, deforestation, and poor erosion controls can exacerbate a drought's effects. It can take weeks or months before the effects of below average precipitation on bodies of water are observed. Depending upon the region, droughts can happen more quickly, be noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the faster the effects will be realized. A naturally dry region, which typically relies more on subsurface water will take more time to actualize its effects.

Periods of drought can have significant environmental, agricultural, health, economic, and social consequences. The effects vary depending upon vulnerability and regional characteristics. Droughts can also reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and increase contamination. The most common effects are diminished crop yield, increased erosion, dust storms, ecosystem damage, reduced electricity production due to reduced flow through hydroelectric dams, shortage of water for industrial production, and increased risk of wildland fires.

4.6.2 Location & Extent

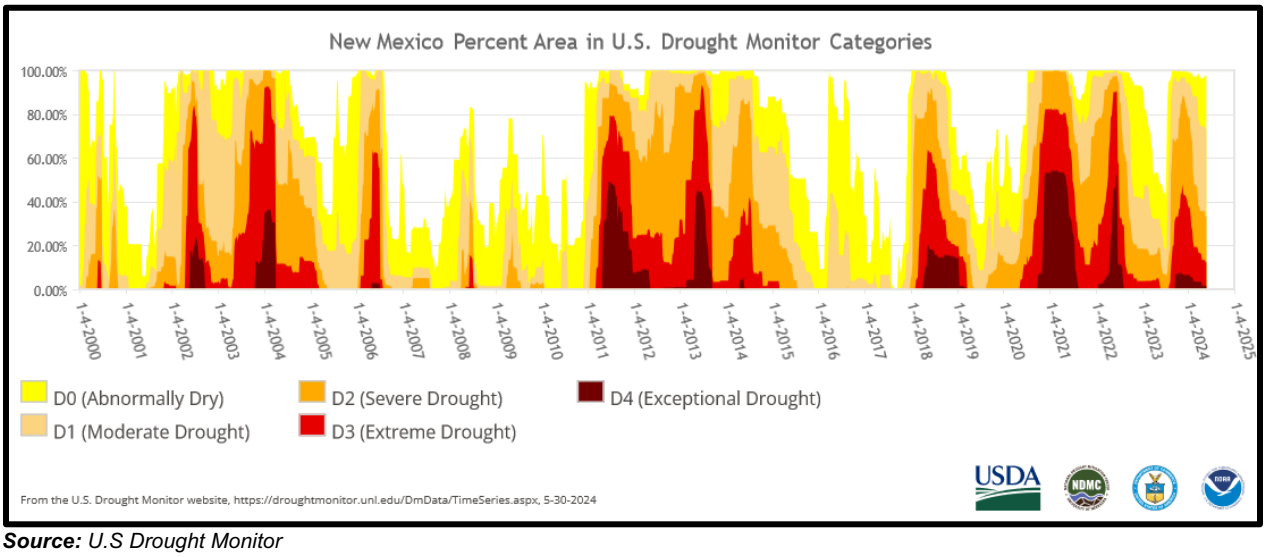
As mentioned in the previous LHMP (2019), extended periods without enough rainfall can and do occur across City of Alamogordo affecting the entire planning area, causing damage to lawns, gardens, flora and fauna. These events, when they do occur, occur on a massive geographic scale often affecting multiple counties, regions, and states. Severe drought can cause enormous economic consequences, not only in the City but in the county, region and nation as well. There is no set speed of onset or warning period. A drought may begin in as short of period as a week or it may take months to reach an official declared drought.

When a drought begins, and ends is difficult to determine. Rainfall data alone won't tell if an area is in a drought, how severe the drought may be, or how long the area has been in drought. However, one can identify various indicators of drought, such as rainfall, snowpack, stream flow, and more, and track these indicators to monitor drought. Researchers have developed several tools to help define the onset, severity and end of droughts. Drought indices take thousands of bits of data on rainfall, snowpack, stream flow, etc., analyze the data over various time frames, and turn the data into a comprehensible big picture.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. Among them are the U.S. Drought Monitor, the Palmer Drought Index, and the Standardized Precipitation Index, as next described.

The U.S. Drought Monitor provides a summary of drought conditions across the U.S. and Puerto Rico. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-based drought indices and indicators, along with local expert input, into a single composite drought indicator. As mentioned in the previous LHMP update (2019), since 2000, the most prolonged drought duration in the State of New Mexico lasted 269 weeks, beginning on December 27, 2011, and ending on February 14, 2017. Per the NOAA National Centers for Environmental Information (NCEI) mentions that New Mexico set a new drought duration record at the end of May 2024. Per the U.S. Drought Monitor, New Mexico has experienced moderate or worse drought for 345 weeks, beginning in February 2017.

Figure 4: U.S Drought Monitor, New Mexico



Source: *U.S Drought Monitor*

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

Table 21: Palmer Drought Severity Index

Category	Range (Per Year)
Extremely Wet	4.0 or more
Very Wet	3.0 to 3.99
Moderately Wet	2.0 to 2.99
Slightly Wet	1.0 to 1.99
Incipient Wet Spell	0.5 to 0.99
Near Normal	0.49 to -0.49
Incipient Dry Spell	-0.5 to -0.99
Mild Drought	-1.0 to -1.99
Moderate Drought	-2.0 to -2.99
Severe Drought	-3.0 to -3.99
Extreme Drought	-4.0 or less

Source: *U.S. Drought Monitor*

The Standardized Precipitation Index (SPI) is a way of measuring drought that is different from the PDI. Like the PDI, this index is negative for drought, and positive for wet conditions. However, the SPI is a probability index that considers only precipitation, while PDI indices are water balance indices that consider water supply (precipitation), demand (evapotranspiration) and loss (runoff).

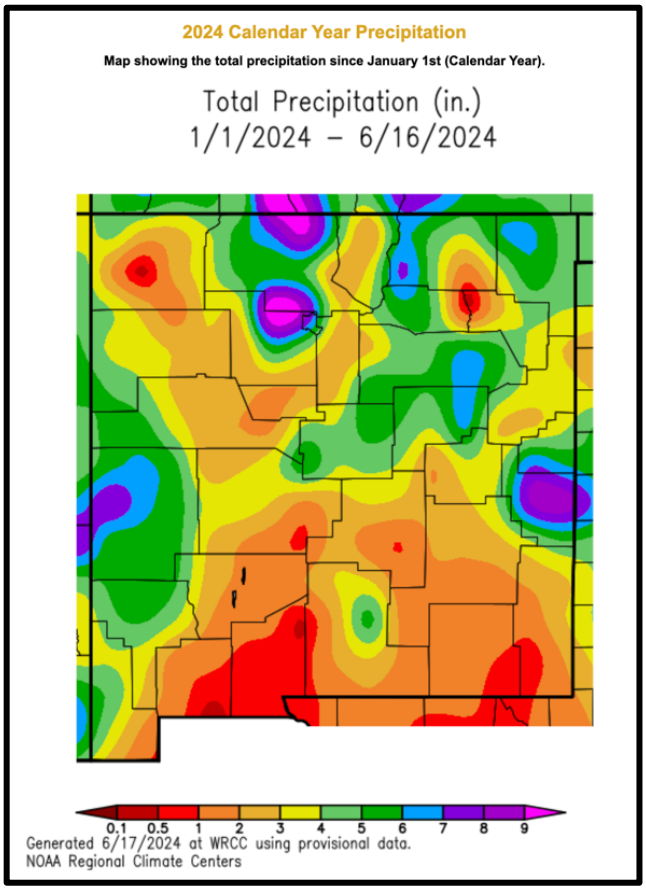
Table 22: Standard Precipitation Index

Category	Range (Per Year)
Extremely Wet	2.0+
Very Wet	1.5 to 1.99
Moderately Wet	1.0 to 1.49
Near Normal	-.99 to .99
Moderately Dry	-1.0 to -1.49
Severely Dry	-1.5 to -1.99
Extremely Dry	-2 and less

Source: *U.S. Drought Monitor*

The following map provides the current precipitation totals for the state of New Mexico from January 1, 2024 – June 16, 2024.

Figure 5: 2024 Calendar Precipitation, New Mexico



Map Source*: The National Weather Services – Albuquerque, NM Weather Office*

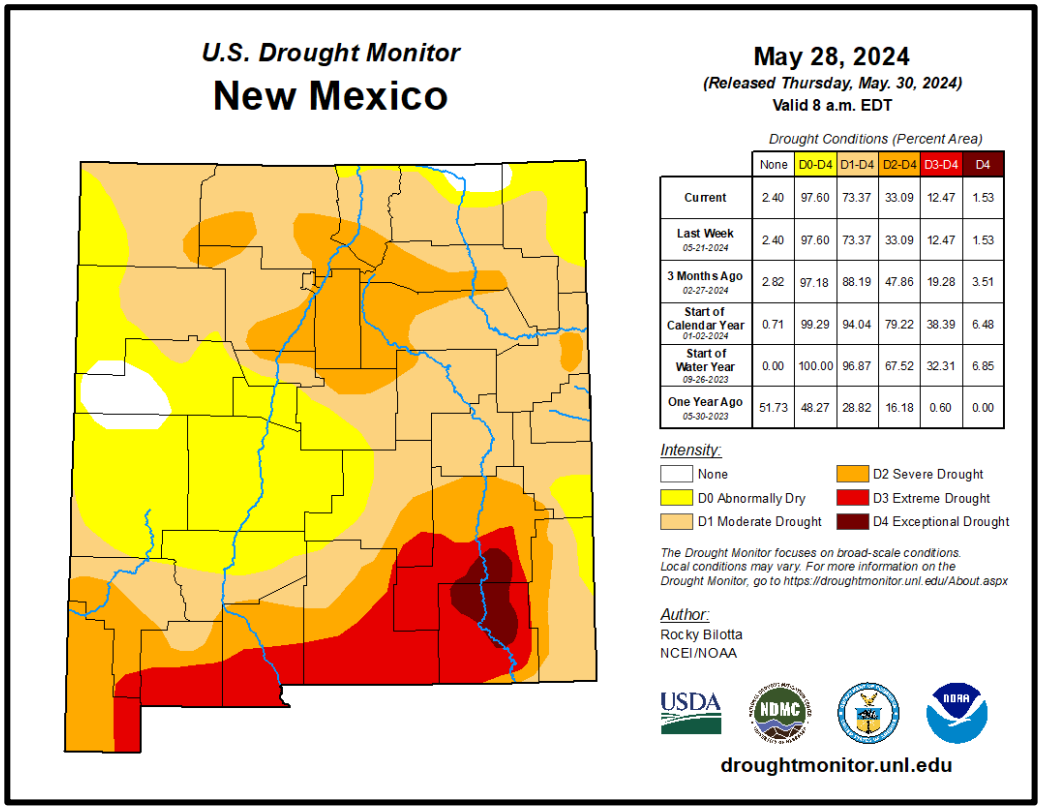
One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the State of New Mexico. The following table and map detail the U.S. Drought Monitor categories and the current conditions for the State of New Mexico.

Table 23: U.S. Drought Monitor Categories

Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: *U.S. Drought Monitor*

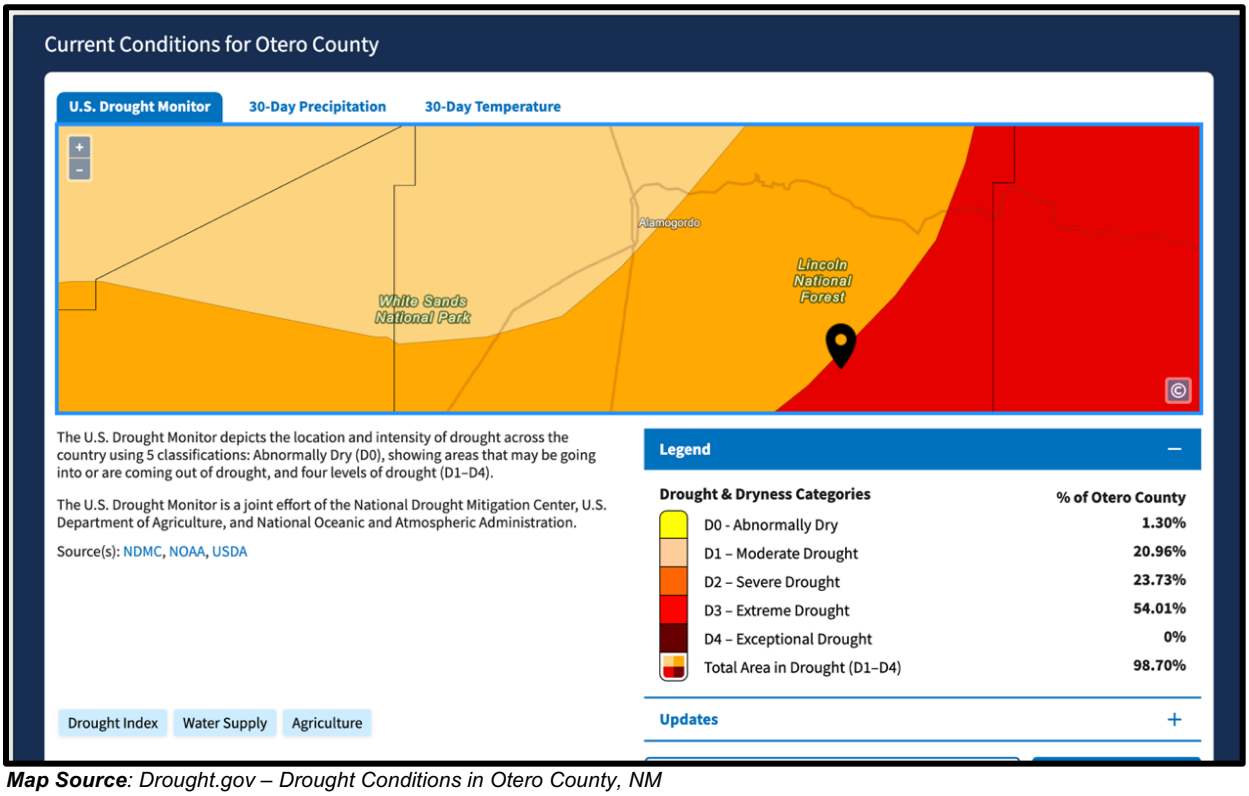
Figure 6: U.S. Drought Monitor, New Mexico



Map Source*: U.S. Drought Monitor*

The entirety of Otero County, including the City of Alamogordo, is clutching a severe drought that demands immediate attention. As of June 2024, Drought.gov reports that these conditions directly impact 98.7% of the County's population. The City of Alamogordo is experiencing a D1—moderate level drought. The following map vividly illustrates the current severity of the drought in Otero County, including the City of Alamogordo.

Figure 7: Drought Conditions in Otero County, NM

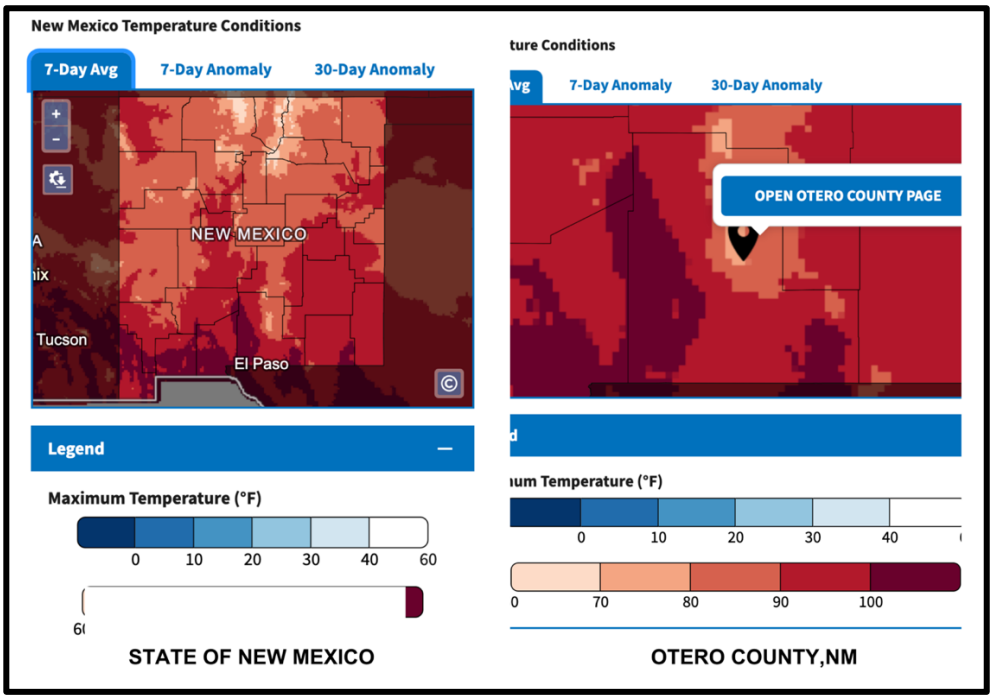


***Map Source**: Drought.gov – Drought Conditions in Otero County, NM*

Extreme Heat and Drought

As mentioned earlier in this hazard profile, there are cases when drought develops relatively quickly and lasts a very short period, exacerbated by extreme heat and wind, and there are other cases when drought spans multiple years or even decades. Extreme Heat is a high heat and humidity period with temperatures above 90 degrees lasts for at least two or three days. A heat wave is two or more consecutive days with unusually high or extreme heat conditions. The National Weather Service - Albuquerque Office mentions that most summers see heat waves in one or more parts of the United States, including New Mexico. While hot temperatures can occur anytime from spring to fall in New Mexico, June and July can be particularly brutal regarding heat. The State of New Mexico Hazard Mitigation Plan (2023) mentions that drought was ranked as the second top priority hazard in Preparedness Area 6, which includes Otero County, where the City of Alamogordo resides. The region is also vulnerable to extreme heat conditions. As of June 2024, the following maps from Drought.gov provide the current temperature conditions, which show extreme heat for the State of New Mexico and Otero County.

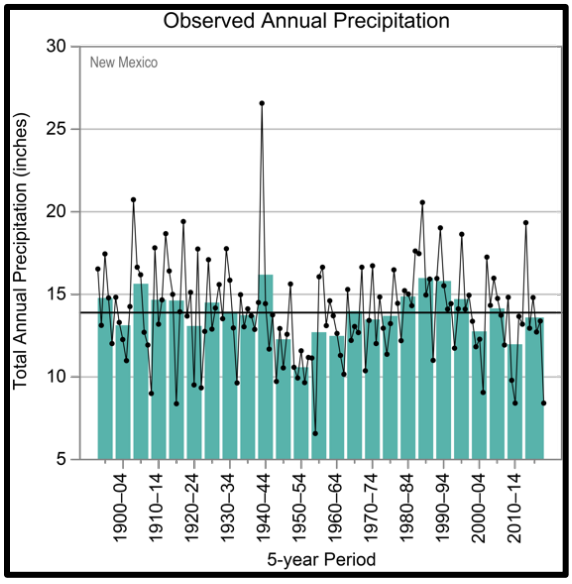
Figure 8: Temperatures Condition, New Mexico and Otero County, NM



Map Source: *Drought.gov – Drought Conditions in Otero County, NM*

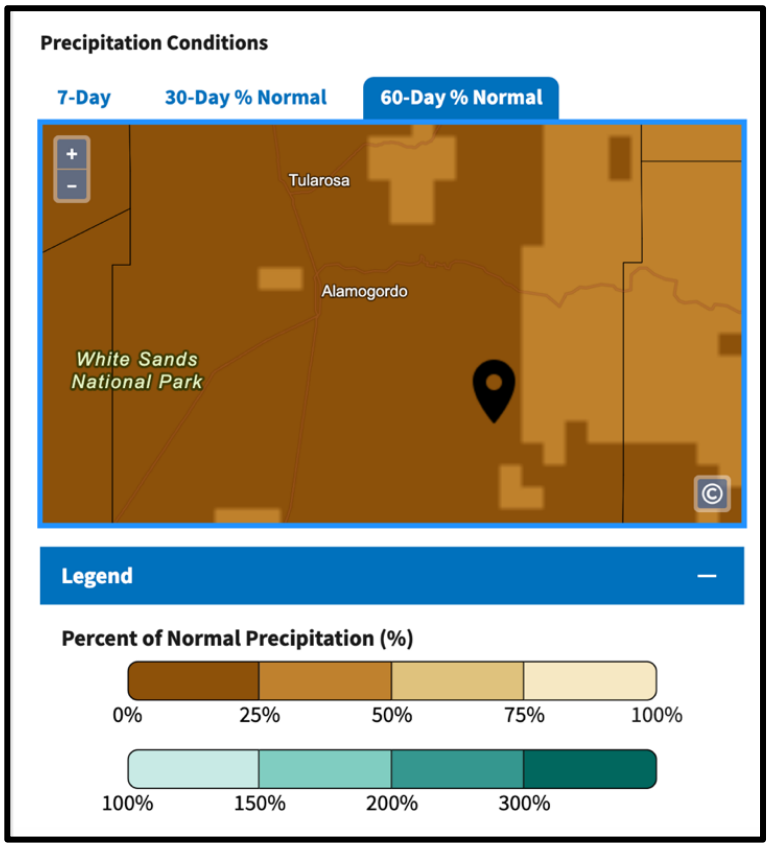
Prolonged drought can also contribute to flash flooding if the soil cannot absorb moisture quickly after rain. Also, reservoir levels throughout New Mexico have been at their lowest since the mid-1970s. The City of Alamogordo, nestled in the southwest and part of the Chihuahua Desert, is a prime example of the critical need for effective water management. Water in this region is scarce, and the City relies on several water systems to meet its needs. Situated at the base of the Sacramento Mountains, Alamogordo benefits from direct water flow to its reservoirs. The NWS diligently collects Precipitation data throughout New Mexico, including additional rainfall data from citizen weather rainfall sites. The following charts provide a comprehensive view of the annual precipitation averages from 1895 to 2020 and the current precipitation conditions for Otero County, home to the City of Alamogordo.

Chart 2: New Mexico Observed Annual Precipitation



Source: *NOAA NCEI State Climate Summary 2022 for New Mexico*

Chart 3: Current Precipitation Conditions – Otero County, NM



Source: *Drought.gov – Drought Conditions in Otero County, NM*

The US Drought Monitor—Otero County, NM webpage has current drought conditions within the planning area and information on the current PDI and SPI.

4.6.3 Previous Occurrences

The previous LHMP 2019 mentions that comprehensive data on droughts, drought impacts, and drought forecasting is extremely limited and often inaccurate. Due to the complexity of drought monitoring, the complexity of agricultural and livestock market pricing, and the large areas of drought impact, the USDA and USGS have difficulty quantifying and standardizing drought data. Each of these contributing drought factors has confounding variables within them.

However, the US Drought Monitor provides weekly updates on the status of Drought throughout the United States. Data can be pulled for a specific county only. City/Town/Tribal data is not able to be calculated. Typically, impacts from a Drought are across the entire county, not a particular jurisdiction. The data provides percentages to indicate how bad the Drought is for that locale. The table below provides the number of days in a Drought level. It's important to note the impact may be a partial percentage or full. It is possible to be in more than one Drought level at the same time.

Chart 4: Drought Classification Chart

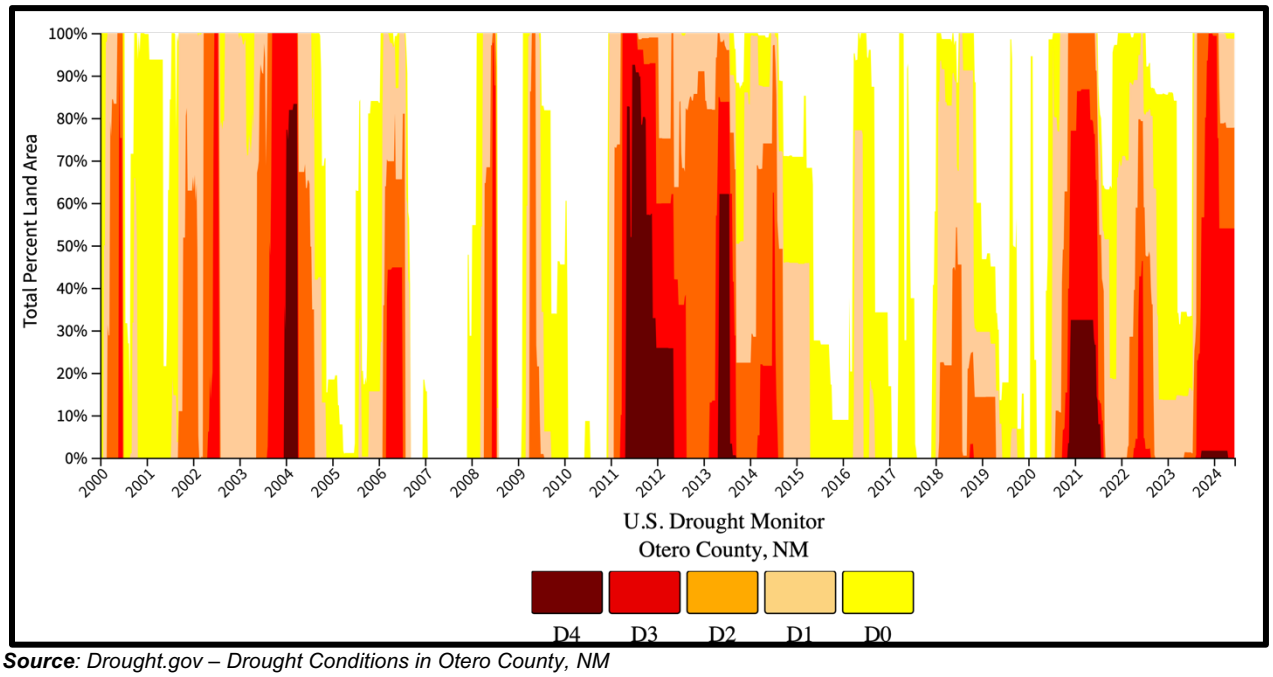
Drought Classification

Home > About > About the Data > Drought Classification

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

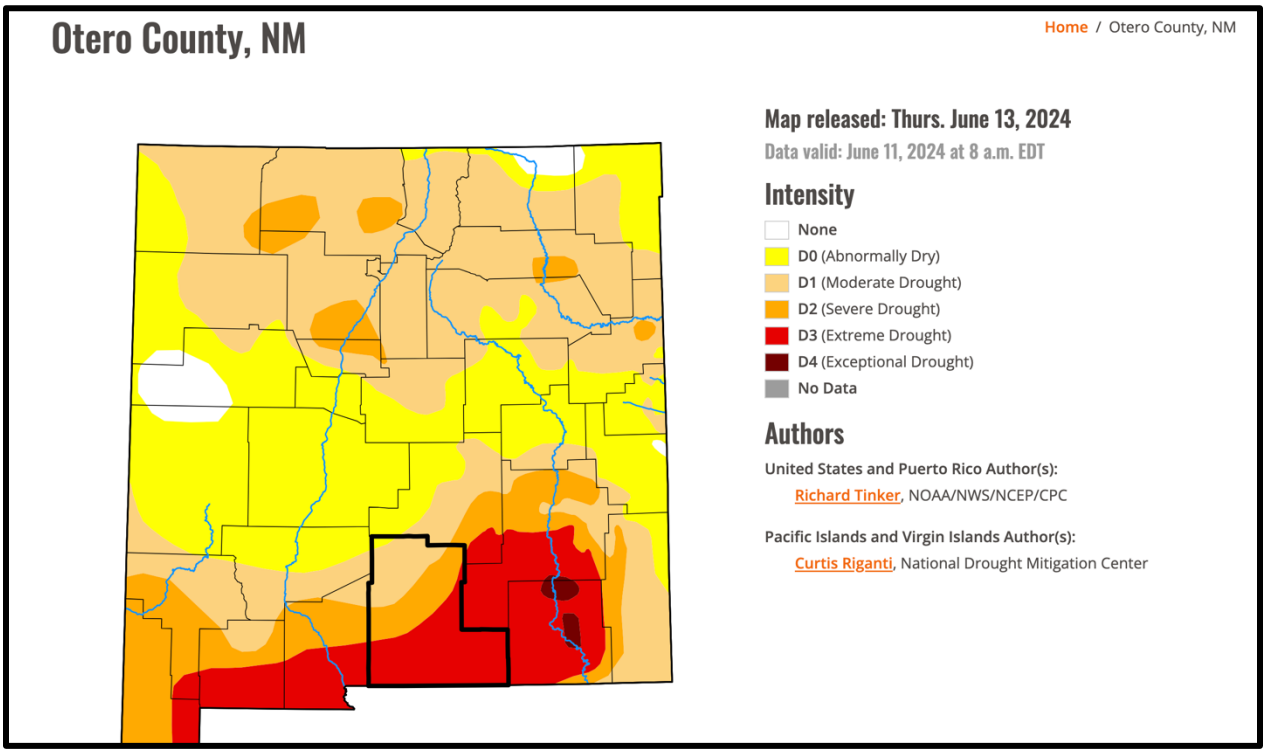
Source: *U.S. Drought Monitor*

Figure 9: Drought Conditions for Otero County



Source*: Drought.gov – Drought Conditions in Otero County, NM*

Map 19: Current Conditions for Otero County



***Source**: U.S. Drought Monitor*

Disaster Declaration History

There have been no FEMA or NMDHSEM disaster declarations related to drought in Otero County since the last LHMP update (2019). However, the following table provides data showing that the County, which includes the City of Alamogordo, has had disaster declarations by the U.S. Department of Agriculture - Farm Agency since the last LHMP update (2018-current).

Table 24: USDA Disaster Designation – Otero County, NM

Crop Disaster Year	Designation Code	Designation Number	Drought	Begin Date	End Date	Designation of Disaster
2018	2 - Contiguous County	S4310	1	4/10/18	N/A	Drought-Fast Track
2018	1 - Primary County	S4316	1	5/15/18	N/A	Drought-Fast Track
2018	2 - Contiguous County	S4354	1	10/2/18	N/A	Drought-Fast Track
2019	1 - Primary County	S4469	1	11/1/18	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4736	1	7/14/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4751	1	7/28/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4757	1	8/4/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4766	1	6/23/20	N/A	Drought-Fast Track

2020	1 - Primary County	S4818	1	8/4/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4850	1	8/25/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4872	1	9/29/20	N/A	Drought-Fast Track
2020	2 - Contiguous County	S4890	1	10/13/20	N/A	Drought-Fast Track
2021	1 - Primary County	S4920	1	11/1/20	N/A	Drought-Fast Track
2021	2 - Contiguous County	S4924	1	11/1/20	N/A	Drought-Fast Track
2022	1 - Primary County	S5154	1	11/1/21	N/A	Drought-Fast Track
2022	2 - Contiguous County	S5158	1	11/1/22	N/A	Drought-Fast Track
2023	2 - Contiguous County	S5378	1	11/1/22	N/A	Drought-Fast Track
2023	1 - Primary County	S5456	1	5/16/23	N/A	Drought-Fast Track
2023	2 - Contiguous County	S5509	1	8/22/23	N/A	Drought-Fast Track
2023	2 - Contiguous County	S5538	1	9/5/23	N/A	Drought-Fast Track
2023	2 - Contiguous County	S5539	1	9/5/23	N/A	Drought-Fast Track
2023	2 - Contiguous County	S5548	1	7/25/23	N/A	Drought-Fast Track
2024	1 - Primary County	S5678	1	11/1/23	N/A	Drought-Fast Track
2024	2 - Contiguous County	S5682	1	11/1/23	N/A	Drought-Fast Track

***Data Source**: U. S. Department of Agriculture (USDA)*

Understanding the Data

The previous LHMP 2019 mentions, comprehensive data on droughts, drought impacts, and drought forecasting is extremely limited and often inaccurate. Due to the complexity of drought monitoring, the complexity of agricultural and livestock market pricing, and the large areas droughts impact, the USDA and USGS have difficulty quantifying and standardizing drought data. Each of these contributing drought factors has confounding variables within them.

However, the US Drought Monitor provides weekly updates on the status of Drought throughout the United States. Data can be pulled for a specific County only. City/Town/Tribal data is not able to be calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The data provides percentages to indicate how bad the Drought is for that locale. The table below provides the number of days in a Drought level. It's important to note the impact may be a partial percentage or full. It is possible to be in more than one Drought level at the same time.

Year	DO	D1	D2	D3	D4	Total
2018	52	51	47	7	0	154
2019	48	29	15	0	0	92
2020	37	27	20	13	7	104

2021	52	52	35	32	28	199
2022	52	52	37	22	0	163
2023	52	52	33	20	14	171
2024	24	24	24	24	16	112
					Total Drought Events	**995**
***Data Source**: U.S Drought Monitor*						

4.6.4 Probability of Future Events

The previous LHMP Update (2019) mentions previous drought events in or affecting Otero County were completed from 1950 to 2018. Only the years 2004-2018 are charted below due to having zero recorded events from 1950 to 2012, in that plan draft it indicated that the City of Alamogordo can expect a drought event with a 261.76% probability per year, or 2.61 events per year.

Currently, Otero County can expect a drought event on an annual basis during the next LHMP planning cycle is with a 28.43%, based upon Table 25: Probability Categories. Calculating future probability is not the only predictor of future occurrences; see the table below. The City of Alamogordo's qualitative chance of a drought is considered **likely.**

Table 25: Probability of Future Events, Drought, Otero County, NM

Event Year	Event Count
2018	154
2019	92
2020	104
2021	199
2022	163
2023	171
2024	112
Total Recorded Events =	**995**
Total Years =	**7**
Probability over Time Frame of 7 Years	**142.4%**
Annual Probability =	**28.43%**

Probability of Future Events Mathematical Equation of Drought

$$\frac{995}{7} x\ 100 = \frac{142.4\%}{5} = 28.43\%$$

4.6.5 Vulnerability and Impact

Table 26: Summary of Changes to Vulnerability, Drought

2023 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Drought			X

- Drought was addressed in the 2019 LHMP update. As a result, Drought continues to be a priority for mitigation planning for the City.
- Since the last plan update (2019), the population has increased 0.951%, therefore, the vulnerability to hazards, like drought, has increased within the City of Alamogordo.

- Drought conditions since the 2019 LHMP update have had an impact on the City of Alamogordo and the State of New Mexico. As a result, the drought hazard continues to be a priority for mitigation planning for both the City and the State.
- Recent drought conditions have contributed to an increase in dry fuels (and tree mortality), and a general increase in wildfire conditions.
- Per the Drought Monitor indicated that Otero County experienced the 32nd driest period to data over the past 130 years (January - May 2024) and was in some form of drought for 214 consecutive weeks from May 19, 2020, to June 18, 2024.
- The City of Alamogordo 40-Year Water Development Plan 2005-2045 mentions that a significant reduction of surface water supply due to drought conditions has placed critical limitations on the long-term reliance on surface water. Because of this, the City of Alamogordo's need for additional water supply is urgent. If drought increases levels of vulnerability for the City of Alamogordo, the City will have mechanisms to reduce impacts on the community. The City's Utilities Department has been proactive and aggressive in its approach to water conversation, which includes conservation education, computer analysis of hydrant flow capabilities throughout the City, and building a pump test facility to help with water-saving measures.

As mentioned, the New Mexico State Hazard Mitigation Plan (2023) mentions that all of New Mexico's preparedness areas have experienced drought over the last 16 years. Still, much of the state, including Otero County, experienced exceptional drought in 2021. The Drought Monitor also indicated that Otero County experienced the 32nd driest period to data over the past 130 years (January - May 2024) and was in some form of drought for 214 consecutive weeks from May 19, 2020, to June 18, 2024. This data proves that Alamogordo is vulnerable to drought conditions now and in the future.

4.6.5a Impact of Climate Change

Climate change is affecting drought conditions in the State of New Mexico, including the City of Alamogordo. The New Mexico Hazard Mitigation Plan (2023) states drought is nature's way of reminding us that we live in a desert. Being in a drought magnifies the challenge of balancing limited water supplies with growing demand. A variety of factors cause a drought. Climate scientists believe that conditions in the North Atlantic and the Eastern Pacific oceans play a significant role in determining the amount of precipitation that New Mexico and the rest of the country receive. The Fourth National Climate Assessment reports that throughout the southwest region, increased temperatures are resulting in decreases in snowpack and its water content, an earlier peak of snow-fed streamflow, and increases in the proportion of rain to snow, all of which exacerbate hydrological drought.

Additionally, climate change can increase drought risk, exacerbated by groundwater depletion, and cause more frequent, intense, and lengthy droughts. Climate change is already profoundly impacting New Mexico's water resources. With increased temperatures within the state, droughts could become more frequent and severe. Because of this, the increase in drought within the planning area is a significant concern due to the stresses on water resources. Water conservation efforts will need to be a planning consideration for the City of Alamogordo to mitigate the effects of drought.

4.6.5b Critical Facilities & Infrastructure

Critical facilities and infrastructure are not directly vulnerable to losses due to drought. However, there is a potential that operations could be impacted by power failures caused by either increased utility demand or damaged power delivery infrastructure. In addition, drinking water infrastructure may be specifically vulnerable to drought impacts. Any decrease in groundwater supplies would stress this infrastructure and may cause shortages or rationing.

The previous LHMP (2019) mentions that drought poses no risk to the City of Alamogordo facilities. However, during this plan update, there was an increased drought risk, exacerbated by

groundwater depletion, which caused more frequent, intense, and lengthy droughts. These effects could risk critical facilities and infrastructure, primarily public works and water utility infrastructure within the City because they work directly to provide water resources for the City.

Potentially Vulnerable Community Lifelines

Water utilities are particularly vulnerable to drought conditions due to the direct impact on water availability and supply. Water utilities can be affected by drought through:

- Reduced Water Availability: The reduction in water availability directly impacts the amount of water that water utilities can draw from local sources.
- Lower Reservoir Levels: Lower reservoir levels can affect the ability to meet water demand during periods of high usage.
- Declining Groundwater Levels: Lower groundwater levels make it more challenging for utilities to extract water.
- Water Quality Challenges: Lower water levels can lead to higher concentrations of contaminants, minerals, and sediments in the available water sources, requiring more extensive and costly treatment processes.
- Increased Treatment Costs: Treating water from depleted or lower-quality sources during drought conditions may require additional treatment steps, technologies, or chemicals, leading to increased operational costs for water utilities.
- Competition for Water Resources: During droughts, there is increased competition for limited water resources among various users, including agriculture, industry, and households. Water utilities may face challenges in securing sufficient water supplies amid this heightened competition.
- Impact on Water Infrastructure: Reduced water flow in rivers and streams can expose water infrastructure, such as pipelines, to the risk of corrosion.
- Water Use Restrictions: To conserve water during droughts, authorities may implement water use restrictions and conservation measures. These restrictions can impact water utilities' revenue and their ability to meet customer demand.

The City Planning and Zoning Department has confirmed that there are no personal wells within the City of Alamogordo limits. However, at the time of this plan update, the city monitors and maintains the following water reservoirs and meters within the planning area.

Table 27: City of Alamogordo Water Reservoirs and Meters
Alamo Filter Plant
Alamo NaClO Storage
Alamo Springs - Atkinson Springs
70 West Pressure Reducing Station
Callahan Ground Storage Reservoir
Callahan Pressure Reducing Station
CM Yard Springs
Crockett Springs
Flinn Springs
Foot Hills Ground Storage reservoir
Fresnal Diversion 3

Table 27: City of Alamogordo Water Reservoirs and Meters
Fresnal Diversion 5
Fresnal Diversion6 - North Ditch Intake
Fresnal Sand Trap - Meter
Golf Booster Pump Station
Golf Ground Storage Reservoir
Golf NaCIO Storage
Golf Pressure Reducing Station
Golf Well T-814
Gordon Canyon Springs
Green Ground Storage reservoir - 5MG
Green NaCIO Storage
Hamilton Pressure Reducing Station
La Luz - Fresnal - Bonito Metering Station
La Luz - Fresnal Diversion Valve
La Luz Filter Plant
La Luz Fresnal Telemetry Repeater
La Luz NaCIO Storage
La Luz Open Storage Reservoir #1 North
La Luz Open Storage Reservoir #2 South
La Luz Open Storage Reservoir #3 East
La Luz Water Operations Administration Office
Las Lomas Pressure Reducing Station
Lower Alamo Booster Pump Station
Lower Alamo Ground Storage Reservoir
Lower Alamo Springs
Lower Heights Booster Pump Station
Lower Heights Ground Storage reservoir
Lower Maruche Springs
Lower Springer Springs
North Florida Pressure Reducing Station
Ocotillo Booster Pump Station
Ocotillo Ground Storage Reservoir
Ocotillo Pressure Reducing Station
Prather Booster Pump Station
Prather Ground Storage Reservoir
Prather NaCIO Storage
Prather Well 1 - T-33
Prather Well 2 T-33-S
Presto Pressure Reducing Station

Table 27: City of Alamogordo Water Reservoirs and Meters
Snow Smith Springs
South Florida Pressure Reducing Station
Springer Springs Meter
Upper Alamo Ground Storage Reservoir
Upper Alamo Springs
Upper Heights Ground Storage reservoir
Upper Maruche Springs
Upper Springer Springs
Well 2 - T-32-S-3
Well 3 - T-32-S-4
Well 4 - T-32-S-5
Well 5 - T-32-S-5
Well 6 - T-32-S-7
Well 7 - T-32-S-8
Well 8 - T-32-S-9
Well 9 T-32-S-10
Westside Booster Pump Station
Westside Elevate Storage Reservoir
Westside Ground Storage Reservoir

Source: *City of Alamogordo Planning and Zoning Department*

Should it be required to drill a private well deeper to accommodate for drought conditions impacting the level of the water table, on average, the cost to drill a private water well in the United States can range from $15 to $45 per foot. However, it's important to note that this is a general estimate, and actual costs can vary based on geological and hydrogeological conditions and well depth.

A complete list of critical facilities and infrastructure can be found in Appendix D - Critical Facilities and Infrastructure.

4.6.5c Land Use and Development

Two areas that affect Land Use and Development Trends concerning drought events are the impact of agriculture and water conservation. Droughts impacts 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 wildland fires. Combinations of low precipitation and unusually high temperatures could occur over several consecutive years. Intensified by such conditions, extreme wildland fires could break out throughout the planning area, increasing the need for water. Surrounding communities, also in drought conditions, could increase their demand for water supplies relied upon by the planning partnership, causing social and political conflicts. If such conditions persisted for several years, the economy of the City could experience declines, especially in water-intensive industries such as agriculture. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the City's economy and natural resources to include:

- Crop and livestock agriculture
- Municipal and industrial water supply
- Recreation/tourism

- Wildlife and wildlife habitat

Related to agriculture within the planning area, to show the unique and varied risk of drought in the planning area, the 2012 Census of Agriculture indicates that Otero County contained 486 farms, covering 1,223,746 acres of land. Agriculture product sales accounted for $14,635,000 in 2012. As of the 2017 Census of Agriculture, Otero County contains 473 farms, covering 1,019,246 acres of land, with agriculture sales accounting for $18,160,000. The most recent Census of Agriculture – 2022 indicates Otero County contains 467 farms, covering 867,162 acres with a market value of agriculture products sold of $24,666,000. If a severe drought affects Otero County, including the City of Alamogordo, the losses could be as much as $24,666,000 in the future. This number represents the total market value of agriculture products sold (crops and livestock) from the 2017 Census of Agriculture for Otero County.

Also, the Drought Risk Index score on the FEMA National Risk Index website states the drought expected annual loss score (representing the average economic loss in dollars resulting from natural hazards each year). The rating also represents a community's relative level of expected agriculture loss each year due to droughts compared to the rest of the United States. For Otero County, NM, which includes the City of Alamogordo, the expected loss of data related to drought is as follows:

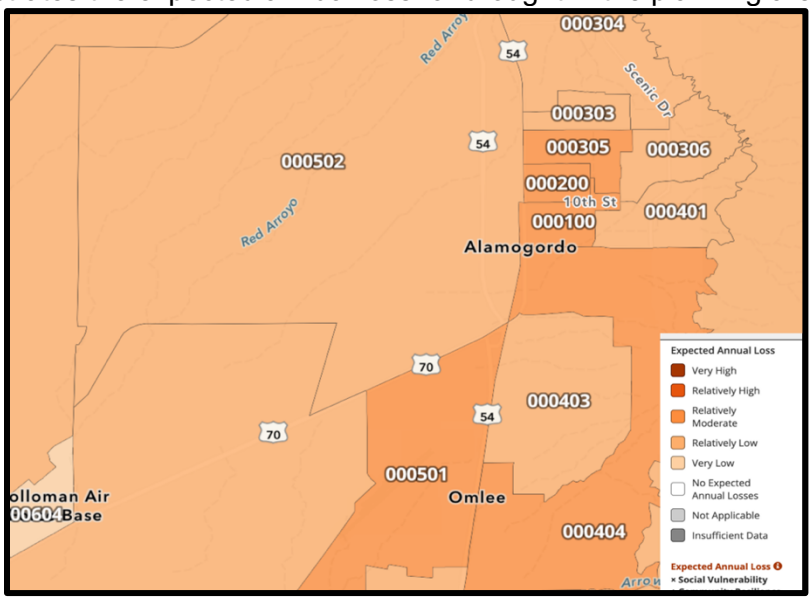
- Expected Annual Loss Score: 85.4 – Relatively Moderate
- Expected Annual Loss: $372K (note: expected annual loss is based on agriculture – crops only impact)
- Exposure: $7.5 M
- Frequency: 71.4 events per year
- Historic Loss Ratio: Relatively Moderate

Table 28: Otero County EAL Data for Drought

Jurisdiction	EAL Value	EAL Rating	Building Value	Population Equivalence	Agriculture Value
Otero County	$371,744	No rating	N/A	N/A	$371,744

Source: *FEMA NRI*
Note: The expected annual loss value is based on agriculture (crop) impacts which is why the EAL and Agriculture values are the same.

The following map illustrates the expected annual loss for drought in the planning area:



Source: *FEMA NRI*

The previous LHMP indicated that there were no significant land use and development projects focused on drought mitigation in City of Alamogordo. However, the following projects were dedicated towards drought mitigation in the previous plan. Mitigation Project Updates and Project Prioritization Tables for this plan update can be found in Section 6 – Mitigation Strategies.

- Alternate water source through reclaimed water
- Watershed thinning project

4.6.5d Jurisdiction Risk and Vulnerability

Drought itself poses no direct injury or death for the City of Alamogordo community. However, as mentioned in the previous LHMP (2019), the entire planning area is at risk. This also means that the secondary impacts from drought could harm the vulnerable populations within the planning area.

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all City residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 29: Drought Consequence Analysis

Subject	Potential Impacts
Impact on the Public	If the drought coincides with warmer months, vulnerable populations may face an increased risk of dehydration, death, heat-related illness, heat stroke. Lower quantities of water may also increase the likelihood of contamination due to higher concentrations of bacteria. During droughts, dry soils and wildfires increase the number of airborne particles, such as pollen and smoke, which can worsen chronic respiratory illnesses.
Impact on Responders	Reduced water availability would likely complicate firefighting efforts in urban and suburban areas where wildfire-fighting tactics such as chemical retardants and controlled burns are less suitable. Some fire suppression equipment requires a minimum level of water pressure to activate. If the drought coincides with warm months, first responders may face increased risk of heat-related injuries or death.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. While the expectation is minimal, this threat may impact an agency's ability to implement their continuity plan based on the hazard's potential to impact power, communications, or water outages. Critical life-saving activities and fire suppression will be directly impacted by these outages.
Delivery of Services	Droughts may impact the delivery of goods and services if there are shortages of raw materials.
Property, Facilities, and Infrastructure	Drought conditions may threaten levels or quality of municipal public water supplies or impact small communities and/or private potable water wells.
Impact on Environment	The potential of drought-related impacts could have significant impacts on supplies of animal feed, livestock, meat and dairy products, and processed grain products, and on crop production. Drought conditions may also increase the potential for fires. Drought is also associated with insect infestations, plant disease, wind erosion of soil, and decrease in levels of water produced by natural aquifers.

Table 29: Drought Consequence Analysis

Subject	Potential Impacts
Economic Conditions	The economic impacts from a drought could be significant. Droughts have the potential to drain local resource, which will have a significant fiscal impact on government.
Public Confidence in Governance	Droughts can adversely affect the public, first responders, infrastructure, agriculture, economy, and overall operations. Direct, effective, and timely response by all levels of government is required for public confidence in the state's governance, especially in recognizing and mitigating economic impacts of the drought.

At greater risk may be the vulnerable populations, including the especially young, the elderly, and those below the poverty level. Hazard occurrences can exacerbate existing vulnerabilities and create new challenges. Vulnerable populations may have pre-existing health conditions that make them more susceptible to heat-related illnesses and dehydration, both of which can be exacerbated during droughts. Populations on fixed incomes and with limited resources may face difficulties in adapting their homes to withstand hazard conditions or may lack financial resources to cope with the increased costs of energy and water.

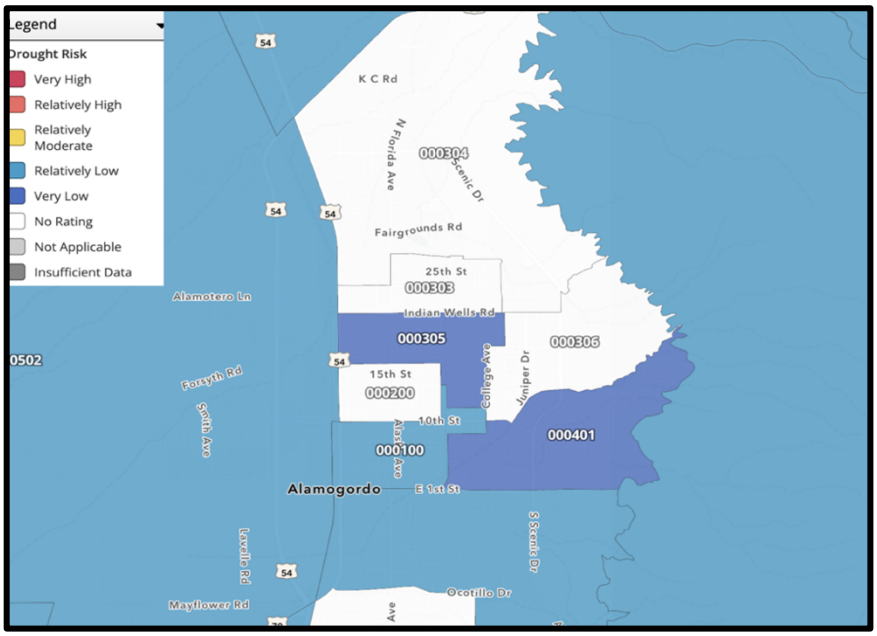
The following table details potentially vulnerable populations for participating jurisdictions within Alamogordo:

Table 30: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2022)	Population Over 65 (2022)	Estimated People in Poverty (2022)
Alamogordo	1,823	7,689	5,592
Data Source: *U.S. Census Bureau – 2022 ACS 5-Year Estimate Subject Tables*			

Using the FEMA NRI, which consists of three input components (expected annual loss, social vulnerability, and community resilience), the following map indicates the potential risk to participating jurisdictions from drought.

Map 20: FEMA NRI Drought Risk, Otero County, NM



Source: *FEMA NRI*

The following table indicates the FEMA NRI and EAL analysis for drought for Otero County which includes the City of Alamogordo. ***Note: No Rating indicates there is an NRI component with a score of 0, and the Risk Index score cannot be calculated for that hazard or community.***

Table 31: Otero County FEMA EAL and NRI for Drought

Jurisdiction	EAL Value	Risk Index	Social Vulnerability	Community Resilience
Otero County	$347,402	Relatively Moderate	Very High	Very Low

Source*: FEMA NRI*

4.6.6 Repetitive Loss Structures

Not Applicable.

4.6.7 HAZUS® Models

Not Applicable.

4.7 Flooding

4.7.1 Hazard Description

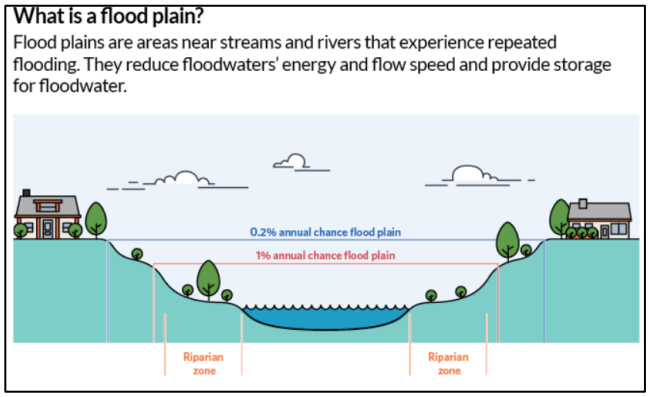


Flooding, as defined by the National Weather Service (NWS), is the rising and overflowing of a body of water onto normally dry land. It can result from any overflow of inland or tidal waters, or an unusual accumulation or runoff of surface waters from any source. Flooding is loosely classified as inland, riverine, or coastal.

Inland flooding, also known as "urban flooding" or "flash flooding," can be caused by intense, short-term rain or by moderate rainfall over several days, which can overwhelm existing drainage infrastructure. Other factors that affect the dynamics of this type of flood include slope, width, and vegetation in place along the watercourse banks. The slope that a flash flood traverse has a definite relationship to the overall speed in which the water will travel. The incline on which the water moves affects the width of the flooding area. Generally, the faster the water moves, the narrower that channel will be created, since the water digs the channel deeper as it flows. When water flows over shallower slope, it tends to spread out more, decreasing its potential to cause mass damage but still considered dangerous. Finally, the type of vegetation located along the flood's path can prevent further erosion of the channel banks. A structure that lies along a flood channel with no surrounding vegetation is at risk of having its foundation undercut, which can cause structural damage, or in some cases, a building's complete collapse. Riverine or alluvial, flooding occurs when excessive rainfall over an extended period of time causes a river to exceed its capacity. Typical causes of flooding, both inland and riverine, include tropical cyclonic systems, frontal systems, and isolated thunderstorms combined with other environmental variables such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. The rate of onset and duration of flooding events depends on the type of flooding (typical flood or flash flood). The spatial extent of a flooding event depends on the amount of water overflowing but can usually be mapped because of existing floodplains.

A floodplain is a flat or nearly flat land adjacent to a river or stream that experiences occasional or periodic flooding environment, topography, ground saturation, soil types, Floodplains, or Special Flood Hazard Areas (SFHAs), are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. The sediments (rock and debris) that build up over time from the floodplain's floor. Floodplains also include a floodway, which consists of the water channel and adjacent areas that carry flood flows and the flood fringe, which are areas covered by the flood but do not experience a strong current.

Figure 10: What is a Floodplain Diagram



Source: Pew Trust

In its common usage, floodplains refer to areas inundated by the 100-year flood, i.e., the flood that has a 1% chance of being equaled or exceeded in any given year and the 500-year flood, i.e., the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters, and businesses and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance and flood insurance.

The adverse impacts of flooding can include structural damage; agricultural crop loss; the death of livestock; loss of access to critical facilities due to roads being washed out or overtopped; unsanitary conditions resulting from materials such as dirt, oil, solvents, and chemicals being deposited during the recession; infestations of disease-carrying mosquitoes; mold and mildew, which pose a severe health risk to small children and the elderly; and temporary backwater effects in sewers and drainage systems. Raw sewage is a breeding ground for bacteria, such as E. coli and other disease-causing agents. A boil order may need to be issued to protect people and animals from contaminated water.

Of equal concern is the long-term psychological effect that flooding has on the people impacted by it. They must contend with the loss of life, property, livelihood, etc., as they cope with the aftermath. The clean-up can take months. The cost to restore a home may be too much, especially for the unprepared or uninsured. Plus, there is the looming fear that it may flood again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Unfortunately, the risks from future floods are significant, given expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and climate change. Because of this, flooding may intensify in many regions across the country, even in areas where total precipitation is projected to decline.

According to the FEMA, water, and flooding account for about 40% of the Presidential declared disasters in the United States.

4.7.2 Location & Extent

A variety of factors affect the severity of flash and riverine flooding within the planning area. These include topography, weather characteristics, development, and geology. Intense flooding will create havoc in any jurisdiction affected. The predicative magnitude of flash and riverine floods varies greatly.

Flash Flooding

Flash flooding occurs during heavy or extended periods of rain, generally when the ground cannot rapidly absorb the water. Factors that can contribute to the severity of flash flooding include rainfall intensity, duration, drainage conditions, and ground conditions (paved or unpaved). Flash floods are particularly dangerous to people and property, as six inches of moving water can knock a person down, and two feet can lift a vehicle. As there is often little warning of a flash flood event, which is why they are the leading cause of most flood fatalities. This type of flooding can be very difficult to predict and can occur with little or no warning. In many cases, flash floods can move through an area mile from where rain has occurred, thereby increasing the danger to persons within the flood's path.

Riverine Flooding

Riverine flooding, a type of flooding that refers to the overflow of water from a river or a stream onto adjacent land areas, can have a significant impact. This type of flooding occurs when the water level in a river or stream rises significantly and exceeds its banks, inundating the surrounding areas. The severity of riverine flooding can be influenced by the amount and intensity of rainfall in the watershed, the size, shape, and slope of the river or stream channel, and the presence of dams on the river system. The potential for widespread impact is clear, underscoring the scale and gravity of the issue.

Otero County is located in south-central New Mexico. The Flood Insurance Study of Otero County, NM, indicates that the dominant landscape feature in Otero County is the Tularosa Basin, which is a graben basin and part of the Rio Grande Rift zone. The Tularosa Basin is a hydrologically closed basin that extends 150 miles north to south and up to 60 miles east to west. Surface water that does not evaporate or soak into the ground eventually accumulates at playas (intermittent lakes), the largest of which is Lake Lucero at the southwest end of the famous White Sands National Monument. To the north of Lake Lucero are extensive alkali flats, which produce additional gypsum for White Sands today. The Sacramento Mountains surround the basin to the east and the San Andres Mountains to the west. Both mountain ranges are almost entirely comprised of limestone. Gypsum deposits eroded from the mountains and transported to the basin are the primary source of the gypsum sand that makes up the dunes in White Sands National Monument.

The Otero County, NM Hazard Mitigation Plan (2011) states that the County is especially susceptible to flash flooding along mountain streams in the eastern portions of the County, with
flooding in adjacent urbanized areas where impervious surfaces cover the ground. During the summer (May through August), thunderstorm frequency in certain parts of New Mexico is among the highest in the nation. Excessive moisture during the summer can lead to significant volume runoffs enhanced by the terrain. Flash floods experienced in Otero County are often associated with the summer monsoon season. Approximately 60% of all flash floods in the state occur in July and August. The monsoon season generally dissipates in the northern part of the state in early September.

The City of Alamogordo, a city at the foot of the Sacramento Mountains, is particularly vulnerable to the flood path of several arroyos. It is built on a series of alluvial fans formed by drainage from these arroyos. Four major and several smaller watersheds contribute to flood flow. From the north to the south, the major watersheds are the Dry, Beeman, Marble, and Alamo Canyons. The Beeman and Marble Canyon alluvial fans flow into the central part of the City. Most flash flooding in the City of Alamogordo is caused by a very dynamic event in which a large volume of water moves through an area at high velocity in a very short time. As rainwater runs into small arroyos, it begins to collect. As these arroyos merge, the amount of water, velocity, and force increase.

FEMA, through the Risk Mapping, Assessment, and Planning (Risk MAP) program, FEMA works with partners to assess and map these flood risks (Flood Insurance Rate Maps (FIRMs). As an additional benefit, the FIRMs serve as the basis for National Flood Insurance Program (NFIP) regulations and flood insurance purchase requirements.

Special Flood Hazard Areas (SFHAs) are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. The FIRM depicts the SFHA, including the 1%-annual-chance flood. These areas are labeled on the map as zone, as explained in the following table:

The following table details FEMA's FIRM flood zone classifications.

Table 32: Flood Zone Classifications

Zone	Description
A	The 1%-annual-chance or base floodplain. There are six (6) types of A Zones.
AE	The base floodplain where base flood elevations are provided.
AH	Shallow flooding base floodplain. BFEs are provided.
AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths are provided.

Table 32: Flood Zone Classifications

Zone	Description
AR	The base floodplain that results from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 1%-annual-chance or greater level of flood protection.
A99	Area to be protected from base flood by levees or Federal Flood Protection Systems under construction. BFEs are not determined.
B or Shaded X	Areas between the limits of the base flood and the 0.2% annual-chance (or 500-year) flood.
C or Unshaded X	Areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2% annual-chance flood
Data Source: *FEMA*	

At the time of this plan update, the City of Alamogordo Planning and Zoning Department "Understanding the SFHA in the City" document mentions that although Alamogordo is in the desert, a significant portion (~50%) of the city is located within the SFHA. The city contains AH, AE, A, AO, and X flood zones.

The following tables provide information related to the peak discharges included in the Otero County Flood Insurance Study, which includes the City of Alamogordo (November 4, 2015) – Summary of Discharges. Flood depth grid mapping was not available. Regarding the extent or range of magnitude, floods can vary significantly in the planning area, from localized drainage to dangerous flash floods with significant depths and high velocities.

Note: *The Flood Insurance Study indicates Otero County, including the City of Alamogordo indicates that in the absence of stream gaging stations and associated data, regional frequency curves for peak discharges and flood volumes were constructed using Snyder's synthetic unit hydrograph procedures (Reference 13) and rainfall frequency duration data (Reference 14). These analyses followed recommended procedures outlined by the Water Resources Council (Reference 15). The USACE HEC-1 computer program (Reference 16) was used to develop discharge rates. Discharge rates computed by the HEC-1 program were plotted on log-probability paper to develop frequency curves. Rainfall data used for the HEC-1 program were developed from a report prepared by the National Weather Service (NWS, Reference 17). Discharges for the 0.2-percent annual flood were determined by straight-line extrapolation of a single-log graph of flood discharges computed for frequencies up to the 1-percent annual flood. Because of the alluvial fan flood flow, there are numerous shifts in flows among all the channels; therefore, the peak discharges are often attenuated in the downstream direction.*

Table 3 -- Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
BEEMAN CANYON CREEK					
3350 ft downstream of Scenic Dr at the Sports Complex	2.62	*	*	2,380	*
CHEROKEE BILL CANYON					
At Confluence with Rio Ruidoso (downstream of county boundary)	47.00	300	1,400	1,900	2,800
FLOW PATH #1					
Cross Section I	13.30	1,950	4,425	5,730	10,000
Cross Section E[1]	20.00	1,950	2,900	2,900	2,900
Cross Section A[2]	*	170	170	170	170
FLOW PATH #2					
Cross Section U	*	150	290	380	610
Cross Section S	1.50	425	835	1,090	1,600
Cross Section Q	1.80	885	1,745	2,270	2,270
Cross Section O	2.30	450	450	450	450
Cross Section C	2.70	860	1,195	1,410	1,950
Cross Section B	3.00	1,140	1,730	2,105	3,050
Cross Section A	*	1,315	2,070	2,545	3,760
FLOW PATH #3					
Cross Section AC	*	525	1,510	2,115	2,200
At Station 8505[3]	0.60	1,070	1,760	2,410	3,600
Cross Section O	*	540	540	540	540
Cross Section M	1.10	910	910	910	910
Cross Section I	*	1,100	5,140	5,590	7,900
Cross Section H	*	1,100	4,300	4,390	4,500
Cross Section D	*	1,100	4,800	4,890	5,000

*Undetermined.
[1] Flows above 2,900 cfs for the 2-, 1- and 0.2% annual chance flood flow southwesterly toward Flow Path #14.
[2] Flows in excess of 170 cfs flow southwesterly toward Flow Path #14.
[3] Feet above downstream of Limit of Detailed Study

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #4					
Cross Section S	*	100	100	100	100
Cross Section O	0.30	450	615	675	2,590
Cross Section N	*	815	1,115	1,220	1,500
Cross Section L	0.80	1,135	1,350	1,350	1,350
At Station 2890[1]	1.10	1,650	1,650	1,650	1,650
Cross Section AC	*	700	700	700	700
FLOW PATH #5					
Cross Section AW	3.40	1,515	3,130	4,060	6,900
Cross Section AT	*	1,515	2,450	2,450	2,450
Cross Section AQ	*	1,515	3,130	3,800	3,800
Cross Section AP	*	3,200	3,200	3,200	3,200
Cross Section AN	*	2,400	2,400	2,400	2,400
At Station 15980[2]	*	1,500	1,500	1,500	150
Cross Section AG	*	1,400	1,400	1,400	1,400
At Station 14000[2]	*	1,900	2,500	3,050	4,800
Cross Section AD	*	500	500	500	500
Cross Section Y	3.70	2,600	3,200	3,750	4,950
Cross Section X	*	3,690	4,900	4,900	4,900
Cross Section U	*	3,100	3,100	3,100	3,100
At Station 11540[2]	*	2,250	2,250	2,250	2,250
At Station 9270[2]	4.40	1,440	1,640	1,765	2,025
At Station 7630[2]	*	400	510	550	630
Cross Section B	4.90	4,400	6,550	7,950	11,000
Cross Section A	*	6,700	12,210	15,680	25,000

*Undetermined.
[1] Feet above confluence with Flow Path #5
[2] Feet above downstream of Limit of Detailed Study

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #6					
Cross Section P	*	250	500	645	1,100
Cross Section N	*	250	360	360	360
Cross Section K	*	250	300	300	300
Cross Section G	*	1,910	3,230	3,815	6,160
Cross Section F	*	200	200	200	200
Cross Section E	*	100	100	100	100
At Station 1660 [1]	0.50	200	200	200	200
Cross Section A	0.90	500	1,100	1,650	3,400
FLOW PATH #7					
Cross Section R	3.60	1,800	3,670	4,750	8,000
Cross Section Q	*	300	1,550	1,750	3,500
Cross Section P	*	300	1,550	1,300	1,300
Cross Section O	*	300	1,550	1,200	1,200
Cross Section N	*	300	900	900	900
Cross Section M	3.70	500	1,100	1,650	3,400
At Station 470 [2]	*	500	500	500	500
Cross Section O	*	2,500	2,500	2,500	2,500
FLOW PATH #8					
Cross Section I	*	625	1,280	1,660	2,760
Cross Section D	2.30	1,090	2,225	2,885	4,800
FLOW PATH #9					
Cross Section K	*	1,450	1,670	1,780	2,040
Cross Section F	*	1,450	1,640	1,765	2,025
FLOW PATH #10					
Cross Section J	*	1,130	1,250	1,320	1,460
Cross Section H	*	1,130	1,250	1,320	1,400
Cross Section D	*	1,010	1,130	1,215	1,395

*Undetermined.
[1] Feet above confluence with Flow Path #7
[2] Feet above confluence with Flow Path #5

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #11					
Cross Section H	*	980	980	980	980
At Station 3435[1]	*	535	535	535	535
Cross Section D	*	1,500	1,500	1,500	1,500
Cross Section C	*	800	800	800	800
Cross Section A	*	2,150	2,440	2,565	2,825
FLOW PATH #12[2]					
Cross Section V	12.40	0	185	315	830
Cross Section U	*	0	185	310	825
At Station 12130 [3]	*	0	180	310	815
At Station 11570 [3]	*	0	180	305	800
Cross Section O	*	0	1,230	1,350	8,000
Cross Section M	*	0	1,215	1,335	7,655
Cross Section L	*	0	2,745	4,870	11,995
Cross Section K	*	0	2,665	4,720	11,480
Cross Section I	*	0	2,530	4,480	10,910
Cross Section G	*	0	2,350	4,175	10,285
At Station 20[3]	13.00	0	2,350	2,350	2,350
FLOW PATH #13					
Cross Section E	3.40	0	4,200	4,600	6,800
Cross Section C	*	170	4,390	4,790	6,990
Cross Section A	*	1,100	5,140	5,590	7,900
FLOW PATH #14					
Cross Section E	*	815	1,170	1,200	1,200
Cross Section D	1.60	950	1,365	1,410	1,470
Cross Section C	*	950	1,895	3,660	9,300
Cross Section B	*	0	500	500	500
At Confluence with Flow Path #3	*	1,100	4,800	4,890	5,000

*Undetermined.
[1] Feet above confluence with Flow Path #9
[2] Alamo Canyon drainage area divided equally between Flow Paths #12 & #16
[3] Feet above Union Pacific Railroad

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #15[1]					
Cross Section C	*	580	1,180	1,540	2,540
At Station 1520[2]	*	795	1,620	2,105	3,500
Cross Section A	*	1,090	2,225	2,885	4,800
FLOW PATH #16[3]					
Cross Section Y	12.40	495	6,200	8,650	17,000
Cross Section X	*	495	6,195	8,640	16,990
Cross Section W	*	490	6,185	8,635	16,965
Cross Section V	*	490	6,000	8,320	16,135
Cross Section P	*	480	5,895	8,200	15,945
Cross Section O	*	475	5,795	8,080	15,745
Cross Section M	*	465	5,690	7,950	15,505
Cross Section I	*	460	4,555	6,770	8,000
Cross Section H	*	445	4,285	6,355	7,410
Cross Section G	*	440	2,650	2,650	2,650
At Station 4530[4]	*	430	2,515	2,515	2,515
Cross Section F	*	425	2,420	2,420	2,420
Cross Section E	0.60	420	1,000	1,500	2,500
Cross Section C	1.20	420	1,570	1,570	1,570
FLOW PATH #17					
Cross Section Y	1.30	555	1,140	1,490	2,500
Cross Section Q	*	555	700	700	700
Cross Section M	*	340	340	340	340
FLOW PATH #18					
At Station 14750[5]	*	340	540	700	1,190
At Station 10550[5]	*	495	1,050	1,350	2,300
At Station 25410[5]	2.00	1,005	5,550	5,850	6,800
FLOW PATH #19					
Cross Section G	*	590	**	**	**
At Station 4600 [4]	*	1,440	**	**	**

*Undetermined.
**See Flow Path #23
[1] Drainage Area included in that shown for Flow Path #8
[2] Feet above confluence with Flow Path #8
[3] Alamo Canyon drainage area divided equally between Flow Paths #12 & #16
[4] Feet above Union Pacific Railroad
[5] Feet above confluence with Flow Path #30

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #20					
Cross Section D	0.30	1,650	**	**	**
FLOW PATH #21					
Cross Section E	0.30	1,985	**	**	**
FLOW PATH #22					
Cross Section E	0.30	200	1,835	2,005	4,330
FLOW PATH #23					
Cross Section F	*	***	5,550	7,250	12,850
Cross Section E	*	***	6,075	8,985	18,250
Cross Section D	0.30	***	8,725	11,635	20,900
FLOW PATH #24					
Cross Section G	*	0	0	0	1,750
FLOW PATH #25					
Cross Section E	*	50	3,100	4,800	10,400
Cross Section D	*	850	3,940	5,600	11,200
Cross Section C	*	1,750	4,800	6,500	12,100
Cross Section A	*	1,850	4,900	6,600	12,200
FLOW PATH #26					
Cross Section C	*	1,710	3,170	3,900	6,700
FLOW PATH #27					
Cross Section F	*	1,500	2,520	3,000	4,500
FLOW PATH #28[1]					
Cross Section D	*	545	1,115	1,440	2,400
Cross Section A	*	795	1,620	2,105	3,500

*Undetermined.
**See Flow Path #23
***See Flow Paths #19, #20 & #21
[1] Drainage Area included in that shown for Flow Path #8

Table 3 -- Summary of Discharges (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
FLOW PATH #29					
Cross Section D	*	540	1,220	1,880	3,060
At Station 4140[1]	*	1,000	1,970	2,740	4,240
Cross Section C	0.50	1,810	3,545	3,990	8,780
FLOW PATH #30					
Cross Section Q	*	510	6,130	8,470	15,715
At Station 4770[2]	*	510	4,500	4,500	6,100
Cross Section A	1.60	850	4,840	4,840	6,440
FLOW PATH #31					
Cross Section F	*	2,635	4,505	6,340	10,975
At Station 8430[2]	*	3,100	4,970	6,805	11,440
Cross Section E	*	615	5,595	7,070	9,460
At Station 5810[2]	*	1,315	6,295	7,770	10,160
Cross Section D	*	1,315	4,500	4,500	4,500
Cross Section A	0.40	3,555	4,500	4,500	4,500
FLOW PATH #32					
Cross Section H	1.50	400	1,630	3,970	9,615
FLOW PATH #33					
Cross Section F	0.30	195	770	1,195	2,490
At Station 4200[2]	0.70	197	10,375	12,100	15,010
HAY RIVER					
Upstream of Riata Rd	25.78	*	*	7,046	*
HAY RIVER TRIBUTARY NO. 1					
Upstream of Riata Rd	0.99	*	*	404	*

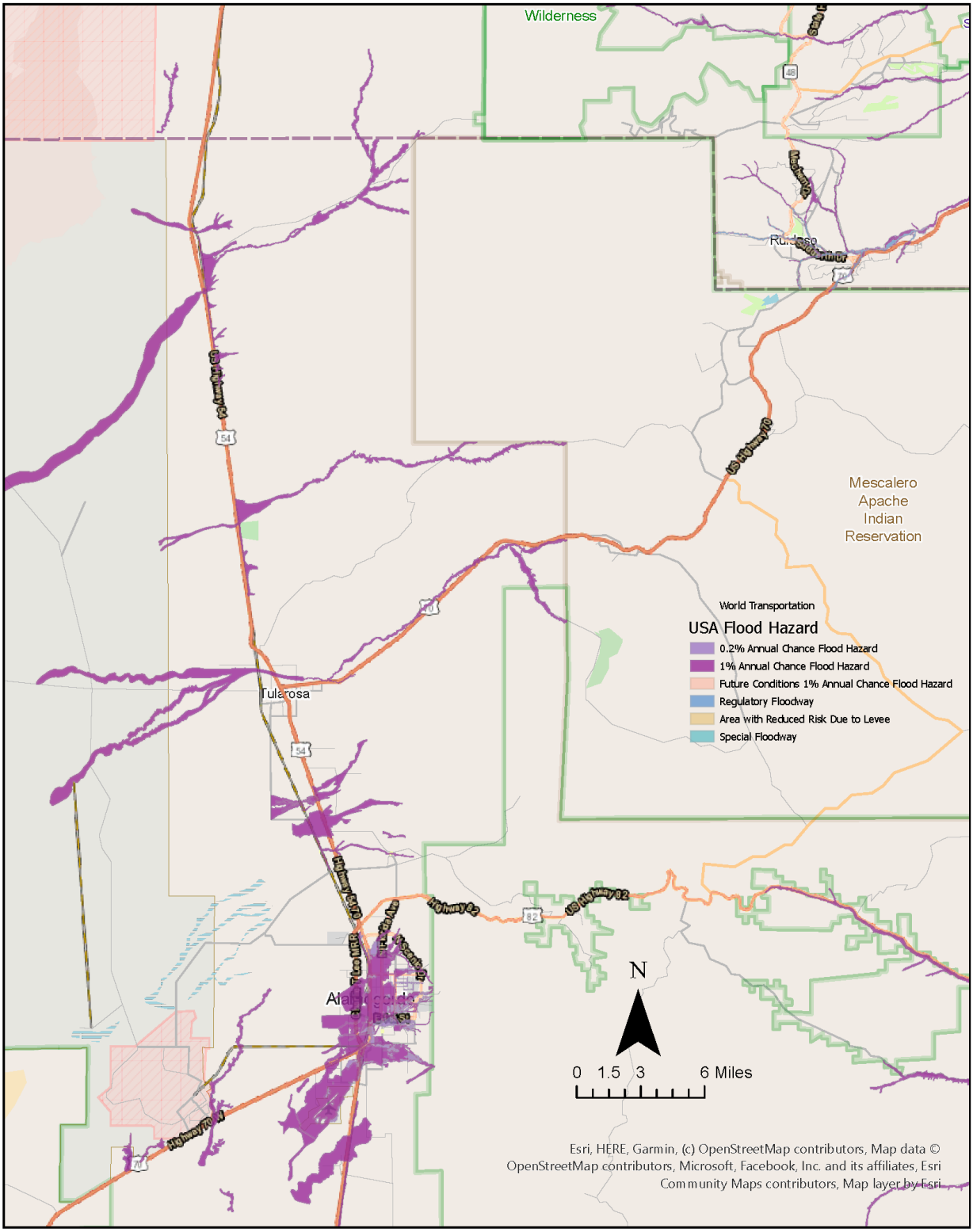
*Undetermined
[1] Feet above Union Pacific Railroad ditch and extension of 16th Street
[2] Feet above downstream of Limit of Detailed Study

20

***Source**: FEMA Flood Insurance Study, Otero County, NM and Incorporated Areas, November 4, 2015*

The following maps use FEMA FIRM data to depict the location of identified flood zones within the City of Alamogordo. All of Otero County, including the City of Alamogordo, has FEMA DFIRM Maps, which can be found in Appendix E: FEMA FIRM Maps (Declaration Maps and FEMA FIRM Maps).

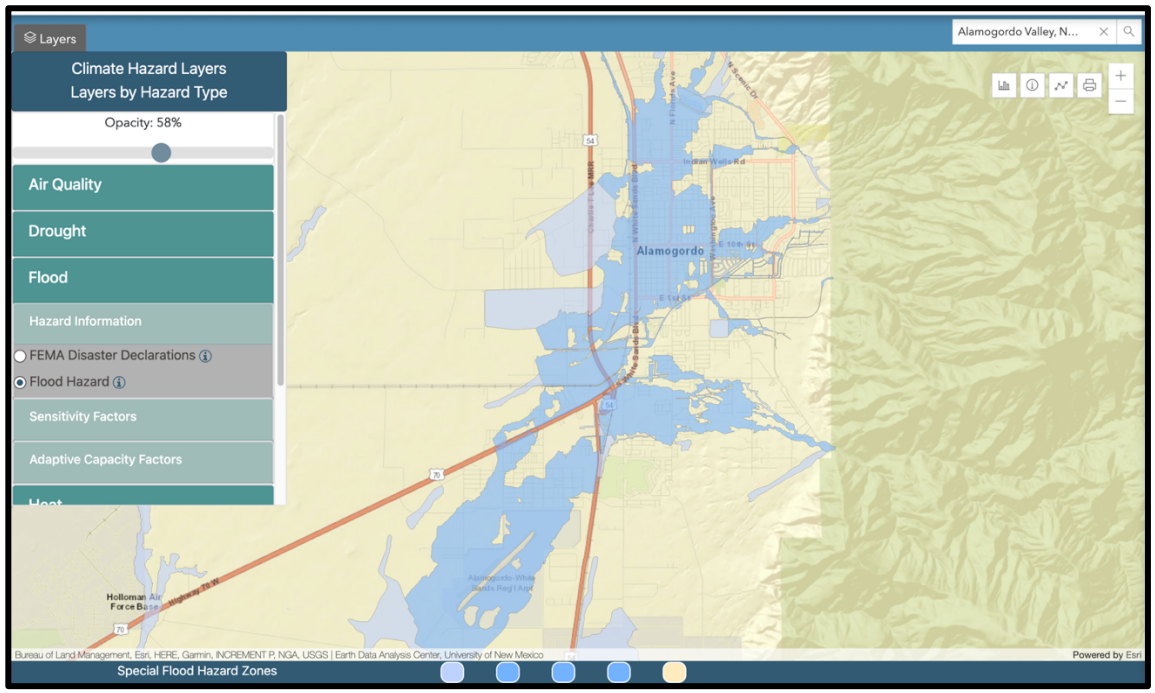
Map 21: City of Alamogordo, NM Flood Map



Alamogordo Floodplain

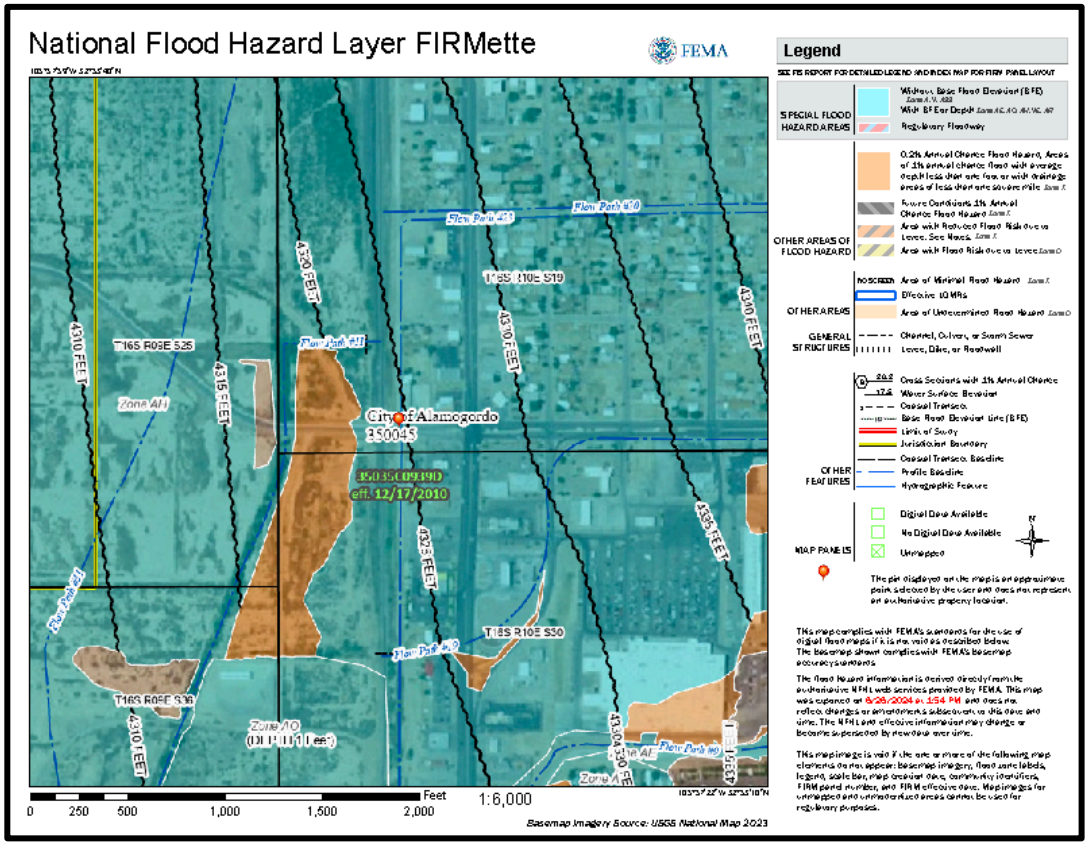
Source: City of Alamogordo, NM Utilities Department

Map 22: City of Alamogordo Flood Zone Map with SFHA Boundary



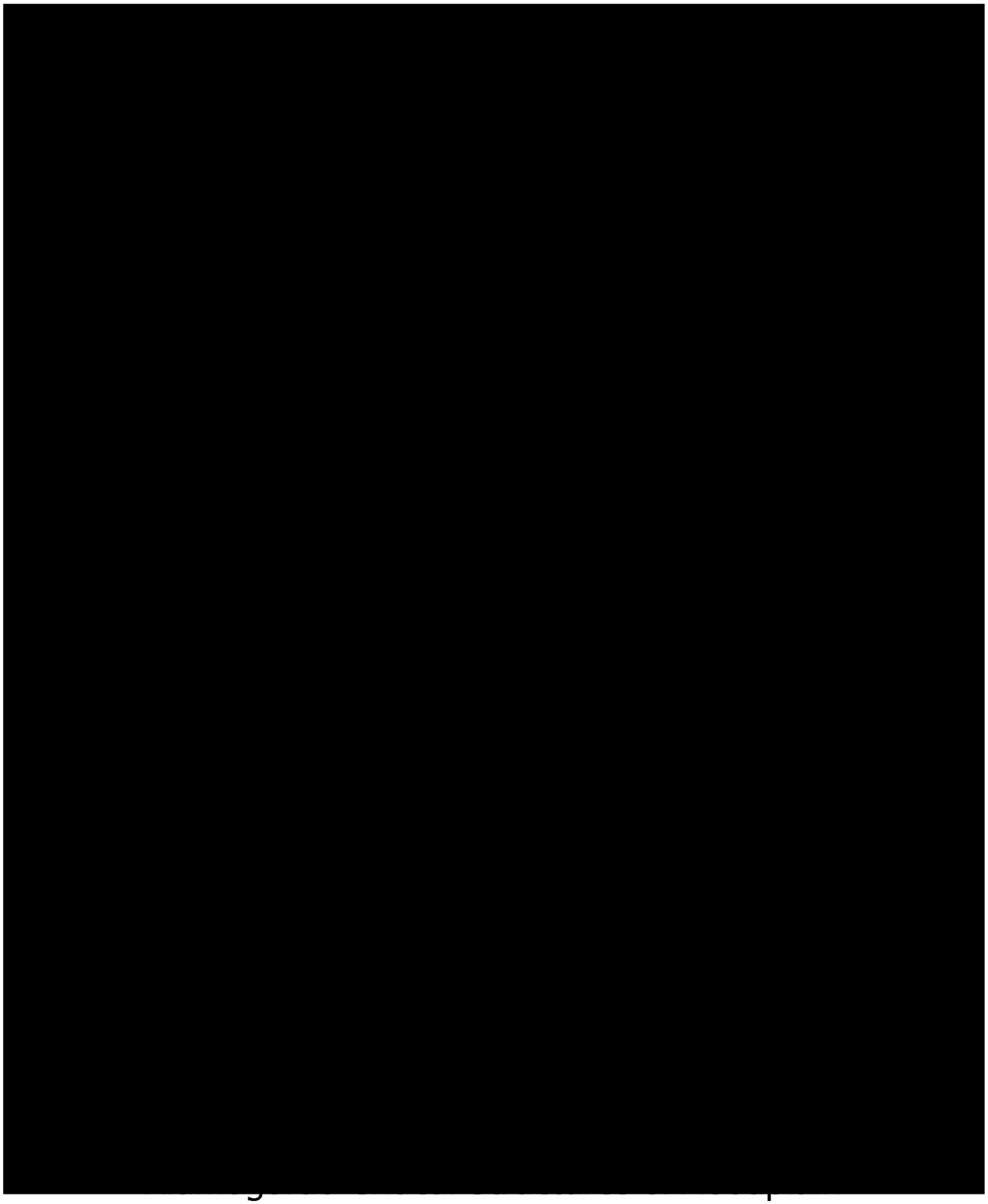
Source: *New Mexico Climate Risk Map*

Map 23: FEMA FIRM Map, City of Alamogordo, NM



Source: *FEMA Flood Map Services*

Map 24: City of Alamogordo, NM Critical Facilities map with Floodplain Layer



***Source**: City of Alamogordo Utilities Department*

4.7.3 Previous Occurrences

The City of Alamogordo has been impacted by flooding in the past. The Army Corp of Engineers Flood Risk Management Fact Sheet (May 4, 2012) states the City of Alamogordo has been flooded 13 times since 1935. Two major floods in 2006, considered 100-year and 250-year events, caused an estimated $7,000,000 in damages to residences, businesses and public infrastructure. The estimated total value of property in the floodplain is $618,000,000. The previous LHMP (2019) indicated that NOAA had recorded one (1) riverine flood and 88 flash flood events that impacted Otero County, which includes the City of Alamogordo. These events recorded the following:

- **Riverine Flood - 1 impact that recorded no loss of life or injury and caused $25,000 in property damage**
- **Flash Flood - 88 impacts recorded no loss of life or injury and caused $3.525 million in property damage.**

Recently, the City experienced flash flooding due to monsoon rainfall in 2022. The Alamogordo Daily News (August 2, 2022), reported that monsoon rains and isolated thunderstorms that struck Alamogordo the last few weeks resulted in flood water and debris-clogged roads, highlighting the need for local officials to address drainage in the city in August 2022.

To gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. From January 1, 2000, to March 31, 2024, NOAA/NCEI recorded 55 flood (flood/flash flood) events in Otero County, where the City of Alamogordo is located. The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of the flood experienced by Otero County, including the jurisdictions located within, and is the only data source accessible.

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
Otero County	6/1/00	Flash Flood	0	0	$50,000.00	A thunderstorm dropped heavy rain on an area scarred from a recent forest fire. Mudslides, ash and debris covered roads and damaged some buildings around Sacramento.
Otero County	6/28/00	Flash Flood	0	0	$0.00	Heavy rain resulted in a 4 foot wall of water descending down a canyon within a burn area.
Otero County	7/31/01	Flash Flood	0	0	$10,000.00	A cluster of thunderstorms dropped an estimated 3 inches of rain on the western Sacramento Mountains between Alamogordo and Cloudcroft. Mudslides resulted and caused the closure of US Highway 82 for at least two hours.
Otero County	9/12/02	Flash Flood	0	0	$40,000.00	Heavy rains resulted in numerous road closures in the southern Sacramento Mountains, as well as Highway 54 between Alamogordo and Tularosa. Highway 82 between Alamogordo and Cloudcroft was impassible due to rock slides.

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
Otero County	8/9/05	Flash Flood	0	0	$0.00	The public reported water entering several homes along U.S. Highway 82 between Alamogordo and Cloudcroft.
Otero County	6/22/06	Flash Flood	0	0	$1,300,000.00	Strong thunderstorms developed over the southern Sacramento Mountains and along the eastern heights of Alamogordo. One storm in particular dropped about an inch and a half of rain in 40 minutes over Marble Canyon , which drains into eastern Alamogordo. Other storms added heavy rain and several inches of drifting small hail to that section of town. Strong winds blew shingles off houses, but flooding was the main problem. Roads along the eastern heights turned into raging torrents which flowed westward into the center of town. Mud flowed into numerous houses and several vehicles were swept into arroyos. A gas main was broken which led to the evacuation of residents in the vicinity. The state of NM put the damage total at about $1.3 million.
Otero County	8/1/06	Flash Flood	0	0	$400,000.00	Several thunderstorms with heavy rains moved southward across the southern Sacramento Mountains, dropping 2 to 3 inches of rain. Flash flooding occurred from Cloudcroft to Timberon, with many roads washed out and structures damaged in the Timberon area.
Otero County	8/4/06	Flash Flood	0	0	$50,000.00	Runoff from heavy rain above Alamo Canyon eventually flooded Boles Acres.
Otero County	8/6/06	Flash Flood	0	0	$50,000.00	Thunderstorms dropped heavy rain on Marble Canyon, with the runoff flooding eastern Alamogordo and Boles Acres downstream.
Otero County	8/13/06	Flash Flood	0	0	$300,000.00	A stationary thunderstorm dropped several inches of rain on Mayhill, with some residents and area ranchers reporting up to 5 inches in an hour. This resulted in a wall of water 9 to 10 feet high down the Rio Penasco River. Extensive flash flooding

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						closed Highway 82, and damaged roads, bridges and homes.
Otero county	8/14/06	Flash Flood	0	0	$0.00	Significant street flooding and arroyo flooding occurred in and around Alamogordo.
Otero County	8/16/06	Flash Flood	0	0	$0.00	An arroyo overflowed with water covering a road in La luz.
Otero County	8/16/06	Flash Flood	0	0	$600,000.00	Heavy rainfall along the western slopes of the southern Sacramento Mountains led to excessive runoff and major flooding in Alamogordo and Boles Acres. Numerous roads throughout the area were closed, covered with water and debris. There were also some rescues of people trapped in their homes.
Otero County	8/22/06	Flash Flood	0	0	$0.00	Highway 244 was closed and impassable northeast of Cloudcroft. Multiple rockslides were reported on US 82 east of Cloudcroft. Tribal police reported mud and rockslides on BIA Road 110 in South Fork Tularosa Canyon. A wall of water 3 to 4 feet high moved down James Canyon toward Mayhill, forcing the evacuation of 100 people from an RV park.
Otero County	9/4/06	Flash Flood	0	0	$0.00	Days of persistent rainfall led to water running over the spillway at Mescalero Dam which flooded Carrizo Creek.
Otero County	7/11/07	Flash Flood	0	0	$0.00	Some of the roads from Boles Acres (south of Alamogordo) to Dog Canyon were under water. Dog Canyon Road was temporarily closed to due flooded low water crossings. A weak upper disturbance moved into a very moist an unstable air mass over southern New Mexico.
Otero County	7/9/08	Flash Flood	0	0	$20,000.00	Upslope conditions within a tropical air mass resulted in 6 to 10 inches of rainfall within 6 hours. The area is remote, so the only effects were a ranch under water (according to the rancher) and a couple of highways flooded. Dark Ridge Observatory near Weed reported more than 6 inches of

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						rain from the event. A weak steering flow within a very moist and unstable air mass resulted in a slow-moving thunderstorm in southern New Mexico which dumped very heavy rain.
Otero County	7/17/08	Flash Flood	0	0	$200,000.00	Rainfall amounts of up to 2 inches fell on the South Tularosa Fire burn scar above Mescalero, resulting in excessive runoff. Logs washed on to Route 10, and much debris blocked residences. A fish hatchery was destroyed which killed all the fish. Though the air mass was not quite as moist through a deep layer as earlier in the month, there was still sufficient moisture for heavy rainfall amounts. The addition of a dry layer in the mid-levels brought a threat of damaging winds and marginally large hail.
Otero County	7/27/08	Flash Flood	0	0	$100,000.00	Moisture associated with the remnants of Dolly resulted in very heavy rain over the South Tularosa Canyon Fire burn scar. Flood waters over-topped containment ponds leading to a widespread flash flood event. Parts of U.S. 70 were closed, the road to the Mescalero Fire Station was washed out, and numerous secondary roads were closed due to high water. Two dams failed at Mud Canyon. Several buildings were affected by the flood waters.
Otero County	6/23/09	Flash Flood	0	0	$200,000.00	The remnants of Hurricane Dolly moved northwestward into far west Texas, moving directly over west El Paso, then curved north and northeastward into Otero County New Mexico. Moisture from this system spread over most of southern New Mexico and lingered another 36 hours. Storm totals from early the 26th into the 27th peaked at more than 4 inches in the Santa Teresa Country Club area. Slow moving thunderstorms dropped nearly 3 inches of rain in the Cloudcroft area, which led to flash flooding in and near the town. Water was over two feet

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						deep in parts of Cloudcroft, resulting in some apartments flooded. Rockslides also occurred along Highway 82 in the area. High pressure aloft was centered over central Texas, which placed southern New Mexico under a moist southeast flow. It was an early start to the North American monsoon in this part of the country.
Otero County	6/23/09	Flash Flood	0	0	$0.00	Street flooding occurred in much of Alamogordo. High pressure aloft was centered over central Texas, which placed southern New Mexico under a moist southeast flow. It was an early start to the North American monsoon in this part of the country.
Otero County	7/5/09	Flood	0	0	$25,000.00	A very moist southerly flow was in place over the area. The atmospheric moisture content was almost twice the normal value for early July. The flow was such that thunderstorm movement was slow, subjecting locations to very heavy rainfall for long periods of time. Occasional wet microbursts were also observed. Part of a bridge was damaged on US Highway 54 near mile marker 93. Edges of the roadway eroded and were washed away.
Otero County	8/23/09	Flash Flood	0	0	$5,000.00	An upper ridge axis was located over the southern plains, putting southern New Mexico under a deep, moist southerly flow. The Mescalero Fire Department reported water and mud covering IR-10 at the west end of a large burn scar. Bulldozers were dispatched to clear the road.
Otero County	8/23/10	Flash Flood	0	0	$0.00	Moist easterly upslope flow with an upper-level ridge centered over area allowed for slow moving thunderstorms to produce very heavy rains over the Sacramento Mountains. Storm drainage culverts on Highway 130 near mile marker 16 were plugged and 2 feet of

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						water was flowing over the highway. The highway was impassable.
Otero County	7/13/11	Flash Flood	0	0	$0.00	An upper ridge was centered over Central Texas with a moist southerly flow setup over the region. Training thunderstorms developed over the Sacramento Mountains and dropped over five inches of rain around Cloudcroft. A total of 5.5 inches of rain was reported in Cloudcroft. Flooding was reported around the Cloudcroft High School area, around the water treatment plant and over Highway 130. The intersection of Chautauqua and Woodlands Roads was closed due to water over the road. Other rainfall totals over the Sacramento Mountains included 2.99 inches 4 miles southwest of Silver Lake and 2.65 inches of rain at the Dry Canyon Mesonet Station 3 miles south-southwest of Silver Lake.
Otero County	7/3/13	Flash Flood	0	0	$0.00	Northerly flow continued across the region as an upper low retrograded to near Kansas City, MO and upper ridge remained over Great Basin. A strong 85+ kt jet and weak upper disturbance was moving through Eastern Colorado and into Northern New Mexico aiding in lift for thunderstorm development. Up to golf ball size hail was reported along with a couple areas of flash flooding due to training of storms over mountain areas. Mescalero Fire Department reported 8 to 12 inches of water along with debris covering Highway 244 between mile markers 10 and 18. Road was closed for a short while.
Otero County	7/11/13	Flash Flood	0	0	$0.00	A deep easterly flow across the region brought surface dew points to around 60 across much of South-Central New Mexico. A weak disturbance produced enough lift for isolated overnight thunderstorms to develop and the slow storm motion allowed locally heavy rains to occur and produce flash flooding. Otero

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						County Sheriff reported very heavy rain and flooding on U.S. 54 near Oliver Lee State Park.
Otero County	9/15/13	Flash Flood	0	0	$100,000.00	A persistent area of high pressure over the Eastern United States setup a deep east to southeast flow off the Gulf of Mexico which provided plenty of moisture to Otero County. An upper trough remained in place through New Mexico which provided the lift for very heavy rains to occur over Otero County and especially the Sacramento Mountains. Highway 244 was closed near Silver Lake with 5 to 6 feet of water over the road. In addition, US Highway 82 and Highway 130 were also closed around Cloudcroft. A couple of bridges in area canyons were also washed out. The flood waters pushed over utility poles and trees as well as damaged some buildings. One rain gauge in Sixteen Springs Canyon measured more than 7 inches of rain in 4 hours.
Otero County	9/16/13	Flash Flood	0	0	$0.00	A persistent area of high pressure over the Eastern United States setup a deep east to southeast flow off the Gulf of Mexico which provided plenty of moisture to Otero County. An upper trough remained in place through New Mexico which provided the lift for very heavy rains to occur over Otero County and especially the Sacramento Mountains. Serious flooding was reported in downtown Alamogordo. Street flooding was also reported in Boles Acres. Highway 82 out of Alamogordo was also flooded.
Otero County	9/17/13	Flash Flood	0	0	$0.00	A persistent area of high pressure over the Eastern United States setup a deep east to southeast flow off the Gulf of Mexico which provided plenty of moisture to Otero County. An upper trough remained in place through New Mexico which provided the lift for very heavy rains to occur over Otero County and especially the Sacramento

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						Mountains. Flooding with necessary evacuations occurred around Sixteen Springs and Walker Canyon. Spotter reports of 2 inches of rain in an hour with County Road 10 washed out east of Sixteen Springs.
Otero County	9/19/13	Flash Flood	0	0	$0.00	Low level moisture remained in place as an upper trough started to exit the region. Eastern New Mexico was in the southeastern quadrant of a 100-knot jet moving through the northern plains which aided in lift across the region. Weak flow in the lower and mid-levels kept storms moving very slowly allowing for locally heavy rain to occur over the Sacramento Mountains which already had saturated soil from over 5 inches of rain over the previous days. Water was over the roads and driveways in Sixteen Springs. Ditches were running 1 to 2 feet deep.
Otero County	7/31/14	Flash Flood	0	0	$0.00	A weak upper-level trough was moving through the region with sufficient moisture still in place from previous days. The northwest flow aloft and weak south to southwest winds at the surface provided sufficient shear for severe thunderstorms with heavy rain to develop across Otero County. Otero County Sheriff reported 2 feet of water flowing over some roads in Orogrande. The Orogrande Cooperative Observer reported 2.96 inches of rain and the SAMS site 5 miles west-northwest of Orogrande recorded 2.03 inches.
Otero County	8/1/14	Flash Flood	0	0	$100,000.00	A very moist atmosphere was in place with weak flow aloft keeping storm motion very slow. A weak upper-level trough was passing over the region which triggered scattered thunderstorms with very heavy rain which led to over 20 houses in Alamogordo getting flooded and mud slides south of Las Cruces. Law enforcement reported that numerous streets

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						in Alamogordo were flooded. Between 20 to 30 homes on the north side of town were flooded.
Otero County	9/12/14	Flash Flood	0	0	$0.00	Low level east to southeast flow started bringing in some low-level moisture to the region with weak flow in the mid-levels. Storms developed over the Sacramento Mountains and moved west onto the lowlands toward Tularosa which caused some localized flash flooding. Flash flooding was reported around the Riata Road area west of Tularosa where water was crossing the road. Drainage ditches along Highway 54 were also filling up.
Otero County	9/24/14	Flash Flood	0	0	$0.00	Residual moisture from Hurricane Odile was getting trapped under a building upper ridge across the Rockies. A weak upper-level disturbance came down the east side of this ridge and triggered showers and thunderstorms over the western Sacramento Mountains. Slow storm motion combined with the plentiful moisture led to locally heavy rain and flash flooding. Highway 82 was closed just west of the tunnel to Cloudcroft was closed due to a rockslide. A section of road at La Luz Creek crossing was closed as well due to flooding.
Otero County	7/22/15	Flash Flood	0	0	$0.00	Moderate moisture and instability was located over the Sacramento Mountains. Weak flow aloft kept storm motion very slow, and an isolated storm developed near Timberon and produced some localized flash flooding. Fire Official reported that the Sacramento River was over its banks at the Timberon Lodge. Heavy rain was still occurring, and streets were flooding in Timberon.
Otero County	7/24/15	Flash Flood	0	0	$0.00	Upper high was centered over the Texas Panhandle and southeast flow was bringing moderate moisture into the region. An isolated slow-moving storm dropped over 3 inches of

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						rain near La Luz and the water drained down the west slopes of the Sacramento Mountains and caused water to cross the road west of Highway 54. Water was crossing Riata Road west of U.S. 54. Rain had fallen several hours earlier up near La Luz and flowed down toward Alamogordo.
Otero County	8/10/15	Flash Flood	0	0	$0.00	An upper ridge was located over Central Texas with deep south to southeast flow across the Rio Grande Valley bringing deep moisture into the region. A surface trough was located near the Rio Grande providing some low-level lift. Heavy rain occurred in and around Alamogordo with over 3 inches reported in the northeast portion of town. Rainfall amounts of 2 to over 3 inches were reported around Alamogordo with multiple road closures put into place. Water was across several roads 6 to 8 inches deep. Winds of up to 50 mph also occurred with the storm.
Otero County	4/12/17	Flash Flood	0	0	$0.00	A back door cold front moved in from the east to near the Rio Grande Valley. Deep moisture behind the front combined with a weak upper trough lifting out of the Baja region to produce severe thunderstorms and slow-moving storms caused some localized flash flooding. Submerged vehicle reported in low water crossing just northwest of Tularosa on Railroad Avenue in a low water crossing.
Otero County	7/27/17	Flash Flood	0	0	$0.00	A weak area of surface convergence setup near the Rio Grande Valley with strong 40-50 knot jet stream winds out of the east providing moisture and good wind shear over the region. Slow moving storms brought an inch to almost an inch and a half of rain to the Alamogordo area which led to flash flooding. An observer reported up to 1.42 inches of rain in Alamogordo

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						with significant street flooding in the north part of Alamogordo.
Otero County	8/1/18	Flash Flood	0	0	$0.00	Upper high was located over southwest Arizona with north-northwest flow across southern New Mexico. Storms developed over the area mountains and produced hail up to one inch in diameter and some flash flooding in Alamogordo from rains over the western Sacramento Mountains. Mud and debris came flowing out of the Sacramento Mountains where over an inch of rain had quickly fallen. Six inches of mud was cleared from the intersection of Scenic and North Florida Ave in Alamogordo.
Otero County	6/4/19	Flash Flood	0	0	$0.00	Upper low was moving into southeastern Arizona with moderately deep low-level moisture pushing west toward the Rio Grande. A disturbance in the southwest flow across the Borderland helped to fire off thunderstorms across northern Otero County into northern Dona Ana County. Everything from severe hail to a flash flood and tornado were reported with these storms. Water was shown running over Riata Road coming out of Rancheria Canyon near Alamogordo.
Otero County	8/14/19	Flash Flood	0	0	$0.00	An upper high over the southwest trapped some deeper moisture over the region with slow moving thunderstorms developing on the west slopes of the Sacramento Mountains. Thunderstorms continued around the Alamogordo area for several hours with over 2 inches of rain reported. Multiple road closures were required around Alamogordo due to several inches of rain falling in and around the area.
Otero County	7/5/21	Flash Flood	0	0	$0.00	Heavy rain fell for the second day in a row around the Mayhill area causing a highway to be closed as monsoon moisture remained in place trapped under an upper level high. Slow

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						moving storms dropped about another inch and a half of rain in the same area which received significant rain the previous day. Highway 130 south of Mayhill was closed due to flooding crossing the roadway.
Otero County	7/6/21	Flash Flood	0	0	$0.00	Training storms developed over the east slopes of the Sacramento Mountains as modest moisture remained in place with a disturbance moving through north-northeast flow aloft. Antecedent moisture and additional heavy rain over the area northeast of Mescalero lead to flash flooding and road closures. Flash flooding lead to closures along Highway 70 near mile marker 250 as well as NM-244 northeast of Mescalero. Torrential rainfall for an hour occurred with near zero visibility.
Otero County	8/14/21	Flash Flood	0	0	$0.00	A continued very moist pattern remained across the Borderland and brought a third day of heavy rain to the La Union area which over the course of 3 days received over 7 inches of rainfall. In addition, flash flooding was reported near White Sands Missile Range and the Mayhill area. The Rio Penasco River came out of its banks from just east of Mayhill into Chaves County with widespread flooding across the area.
Otero County	6/27/22	Flash Flood	0	0	$0.00	Deep monsoonal moisture remained across the region just ahead of an upper trough moving across the southern Rockies. Storms developed off the eastern slopes of the Sacramento Mountains with some isolated areas receiving heavy rain which caused flash flooding along Highway 130. Highway 130 was closed due to widespread flash flooding west of Weed.
Otero County	7/24/22	Flash Flood	0	0	$0.00	Some drier low-level air started moving into southern New Mexico, but modest mid-level moisture remained across the

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						area. Gusty winds and flash flooding were reported with the stronger storms that developed in Grant and Otero counties. Landscaping and trash cans washed away in front of the Space Museum due to high water flows. The radar estimated 1.5 to 2 inches of rainfall upstream of the museum over Horse Ridge.
Otero County	7/27/22	Flash Flood	0	0	$0.00	Deep monsoon moisture moved back into southern New Mexico from the southeast. Light winds aloft kept storms moving slowly which allowed for heavy rain and flash flooding to occur in Grant and Otero counties. A report of at least a foot of running water and debris over the road near the intersection of North Florida Ave and North Scenic Drive on the north side of Alamogordo.
Otero County	7/29/22	Flash Flood	0	0	$10,000.00	Modest low and mid-level southeast flow kept some monsoon moisture around the Sacramento Mountains. Very weak flow aloft kept storms moving slowly allowing for heavy rain to fall over the Soldier Canyon Burn Scar. Several areas around Mescalero received flash flooding due to over two inches of rain falling in just over an hour. A total of 2.25 inches of rain fell at the Newcalero Tribal Fish Hatchery in about an hour and a half. Flash flooding was subsequently reported between mile markers 247 and 252 on Highway 70 with 3 feet of water and debris crossing the road. In addition to the highway flooding, six inches of water flowed into the Mescalero Community Center.
Otero County	8/11/22	Flash Flood	0	0	$0.00	Deep lower and mid-level moisture remained trapped under an upper high centered over the Rockies. A weak disturbance moving through northeast flow triggered slow moving storms over the Sacramento Mountains and brought flash flooding to the Soldier Canyon burn scar.

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						Highway 70 was closed between mile markers 242 and 247. Heavy debris was across the road near mile marker 242. Rainfall amounts in excess of 1 inch in an hour were recorded near the burn scar.
Otero County	8/20/22	Flash Flood	0	0	$0.00	Abundant moisture remained over the region with an upper trough approaching from the west. Weak mid-level flow kept storms slow moving resulting in areas receiving over 2 inches of rain leading to flash flooding and debris flows around the Soldier Canyon burn area. Recent heavy rain and an additional 1 to 3 inches of rain brought debris flow down from the Soldier Canyon burn scar. The Emergency Manager reported Round Mountain Road was closed from 4 feet of mud and debris.
Otero County	8/20/22	Flash Flood	0	0	$2,000.00	Abundant moisture remained over the region with an upper trough approaching from the west. Weak mid-level flow kept storms slow moving resulting in areas receiving over 2 inches of rain leading to flash flooding and debris flows around the Soldier Canyon burn area. A spotter reported torrential downpour with a lot of fast-moving running water near their residence. The flood waters damaged a few of their fences.
Otero County	8/21/22	Flash Flood	0	0	$0.00	Several days of heavy rain continued across southwest New Mexico as a slow moving mid and upper-level trough helped produce widespread rain across the region with nearly 5 inches of rain reported near White Sands. As a result of the heavy rain, numerous reports of flash flooding were received. A spotter posted a photo of their property flooding with an estimated water depth of 6 inches at it's crest.
Otero County	8/23/23	Flash Flood	0	0	$0.00	The remnants of Tropical Storm Harold moved through southern Texas and into the Borderland

Table 33: Flood Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Extent/Impact Description
						on August 23. While the storm weakened significantly, some convective thunderstorm bands developed over Otero County on the afternoon of the 23rd and dropped over 3 inches of rain in La Luz. The heavy rainfall was also blamed for a landslide that occurred along Highway 82 near High Rolls during the early morning hours of the 24th. Rockslide reported on Highway 82 just west of Mountain Park near the Tunnel Vista observation site due to the heavy rain that fell the previous afternoon/evening. The road remained closed for approximately 2 days.
Total Impacts of Flood in Otero County, NM			**0**	**0**	**$3,562,000.00 in property damage**	
Data Source: *NOAA/NCEI Storm Event Database*						

4.7.4 Probability of Future Incidents

Based on the NOAA/NCEI Storm Events Database, 55 flooding incidents (flood/flash flood) occurred in Otero County, including the City of Alamogordo, since the last LHMP update. Otero County can expect a flooding event with an annual probability of 45.83% as indicated in the table below. This number is based on historical events. As such, and according to the probability range table, flooding is **likely** for the planning area.

Table 34: Probability of Future Events, Flooding, City of Alamogordo, NM

Event Year	Riverine Flood Event Count	Flash Flood Event Count
2000	0	2
2001	0	1
2002	0	1
2003	0	0
2004	0	0
2005	0	1
2006	0	10
2007	0	1
2008	0	3
2009	0	4
2010	0	1
2011	0	1
2012	0	0
2013	0	6
2014	0	4
2015	0	3
2016	0	0
2017	0	2
2018	0	1

2019	0	2
2020	0	0
2021	0	3
2022	0	8
2023	0	1
2024	0	0
Total Recorded Events =	**0**	**55**
Total Years =	**24**	**24**
Probability over Time Frame of 7 Years	**0%**	**785.7%**
Annual Probability =	**0%**	**45.83%**

Probability of Future Events Mathematical Equation of Flooding (Flash Flood)

$$\frac{55}{24} x\ 100 = \frac{229.17\%}{5} = 45.83\%$$

4.7.5 Vulnerability and Impact

Table 35: Summary of Changes to Vulnerability, Flooding			
202X LHMP Update Hazards	**Decrease in Vulnerability**	**No Change in Vulnerability**	**Increase in Vulnerability**
Flooding			X

- Flooding was addressed in the 2019 LHMP update, So It continues to be a priority for mitigation planning for the City.
- Since the last plan update (2019), the population has increased by 0.951%; therefore, the City of Alamogordo is more vulnerable to hazards, like flooding.
- The State Hazard Mitigation Plan (2023) mentions that the USACE's Post Flood Report: Record Rainfall and Flooding Events During September 2013 in New Mexico reported climate trends over recent decades that show decreased monsoon precipitation frequency but increased intensity. The increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms.
- The previous plan update (2019) included eight (8) of the nine (9) mitigation projects/actions that addressed flooding concerns in the planning area. At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area. The City indicated that as a result of the incident, a consultant would be hired to create a Master Drainage, which will identify and prioritize recommended improvements related to flooding in the City.

Based on the FIRM maps highlighted in this hazard profile's Location & Extent section, the City of Alamogordo can expect the following relevant to riverine and flash flood events.

Table 36: City of Alamogordo Riverine Flood Impact Summary

Data	Recorded Impact
Deaths or Injuries (2000-2024)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2000-2022)	$0

Table 36: City of Alamogordo Riverine Flood Impact Summary

Data	Recorded Impact
Average Property Damage per Year	$0

Source: *NOAA/NCEI Storm Events Database*

According to Table 104: Hazard Risk Summary, the overall hazard priority for flooding is Likely in the planning area.

HAZUS® Analysis

The results of the HAZUS® analysis were utilized to estimate potential losses for riverine flooding. The intent of this analysis was to enable the City of Alamogordo to estimate where flood losses could occur and the degree of severity using a consistent methodology. The HAZUS® model helps quantify risk along known flood-hazard corridors as well as lesser streams and rivers that have a drainage area of 10 square miles or more. HAZUS®, version 6.0, was used to perform the analysis for the City using essential facility data available through HAZUS databases and HIFLD data. The analysis was completed by BOLDplanning inc. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance flood event (100-Year Flood) and 0.2% annual chance flood event (500-Year Flood). The reported losses are based upon essential facility and census data as part of HAZUS®. We are also mapping updated essential facilities provided by City of Alamogordo GIS Department in relation to the flooded areas from HAZUS® Level One modeling efforts.

HAZUS® determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be a population vulnerable to displacement even if the structure is not vulnerable to damage. Individuals and households will be displaced from their homes even when the home has suffered little or no damage either because they were evacuated or there was no physical access to the property because of flooded roadways.

Flood sheltering needs are based on the displaced population, not the damage level of the structure. HAZUS® determines the number of individuals likely to use government-provided short-term shelters through determining the number of displaced households as a result of the flooding. To determine how many of those households and the corresponding number of individuals will seek shelter in government-provided shelters, the number is modified by factors accounting for income and age. Displaced people using shelters will most likely be individuals with lower incomes and those who do not have family or friends within the immediate area. Since the income and age factors are taken into account, the proportion of displaced population and those seeking shelter will vary from City to other locations within Otero County.

Additionally, HAZUS® takes into account flood depth when modeling damage (based on FEMA's depth-damage functions). Generated reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes include agriculture, commercial, education, government, industrial, religion, and residential. Damage percent classes are grouped by 10 percent increments up to 50%. Buildings that sustain more than 50% damage are considered to be substantially damaged.

The following table provides the HAZUS® results for vulnerable populations and the population estimated to seek short term shelter as well as the numbers of damaged and substantially damaged buildings for the City of Alamogordo.

Table 37: City of Alamogordo HAZUS® 100- Year Flood Scenario Displaced Population Building Damages

Displaced Population	Persons Seeking Shelter	Damaged Buildings	Destroyed Buildings
837	124	289	236

Source: *FEMA HAZUS®*

Table 38: City of Alamogordo HAZUS® 500- Year Flood Scenario Displaced Population Building Damages

Displaced Population	Persons Seeking Shelter	Damaged Buildings	Destroyed Buildings
1,476	259	467	**377**

Source: *FEMA HAZUS®*

Especially critical is timely evacuation orders, and adherence to those orders. If evacuation is not heeded, or flood waters rise quickly enough, citizens could drown or become trapped for extended periods of time with no access to services or medical care. Of special concern are long term care and medical facilities where it can take longer to evacuate, or evacuation may be impossible. Additionally, lower income citizens may not have the means to relocate, whether it be lack of transportation or lack of resources to afford temporary shelter. Expected impacts of flooding on citizens may include:

- Loss of Life: Flooding is one of the leading causes of weather-related fatalities worldwide. Fast-rising floodwaters can lead to drowning and other water-related accidents, resulting in the tragic loss of lives.
- Injuries: Floods can cause injuries due to waterborne diseases, contaminated floodwaters, debris, and accidents during evacuation or rescue operations.
- Displacement: Many people may be forced to evacuate their homes during floods and will require emergency shelter or temporary housing. Prolonged displacement can be emotionally and economically challenging.
- Health Risks: Floodwaters often contain pollutants, sewage, and hazardous materials. Exposure to contaminated water can lead to waterborne diseases, infections, and other health risks.
- Mental Health Effects: Survivors of floods may experience a range of emotional and psychological challenges, including post-traumatic stress disorder, anxiety, depression, and grief.
- Food and Water Shortages: Floods can contaminate water supplies and disrupt the distribution of food. This can lead to shortages of clean drinking water and essential food items.
- Impact on Vulnerable Populations: Vulnerable populations, including the elderly, children, people with disabilities, and those living in poverty, are often disproportionately affected by floods due to limited resources and mobility challenges.
- Long-Term Consequences: Some flood impacts, such as mold growth, structural damage, and land degradation, can have long-term consequences that persist even after the floodwaters recede.

Floods can have significant and often costly impacts on facilities and critical infrastructure. These impacts can disrupt essential services, damage infrastructure, and pose safety risks. The extent of the impact depends on factors such as the flood's severity, the infrastructure's preparedness, and the effectiveness of flood management measures. Here are some of the common impacts of floods on facilities and critical infrastructure:

- Structural Damage: Floodwaters can cause extensive damage to buildings, including critical infrastructure such as power plants, water treatment facilities, hospitals, and transportation hubs. The

force of moving water can weaken foundations, erode structural elements, and compromise the integrity of buildings.

- Electrical and Mechanical Systems: Floodwaters can damage electrical systems, including transformers, switchgear, and electrical panels, leading to power outages and the disruption of critical services. Mechanical systems, such as heating, ventilation, and air conditioning, may also be affected.
- Water and Wastewater Infrastructure: Floods can overwhelm water supply and wastewater treatment systems. Contamination of drinking water sources can lead to water shortages and health risks, while damage to wastewater treatment plants can result in the discharge of untreated sewage into water bodies.
- Transportation Networks: Floods can damage roads, bridges, railways, and airports, making transportation difficult or impossible.
- Communication Infrastructure: Floods can disrupt telecommunications and internet services, hindering communication among emergency responders and the public. Loss of communication can impede coordination and response efforts.
- Healthcare Facilities: Damage to healthcare infrastructure can limit the capacity to provide medical care during a crisis.
- Energy Infrastructure: Floods can damage power generation facilities, including hydroelectric dams and power plants, leading to power outages and potential safety hazards.

HAZUS® analysis also provides an estimate of the repair costs for impacted buildings as well as the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community by restricting a building's ability to function properly. Income loss data accounts for losses such as business interruption and rental income losses as well as the resources associated with damage repair and job and housing losses. These losses are calculated by HAZUS® using a methodology based on the building damage estimates.

The damaged building counts generated by HAZUS® are susceptible to rounding errors and are likely the weakest output of the model due to the use of census blocks for analysis. Generated reports include this disclaimer: "Unlike the earthquake and hurricane models, the flood model performs its analysis at the census block level. This means that the analysis starts with a small number of buildings within each census block and applies a series of distributions necessary for analyzing the potential damage. The application of these distributions and the small number of buildings make the flood model more sensitive to rounding errors that introduces uncertainty into the building count results." Additionally, losses are not calculated for individual buildings, but instead are based on the performances of entire classes of buildings obtained from the general building stock data. In the flood model, the number of grid cells (pixels) at each flood depth value is divided by the total number of grid cells in the census block. The result is used to weight the flood depths applied to each specific occupancy type in the general building stock. First floor heights are then applied to determine the damage depths to analyze damages and losses.

The following tables and figures provide the HAZUS® results for building damages and business interruption loss due to these damages.

Table 39: City of Alamogordo HAZUS® 100-Year Flood Scenario Structural Damage and Income Loss

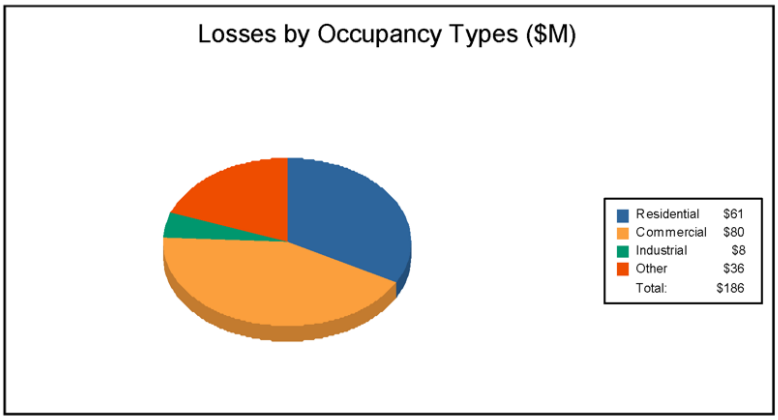
Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Business Interruption Loss	Total Loss
$46,430,000	$49,870,000	$5,100,000	$101,400,000	$165,690,000	$185,640,000

HAZUS™

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	34.22	8.39	2.17	1.66	46.43
	Content	16.57	23.78	5.21	4.31	49.87
	Inventory	0.00	3.87	0.69	0.54	5.10
	Subtotal	**50.79**	**36.04**	**8.07**	**6.50**	**101.40**
Business Interruption						
	Income	0.03	15.66	0.07	0.83	16.59
	Relocation	8.21	4.68	0.15	0.69	13.73
	Rental Income	2.32	3.64	0.02	0.06	6.04
	Wage	0.08	19.57	0.13	28.10	47.88
	Subtotal	**10.64**	**43.55**	**0.38**	**29.68**	**84.24**
ALL	**Total**	**61.43**	**79.59**	**8.45**	**36.18**	**185.64**



FEMA RiskMAP Increasing Resilience Together

Flood Global Risk Report Page 14 of 16

***Source**: FEMA HAZUS®*

Table 40: City of Alamogordo HAZUS® 500-Year Flood Scenario Structural Damage and Income Loss

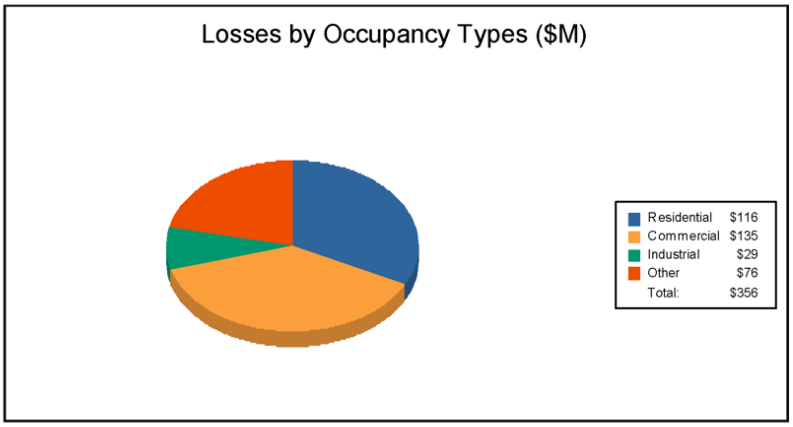
Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Business Interruption Loss	Total Loss
$83,520,000	$96,230,000	$10,540,000	$190,290,000	$165,690,000	$355,980,000

HAZUS™

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	57.03	14.92	7.31	4.27	83.52
	Content	31.47	37.61	18.35	8.80	96.23
	Inventory	0.00	5.70	2.30	2.54	10.54
	Subtotal	**88.49**	**58.23**	**27.96**	**15.61**	**190.29**
Business Interruption						
	Income	2.61	30.19	0.21	1.47	34.47
	Relocation	13.79	8.00	0.46	1.25	23.50
	Rental Income	4.85	6.18	0.07	0.09	11.19
	Wage	6.13	32.25	0.35	57.78	96.52
	Subtotal	**27.38**	**76.62**	**1.09**	**60.59**	**165.69**
ALL	**Total**	**115.87**	**134.86**	**29.05**	**76.20**	**355.98**



FEMA

RiskMAP
Increasing Resilience Together

Flood Global Risk Report

Page 14 of 16

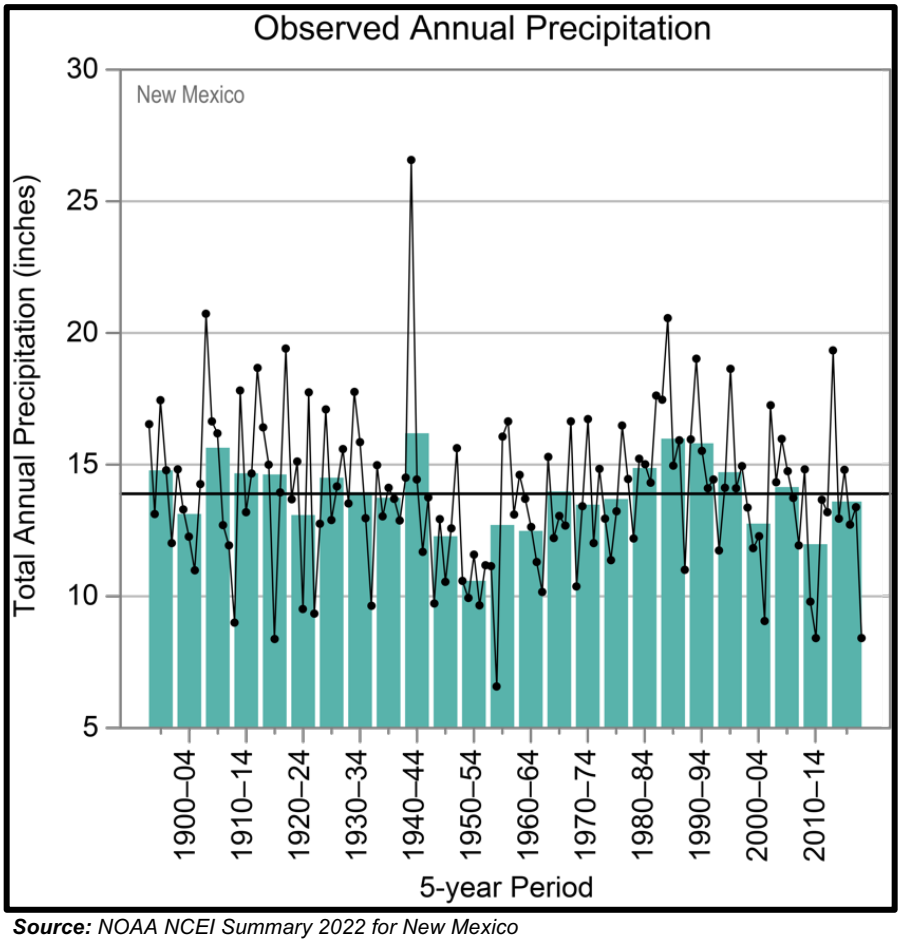
***Source**: FEMA HAZUS®*

4.7.5a Impact of Climate Change

The State Hazard Mitigation Plan (2023) mentions that the USACE's Post Flood Report: Record Rainfall and Flooding Events During September 2013 in New Mexico reported climate trends over recent decades that show decreased monsoon precipitation frequency but increased intensity. The increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms. Related to flooding, models suggest that Otero County, where the city of Alamogordo resides, will experience more extreme and intense precipitation events.

The NOAA NCEI Summary 2022 for New Mexico indicates that, unlike many areas in the United States, New Mexico has not experienced an upward trend in the frequency of extreme precipitation events due to an essential feature of New Mexico's summer climate, the North American Monsoon. The monsoon season begins in late June and extends through September, making July and August the wettest months in the State, which includes the planning area. This rainfall is vital in supporting the State's agricultural economy because half of the annual precipitation occurs during this season. These rain events are highly beneficial but occasionally can be destructive. They can be seen in the hazard and impact description in the above Previous Occurrence section of this hazard profile.
The NOAA NCEI State Climate Summary 2022 for New Mexico indicates that the total annual precipitation is highly variable from year to year and decade to decade, as indicated by the following chart:

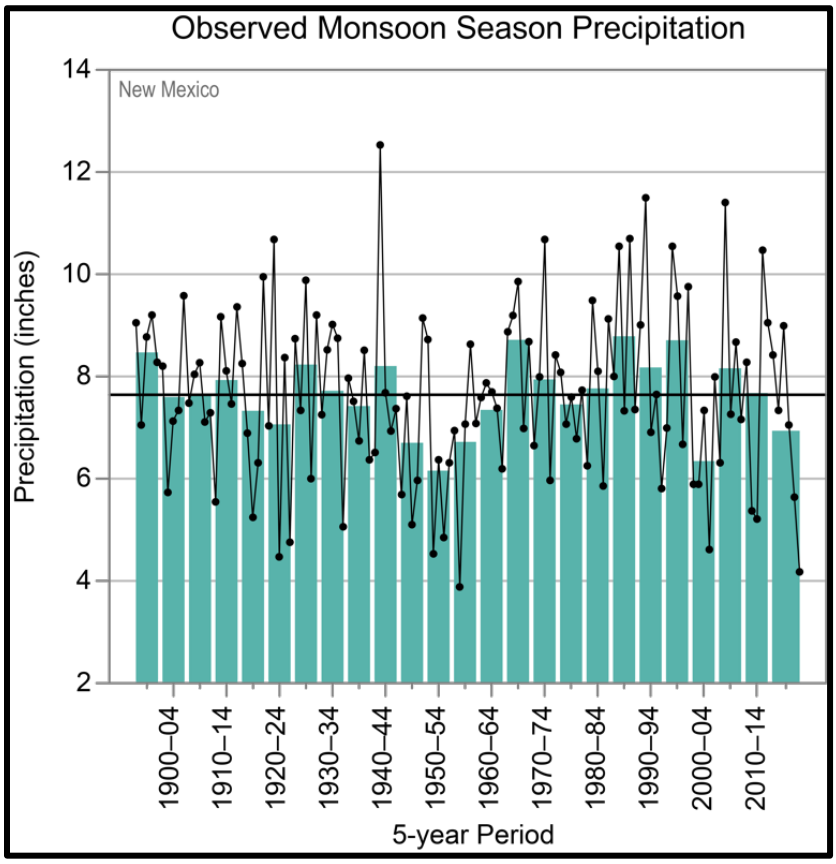
Chart 5: New Mexico Total Annual Precipitation



Source: *NOAA NCEI Summary 2022 for New Mexico*

Additionally, the NOAA NCEI State Climate Summary 2022 for New Mexico indicates that the extension of the North American Monsoon which begins in late June and extends into September, as indicated by the following cha

Chart 6: Observed Monsoon Season Precipitation



Source: *NOAA NCEI Summary 2022 for New Mexico*

The City of Alamogordo's current land-use regulations require the consideration of flood hazards during the development review process. Additionally, the generally static, or declining, nature of population growth during the past ten years in all participating jurisdictions indicates that both current and future development may decline. As such, the vulnerability to flood events may decrease.

4.7.5b Critical Facilities & Infrastructure

Flooding can cause minimal or complete damage to facilities, taking them offline for days to years, depending on the resources available after an event. Since 2000, the City of Alamogordo has incurred property damage from flood totaling $3,562,000.00, as reported by the NOAA/NCEI Storm Events Database for Otero County, where the City resides. The potential loss values identified in subsequent tables are based on the critical facilities' land value. Facilities have the potential to be damaged by these quick-onset floods. The following table provides a structural summary by sector for the City of Alamogordo, as identified by the FEMA HAZUS® database.

Table 41: Structural Summary: City of Alamogordo

Jurisdiction	Agriculture	Commercial	Government	Industrial	Residential	Education	Religious
Alamogordo	**$8,377**	**$1,226,715**	**$204,201**	**$170,400**	**$3,207,679**	**$311,001**	**$80,034**

Source: *FEMA HAZUS® Database*

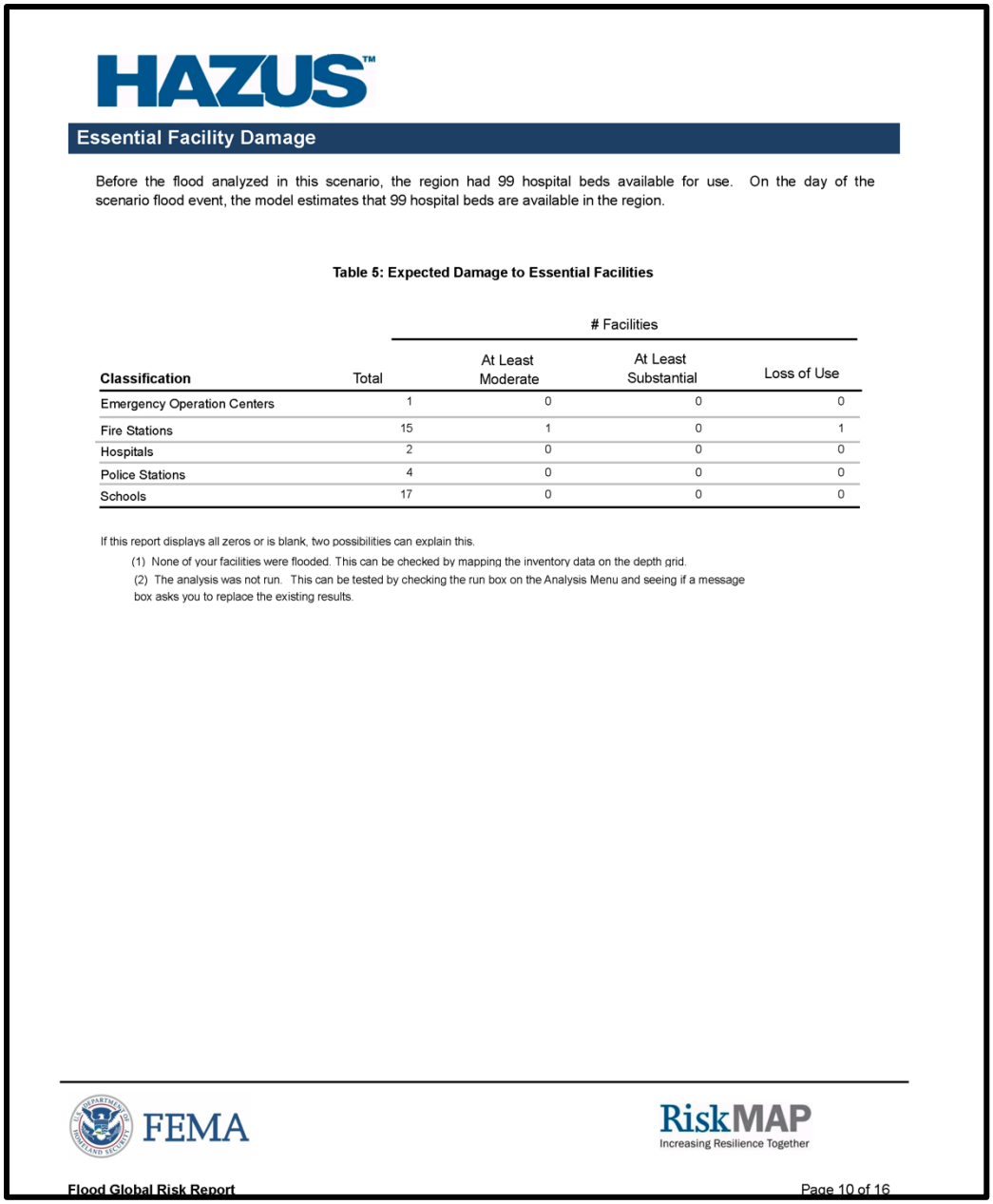
Potentially Vulnerable Community Lifelines

Flooding can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that flooding can place on infrastructure, resources, and operational processes.

The HAZUS® model indicated that the following jurisdictional critical facilities are estimated to be damaged or suffer loss of use in the planning area from the 100-Year and 500-Year flood scenarios.

Table 42: HAZUS® 100- year Food Scenario
Number of Critical Facilities Damaged or Impacted

Jurisdiction	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools
Alamogordo	0	1	0	0	0



HAZUS™

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 99 hospital beds available for use. On the day of the scenario flood event, the model estimates that 99 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	1	0	0	0
Fire Stations	15	1	0	1
Hospitals	2	0	0	0
Police Stations	4	0	0	0
Schools	17	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

FEMA

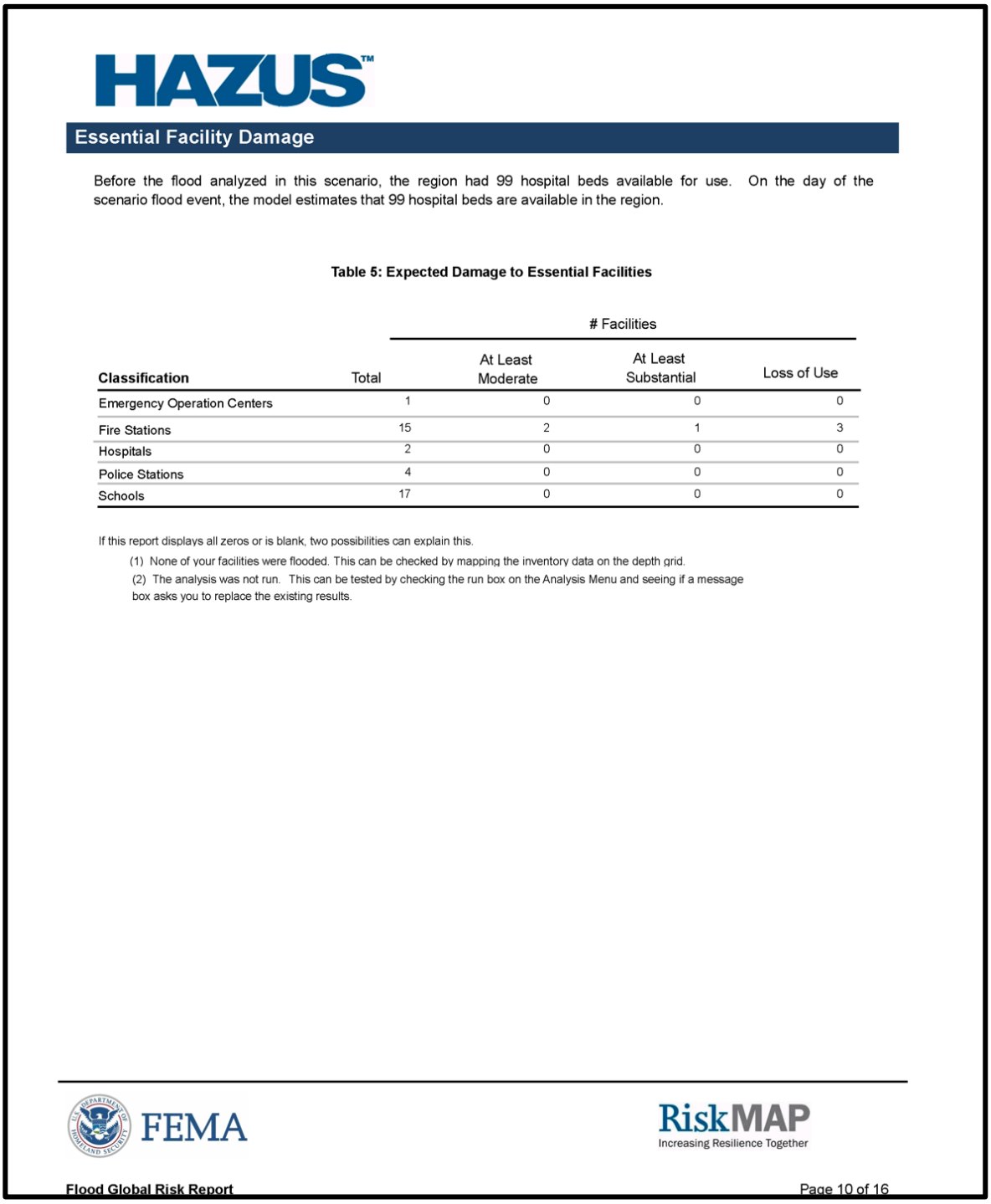
RiskMAP
Increasing Resilience Together

Flood Global Risk Report Page 10 of 16

Source: *FEMA HAZUS®*

Table 43: HAZUS® 500- year Flood Scenario
Number of Critical Facilities Damaged or Impacted

Jurisdiction	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools
Alamogordo	0	3	0	0	0



HAZUS™

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 99 hospital beds available for use. On the day of the scenario flood event, the model estimates that 99 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

		# Facilities		
Classification	Total	At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	1	0	0	0
Fire Stations	15	2	1	3
Hospitals	2	0	0	0
Police Stations	4	0	0	0
Schools	17	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.

(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

FEMA

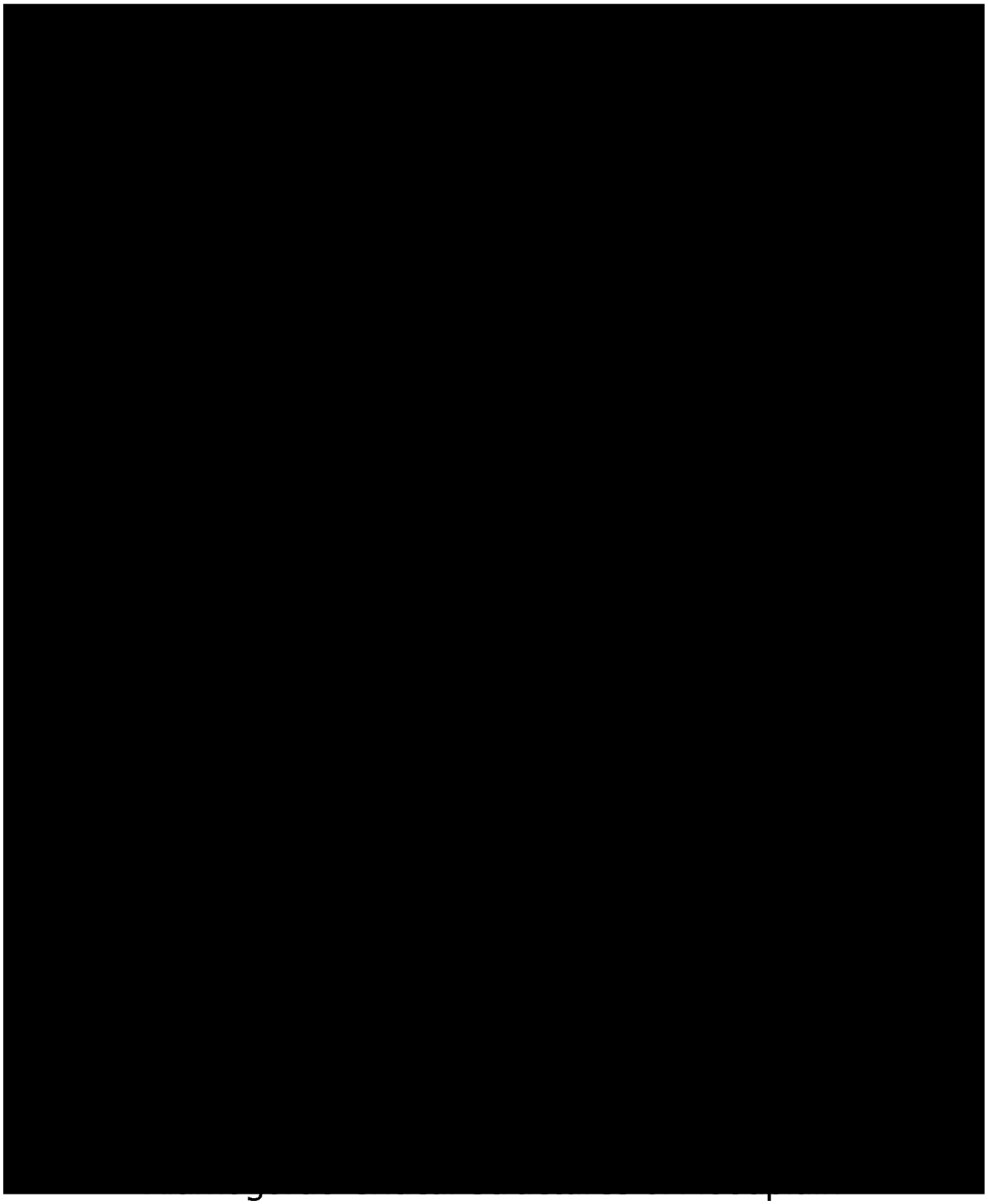
RiskMAP
Increasing Resilience Together

Flood Global Risk Report Page 10 of 16

***Source**: FEMA HAZUS®*

A HAZUS® analysis was performed to determine critical facility locations relative to the potential flood areas. Using GIS, flood zones were overlaid on the critical facility location data:

Map 25: City of Alamogordo, NM Critical Facilities map with Floodplain Layer



***Source**: City of Alamogordo Utilities Department*

A major hospital identified in the City of Alamogordo is the Gerald Champion Regional Medical Center, a part of the CHRISTUS Health family. The total in-patient bed capacity of these facilities is approximately 100 staffed beds (https://www.ahd.com/free_profile/320004/Gerald_Champion_Regional_Medical_Center/Alamogordo/New_Mexico/) . This facility is considered a small regional medical center and a flood event is likely to cause the facility to see an increase in flood related injuries during an event, it is considered likely that this increase could impact or overload capacity.

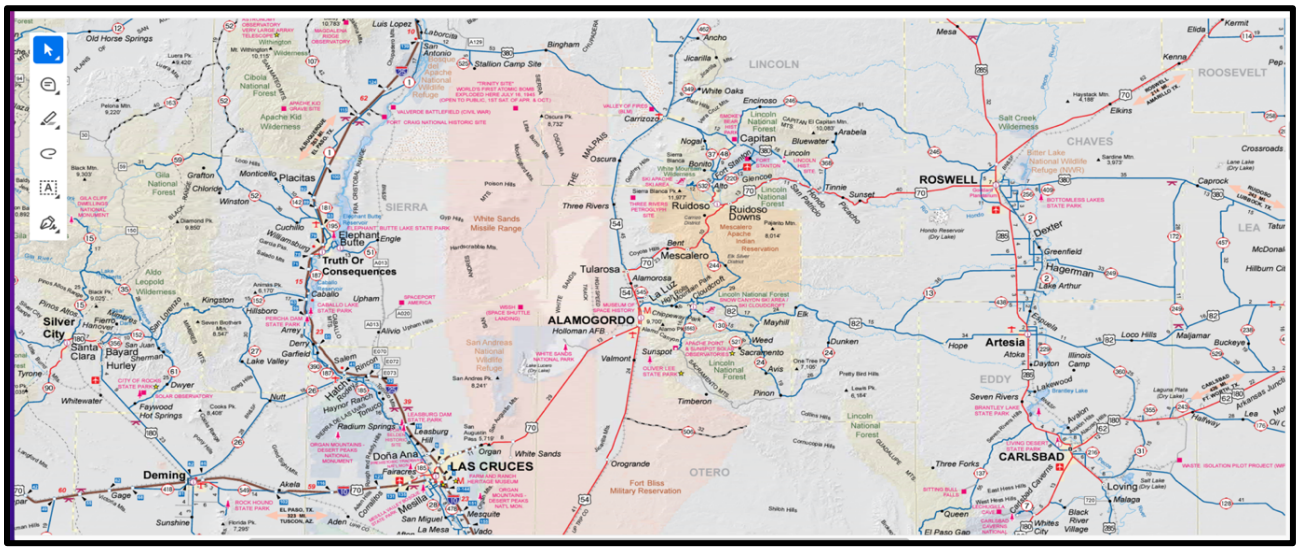
As per HAZUS®, before the flood analyzed in this scenario, the region had 99 hospital beds available for use. On the day of the scenario flood event, the model estimates that 99 hospital beds are available in the region.

Flooding can have significant and widespread impacts on road infrastructure. The extent of the damage depends on factors such as the severity and duration of the flood, the type of flooding (riverine, flash flooding), and the design and resilience of the road infrastructure. Impacts may include:

- Structural Damage: Floodwaters can erode road surfaces, weaken foundations, and damage bridges and culverts. The force of flowing water can undermine the structural integrity of roads and cause washouts.
- Road Surface Erosion: The erosion caused by floodwaters can remove the top layer of road surfaces, leading to potholes, cracks, and a general deterioration of the road condition.
- Subsidence and Sinkholes: The infiltration of water into road foundations can cause subsidence or create sinkholes.
- Debris Accumulation: Floodwaters often carry debris such as logs, branches, and sediment. The accumulation of debris on roads can impede drainage systems, block culverts, and hinder the flow of water.
- Road Closures: Flooding can result in the closure of roads due to safety concerns. High water levels, washouts, or structural damage may make roads impassable, leading to disruptions in transportation.
- Loss of Road Markings and Signs: Floodwaters can wash away road markings and signs, reducing visibility and creating safety hazards for motorists.
- Long-Term Damage: Even after floodwaters recede, long-term damage to road infrastructure may persist. Subsurface waterlogging, soil destabilization, and residual structural weaknesses can contribute to ongoing deterioration.

The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from $1,000,000 to $10,000,000 million per mile. The following map provides the transportation routes throughout the planning area.

Map 26: City of Alamogordo, New Mexico – Transportation Map



***Map Source**: New Mexico Department of Transportation – State Map 2022*

Flooding can have substantial and often severe impacts on electrical utilities, disrupting power generation, transmission, and distribution systems. The consequences of flooding on electrical utilities can vary depending on factors such as the depth and duration of the flooding and the type of infrastructure affected, and may include:

- Substation and Power Plant Damage: Floodwaters can inundate electrical substations and power plants, damaging critical equipment such as transformers, switchgear, and control systems. Substantial damage to these facilities can lead to prolonged outages.
- Electrical Equipment Short-Circuits: Water infiltration into electrical equipment can cause short-circuits, leading to equipment failure and potentially causing fires. This can result in widespread power outages and safety hazards.
- Transmission Line Disruptions: Floodwaters can impact the stability of transmission towers and lines. Structural damage or collapse of transmission infrastructure can disrupt the flow of electricity over long distances.
- Distribution Network Damage: Localized flooding can damage distribution infrastructure, including power lines, poles, and transformers. This can lead to outages in specific neighborhoods or communities.
- Transformer Submersion: Floodwaters can submerge transformers, which are critical components in power distribution. Submersion can cause these transformers to malfunction or fail, leading to service interruptions.
- Underground Cable Damage: Underground power cables can be damaged by flooding, especially in areas with subterranean infrastructure. Water infiltration can compromise cable insulation, leading to electrical faults and outages.
- Loss of Fuel Supply: Natural gas power plants may face challenges in maintaining a stable fuel supply if transportation routes are disrupted due to flooding.

The City of Alamogordo Utility Department indicates that the City does not offer gas and electricity. PMN is the electricity provider for Alamogordo residences, and New Mexico Gas Company is the natural gas provider.

4.75c Land Use and Development

The Flood Risk Index score on the FEMA National Risk Index website states the riverine flooding expected annual loss score (represents the average economic loss in dollars resulting from natural hazards each year). For Otero County, NM, which includes the City of Alamogordo, the expected loss of data related to riverine flooding is as follows:

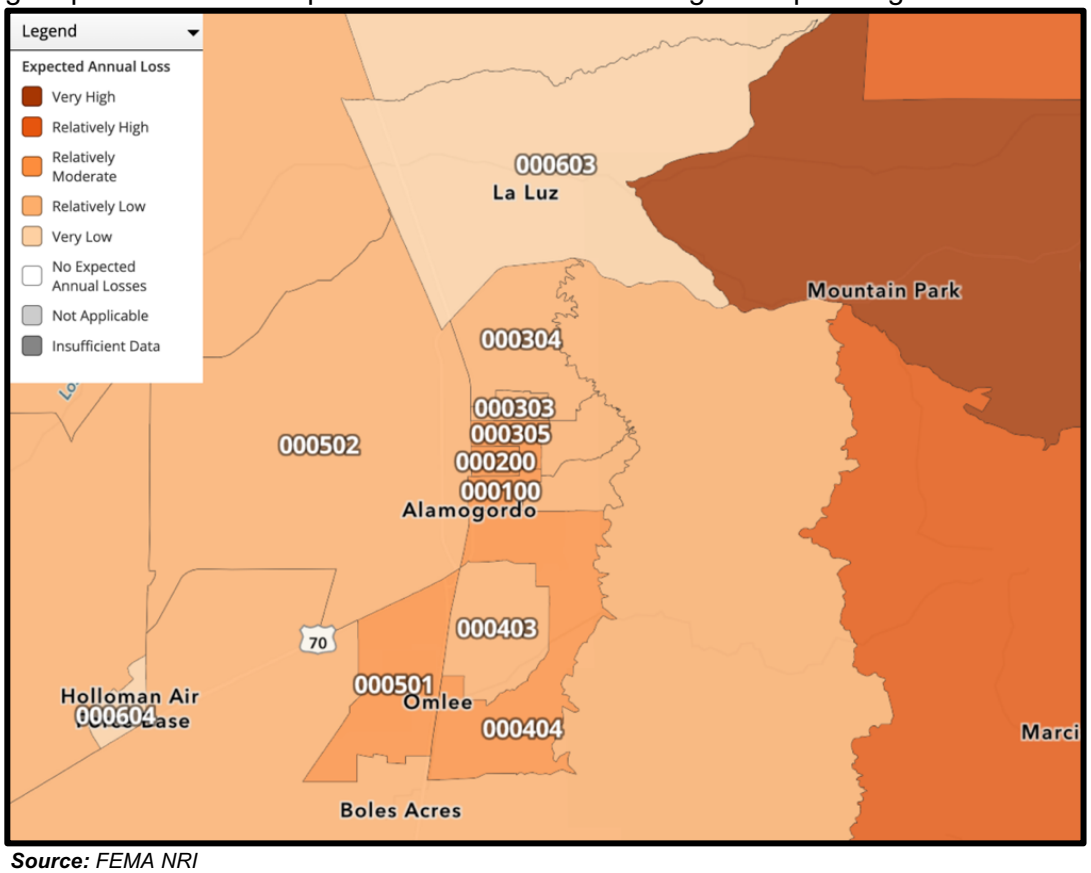
- Expected Annual Loss Score: 96.4 – Relatively High
- Expected Annual Loss: $8.7M
- Exposure: $135B
- Frequency: 1.8 events per year
- Historic Loss Ratio: Very Low

Table 44: Otero County EAL Data for Flooding

Jurisdiction	EAL Value	EAL Rating	Exposure Building Value	Population Equivalence	Agriculture Value Exposure
Otero County	$8,7217,274	Relatively High	$2,302,785,403	$8,368,178	$3,857,304

Source: *FEMA NRI*

The following map illustrates the expected annual loss for flooding in the planning area:



Source: *FEMA NRI*

The previous LHMP Update (2019) indicated that the vulnerability had decreased due to land use, growth, or development trends in the City of Alamogordo. However, at the time of this plan update, the population has increased by 0.951%. Therefore, the vulnerability to hazards, like flooding, has increased. Also, the

previous plan update (2019) included the following eight (8) mitigation projects that addressed flooding concerns in the planning area:

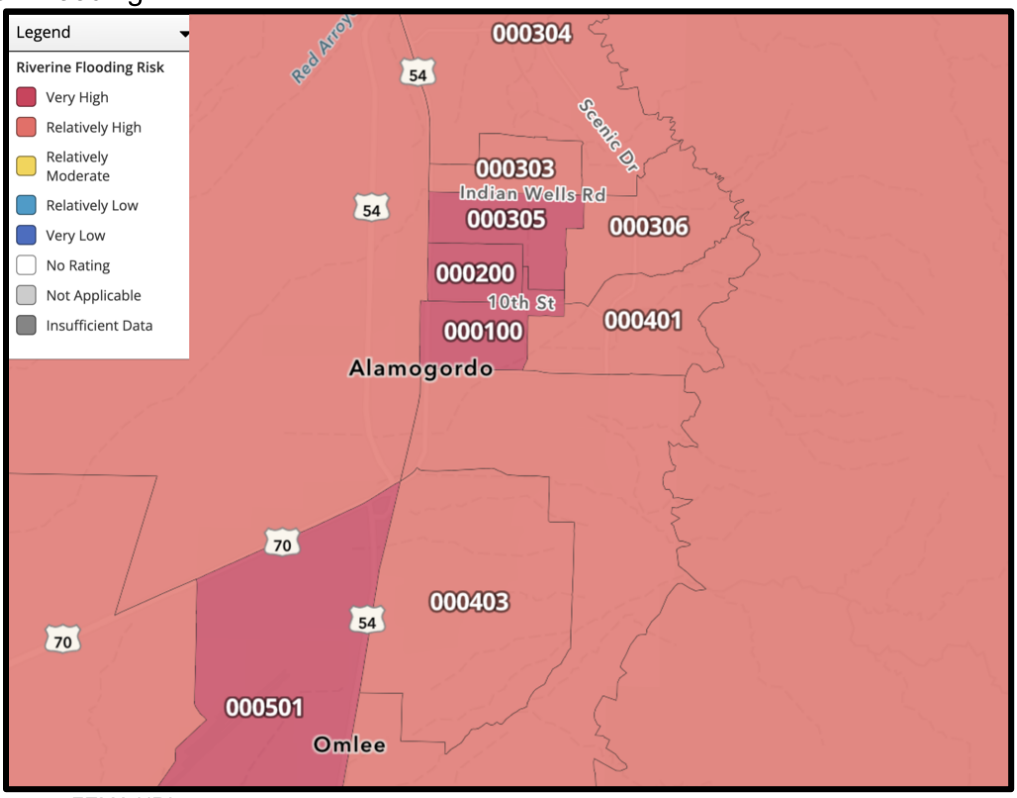
- Development of desalination plant
- Hire a floodplain manager
- North diversion project
- South diversion project
- Water shed thinning project
- Re-Design and construction of Coffer Dam

Mitigation Project Updates and Project Prioritization Tables for this plan update can be found in Section 6 – Mitigation Strategies.

4.7.5d Jurisdictional Risk and Vulnerability

In the City of Alamogordo, flooding (flash/flood) can affect the entire planning area or only a portion, or portions, of it. Unfortunately, there is no accurate method of predicting the location or extent of a flash flood's impact— namely, whether it will affect just one jurisdiction, any number, or all neighboring jurisdictions. To help understand the risk and vulnerability to flooding conditions in the planning area mapping from the FEMA NRI was run on a county level, since the City resides within Otero County. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

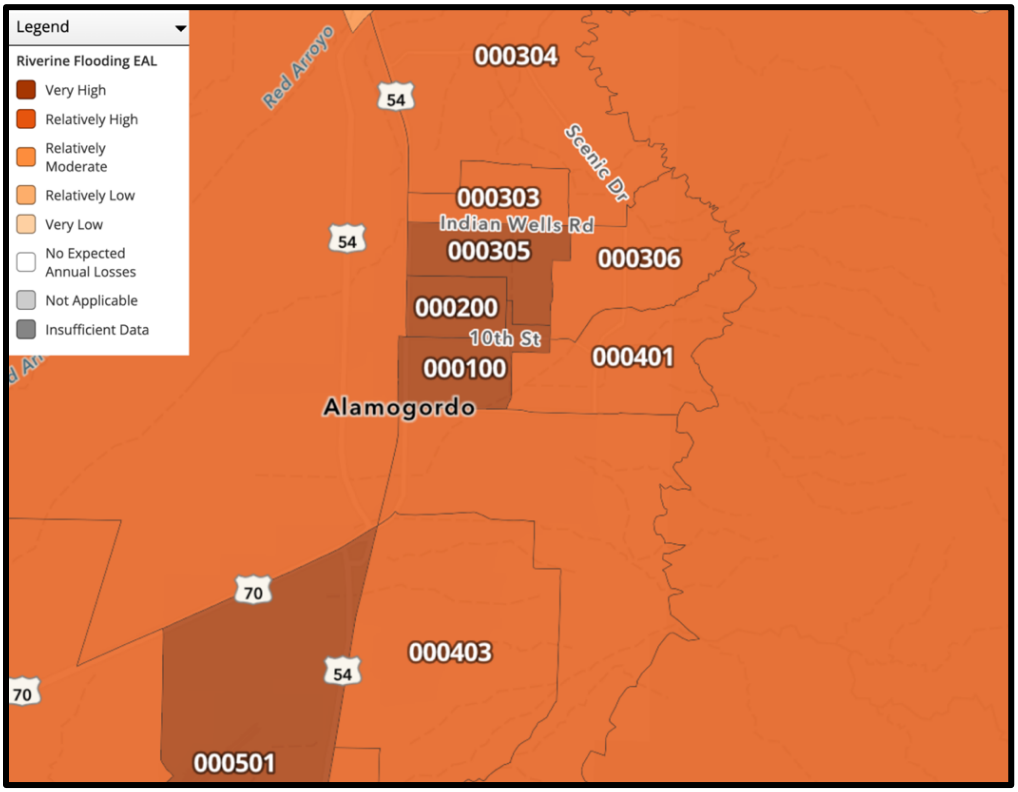
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions from flooding:



***Source**: FEMA NRI*

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for flooding for participating jurisdictions within Otero County, where the City of Alamogordo resides:

Map 27: FEMA NRI Jurisdictional Flood EAL



Source: FEMA NRI

Table 45: Otero County FEMA EAL and NRI for Flooding

Jurisdiction	EAL Value	Risk Index	Social Vulnerability	Community Resilience
Otero County	$8,7217,274	Relatively High	Very High	Very Low

Source: *FEMA NRI*

The City of Alamogordo structures are valued at $5,208,407. Since flash flooding threatens the entire planning area, all structures are considered exposed and valuable. The following table provides a structural summary by sector for the City of Alamogordo, as identified by the FEMA HAZUS® database.

Table 46: Structural Summary: City of Alamogordo

Jurisdiction	Agriculture	Commercial	Government	Industrial	Residential	Education	Religious
Alamogordo	$8,377	$1,226,715	$204,201	$170,400	$3,207,679	$311,001	$80,034

Source: *FEMA HAZUS® Database*

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. Each hazard's impact is evaluated in terms of disruption of operations, recovery

challenges, and overall well-being for all City of Alamogordo residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 47: Flooding Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Significant flooding events can lead to the damage and loss of homes, property, and businesses. Flash flooding and excessive rainfall may lead to dangerous conditions on roadways. Closures of medical facilities is a major public health concern if flooding damages those facilities. Water sources may become contaminated, and water or sewer systems may be disrupted. Vector-associated disease may increase.
Impact on Responders	Responders may be called on to evacuate people from impacted areas, close roads, and attend to the injured. Responders may face challenges with transportation. Flash floods can also injure responders, as well as delay response operations.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Floods which create power outages, debris damage, and road closures are not uncommon. This threat may impact an agency's ability to maintain operations.
Delivery of Services	Flooding can cause road and bridge closures, as well as disrupt transit services, impacting the ability to deliver goods and services. Exposure to flood waters may also damage or destroy physical goods such as food, clothing, and hygiene products.
Property, Facilities, and Infrastructure	Flooding can cause significant property destruction. Floods can disrupt normal daily activities due to the potential impact on schools, hospitals, and other public infrastructure. Transportation infrastructure can be damaged which could impact the freedom of movement or provision of utilities. Water sources can become contaminated. Water and sewer systems may be disrupted. Solid-waste collection and disposal may also be impacted, causing dangerous public health risks.
Impact on Environment	Rising waters from flooding impact the environment by spreading pollution, inundating water and wastewater treatment plants, and disrupting wildlife. Standing water following a flood event can facilitate the spread of vector-associated diseases.
Economic Conditions	Significant and repeated flooding can lower property value throughout the state, which can have a deleterious effect on the tax base. Furthermore, flooding drains response resources, which can be costly during a large flooding event for disaster reimbursement
Public Confidence in Governance	Ineffective flooding response can decrease the public's confidence in the ability to respond and govern. Multi-level government response requires direct actions that must be immediate and effective to maintain public confidence. Efficiency in response and recovery operations is critical in keeping public confidence high.

The following table details potentially vulnerable populations for participating jurisdictions within Alamogordo:

Table 48: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2022)	Population Over 65 (2022)	Estimated People in Poverty (2022)
Alamogordo	1,823	7,689	5,592
Data Source: *U.S. Census Bureau – 2022 ACS 5-Year Estimate Subject Tables*			

National Flood Insurance Program Communities

The NFIP is a federal program, managed by FEMA, that exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas. The City of Alamogordo LHMP (2019) states the City is a participant in the National Flood Insurance Program (NFIP). The initial FIRMS date were initiated for the following dates:

Table 49: National Flood Insurance Program – Alamogordo, NM

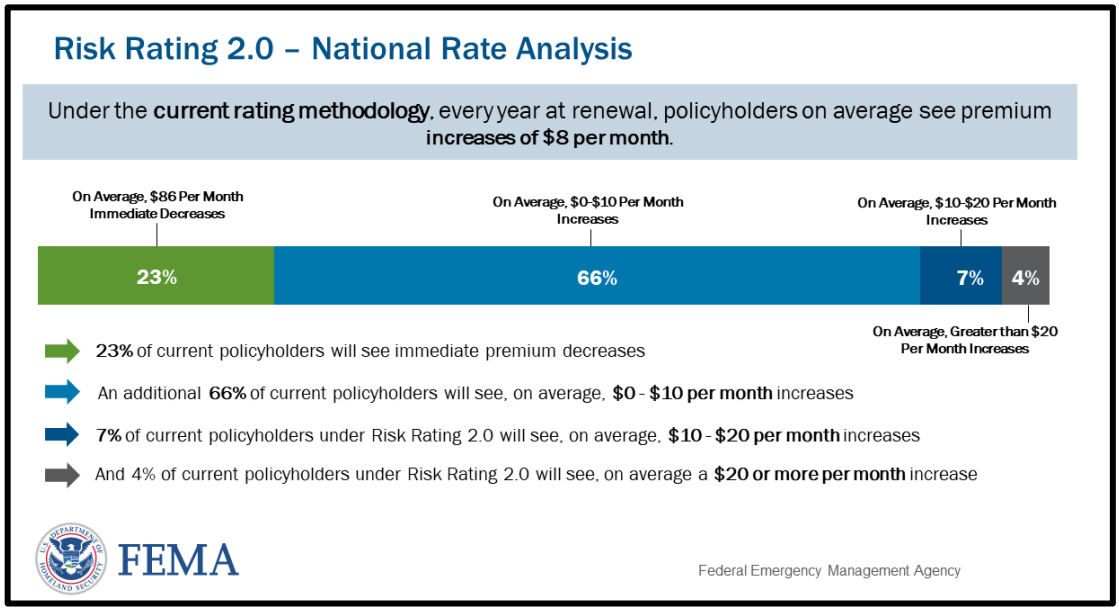
Jurisdiction	CID Number	Initial FIRM Date
City of Alamogordo	350045#	07/19/1974

Additionally, the NFIP's Community Rating System (CRS) incentive rewards communities for the work they do managing their floodplains. Eligible communities that qualify for this voluntary program go above the minimum NFIP requirements and can offer their citizens discounted flood insurance in both SFHAs areas and non-SFHA areas. The FEMA Community Status Book Report for Communities participating in the NFIP https://www.fema.gov/cis/NM.pdf) still indicates the digital FIRMs for the City of Alamogordo were updated on December 17, 2010.

For more information about the NFIP/CRS Status for the City of Alamogordo can be found in Section 5 – Capabilities Assessment under "National Flood Insurance Program Participation".

The Nevada Flood Risk Portfolio states that high-risk flood zones, also known as Special Flood Hazard Areas (SFHAs), are delineated on Flood Insurance Rate Maps (FIRMs) to represent areas subject to inundation by the base (1-percent-annual chance) flood. Structures located with the SFHA have a 26 percent change of flooding during the life of a standard 30-year mortgage. The FEMA Risk Rating 2.0: Equity in Action allows FEMA to provide individuals and communities with information to make more informed decisions on purchasing flood insurance and initiating and informing appropriate mitigation options to help lower flood insurance rates. The current rating methodology has not changed since the 1970s. Over the years, technology has evolved, and so has FEMA's understanding of flood risk. Risk Rating 2.0 allows FEMA to calculate premiums more equitably across all policyholders based on the value of their home and individual property's flood risk.

Figure 11: FEMA, National Rate Analysis



Data Source: *FEMA*

Related to the SFHA, the following table provides premium change analysis for the SFHA Count and % SFHA by County by FEMA. In order to get data that reflect the City of Alamogordo, the Zip codes 88310 and 88311 were used to reflect the data of the planning area.

FEMA Risk Rating 2.0 - Equity In Action

First Year Change by State and Zip- Count of SFH Policies

NM	Zip Code	Green bar											Blue Bar	Dk. Blue Bar	Grey bar									
		< -$100	$-100 to $-90	$-90 to $-80	$-80 to $-70	$-70 to $-60	$-60 to $-50	$-50 to $-40	$-40 to $-30	$-30 to $-20	$-20 to $-10	$-10 to $0	$0 to $10	$10 to $20	$20 to $30	$30 to $40	$40 to $50	$50 to $60	$60 to $70	$70 to $80	$80 to $90	$90 to $100	> $100	Total
	88310	5	-	3	-	7	14	20	38	49	44	43	756	28	4									1,011

First Year Change by State and Zip- Count of All Policies

NM	Zip Code	Green bar											Blue Bar	Dk. Blue Bar	Grey bar									
		< -$100	$-100 to $-90	$-90 to $-80	$-80 to $-70	$-70 to $-60	$-60 to $-50	$-50 to $-40	$-40 to $-30	$-30 to $-20	$-20 to $-10	$-10 to $0	$0 to $10	$10 to $20	$20 to $30	$30 to $40	$40 to $50	$50 to $60	$60 to $70	$70 to $80	$80 to $90	$90 to $100	> $100	Total
	88310	11	2	6	1	8	20	22	46	52	46	51	977	60	10	4	1	2	-	-	1	1	-	1,321

Data Source: *FEMA* - https://www.fema.gov/sites/default/files/documents/fema_risk-rating-zip-breakdown_2021.xlsx

4.7.6 Repetitive Loss Structures

The NFIP defines a RL property as:

- Any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. At least two of the claims must be more than 10 days apart.

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both of the above, at least two of the referenced claims must have occurred within ten years and be greater than ten days apart.

According to the City of Alamogordo Floodplain Manager, the previous LHMP (2019) mentions only one repetitive loss structure that has yet to be mitigated. However, at the time of this plan update, the State Floodplain Coordinator with the New Mexico Department of Homeland Security and Emergency Management (NMDHSEM) reported that as of 2019, the City of Alamogordo has zero (0) repetitive loss properties in the planning area. The data the State of New Mexico provided about RL properties does not include the property type. This plan update relies on data from the State Floodplain Coordinator for this data and is the only data source accessible.

4.7.7 HAZUS® Models

HAZUS®, version 6.0, was used to perform the analysis for the City of Alamogordo using essential facility data for The City of Alamogordo Fire Department. The analysis was completed by BOLDplanning. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance flood event (100-Year Flood) and 0.2% annual chance flood event (500-Year Flood).

4.8 Wildfire

4.8.1 Hazard Description



Wildfire in NM Photo Source: USA Today

The National Weather Service (NWS) defines a wildfire as "any free-burning, uncontainable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment." Wildfires can occur naturally from a lightning strike; by human accident from a non-fully extinguished campfire; and on rare occasions, by human actions, or arson. The threat of wildfire increases in areas prone to intermittent drought, or that are generally arid and dry. Regardless of how they begin, wildfires have the ability to consume large areas including infrastructure, property, and resources.

There are three general types of wildfires—ground, surface, and crown. Ground fires, often referred to as underground or subsurface fires, occur in deep accumulations of organic matter such as humus, peat and similar dead vegetation that are dry enough to burn. These fires move very slowly and become difficult to fully extinguish or suppress. Occasionally, during prolonged drought, ground fires can smolder all winter underground and then emerge at the surface again in the spring. Surface fires burn only surface litter and duff, including leaves and fallen branches, and are the easiest of all fires to extinguish. Crown fires, on the other hand, are the most intense and most difficult to maintain. They burn trees up their entire length, and usually occur where there are strong winds, steep slopes, and a heavy fuel load (e.g., densely wooded forests).

With more people making their homes in wooded settings near forests and remote mountain sites, the threat of wildfire is steadily on the rise. This is because the demographic change is expanding the size of the area where structures and other human development meet or intermingle with undeveloped wildland, otherwise known as the wildland urban interface (WUI). The WUI creates an environment in which fire can move readily between structure and vegetation fuels, often resulting in massive fires, or conflagrations, that may lead to widespread evacuations.

A wildfire risk assessment can determine the level of risk of a particular location. The "boundary" WUI is characterized by areas of development where homes, especially new subdivisions, press against public and private wildlands, such as private or commercial forest land, or public forests or parks. There is a clearly defined boundary between the suburban fringe and the rural countryside. WUI areas deemed as "intermix" are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just starting to transition from rural to urban land use. "Island" WUI areas, also called occluded interface, are plots of undeveloped wildland, such as remnant forests and parks, within predominately urban or suburban locales.

Aside from damaging or destroying property, or worse, claiming lives, wildfires put off dense smoke that can affect air quality and pose a serious health risk. This is especially true for the elderly or those, young and old, who have breathing conditions such as asthma or Chronic Obstructive Pulmonary Disorder (COPD). Experts agree that smoke inhalation is the number one cause of death related to fires.

Wildfires are also notorious for spawning secondary hazards long after the original fire is extinguished. Such hazards include flash flooding, debris flow and landslides. All result from fire consuming the vegetation that provides precipitation interception and infiltration as well as slope stability.

Fire services can mitigate wildfires by regularly engaging in preventative burns and proactive land use measures. Homeowners and business owners can also do their part by taking precautionary efforts, such as

following local fire-related ordinances; removing leaves, limbs and other debris from property; and creating a defensible space around structures. Among those emphasizing the need for such preemptive actions is Firewise USA™, a national recognition program that provides instructional resources to inform people how to adapt to living with the risk of wildfire.

4.8.1 Location & Extent

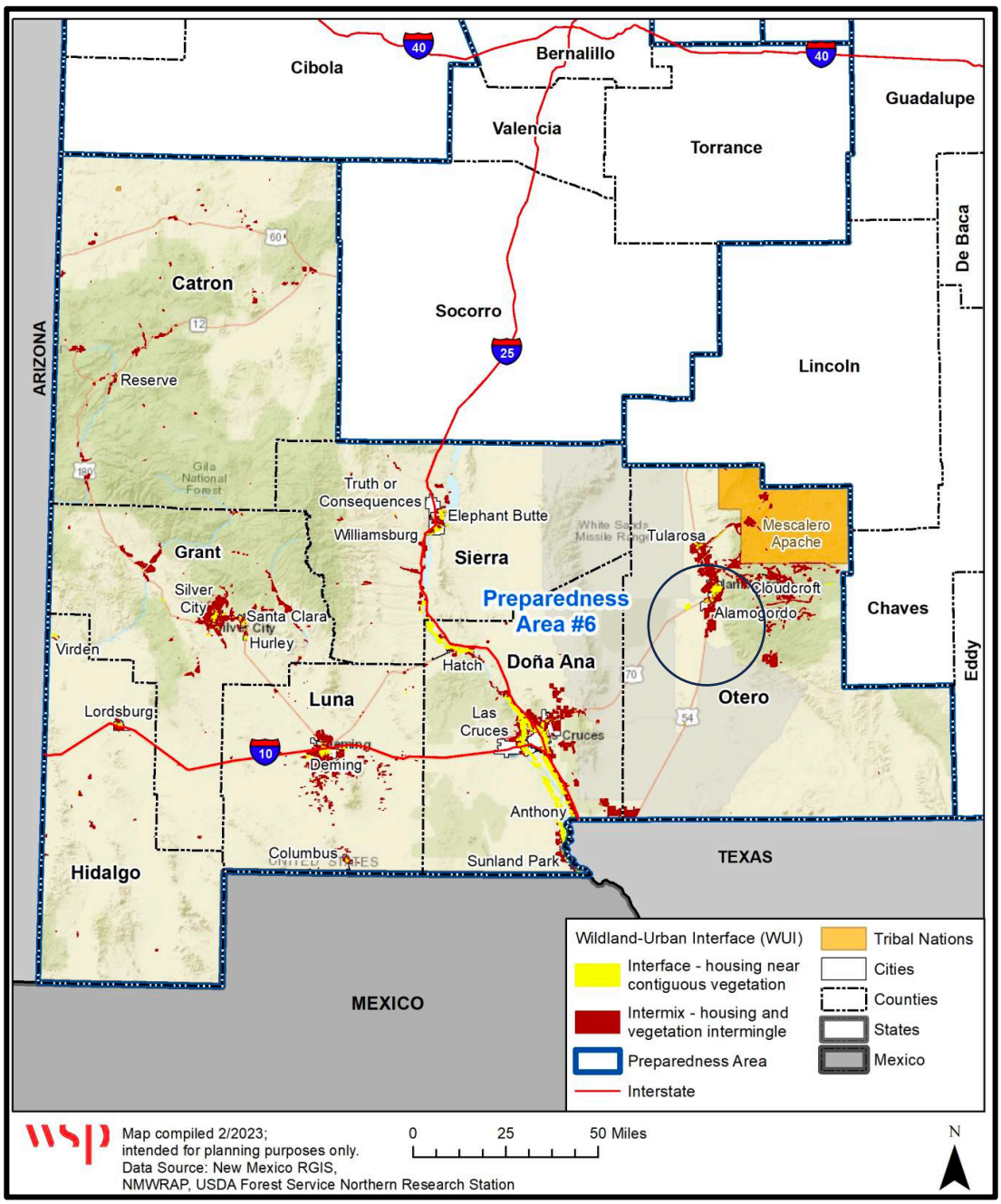
The USADA U.S Forestry Service's Wildfire Risk to Communities database mentions that the State of New Mexico has a high wildfire risk—higher than 82% of the states in the U.S. The New Mexico State Hazard Mitigation Plan (2023) states that wildfires can occur at any time of day and during any month of the year. Still, the peak fire season in New Mexico is generally from March through July. 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 determining the number of fires and acreage burned. Three factors can contribute to wildfires in the State - fuel, topography, and weather. The New Mexico State Hazard Mitigation Plan (2023) provides the following information to those factors:

- **Fuel:** Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree leaves, twigs, and branches to dead-standing trees, live trees, brush, and cured grasses. Also considered as a fuel source are manmade structures, such as homes and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Fuel is the only factor that humans can modify.
- **Topography:** An area's terrain and slopes affect its susceptibility to wildfire spread. Due to the tendency of heat from a fire to rise via convection, both fire intensity and rate of spread increase as the slope increases. The arrangement and types of vegetation throughout a hillside can also contribute to increased fire activity on slopes.
- **Weather**: Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out fuels that feed wildfires, creating a situation where fuel will more readily ignite and burn more intensely. Thus, during periods of drought, the threat of wildfire increases. Wind is the most influential weather factor of the three, and its influence can increase spread rates regardless of temperature and relative humidity.

Wildfire frequency and severity can sometimes result from other hazards of impact like drought and flooding. Related to drought, the New Mexico State Hazard Mitigation Plan (2023) mentions that drought has the potential to increase the incidences and severity of other hazard events such as wildfire and flooding. Forest and wildland fires are in increased danger. Loss of forests and trees increases erosion, causing severe damage to aquatic life, irrigation, and power development by heavy silting of streams, reservoirs, and rivers. When severe to exceptional drought occurs, there is a significant consequence to the water supply, i.e., water used for drinking and agriculture, water quality, fighting wildfire, and recreation. Drought also creates conditions that make wildfires more likely. When a drought begins, agriculture is usually first affected because of its heavy dependence on stored moisture in the soil. Soil moisture can be rapidly depleted during extended dry periods. Also, reservoir levels throughout New Mexico have been at their lowest since the mid-1970s. At the time of this plan update, much of New Mexico, including Otero County, where the City of Alamogordo is located, experienced exceptional drought in 2021. The Drought Monitor also indicated that Otero County experienced the 32nd driest period to date over the past 130 years (January - May 2024) and was in some form of drought for 214 consecutive weeks from May 19, 2020, to June 18, 2024.

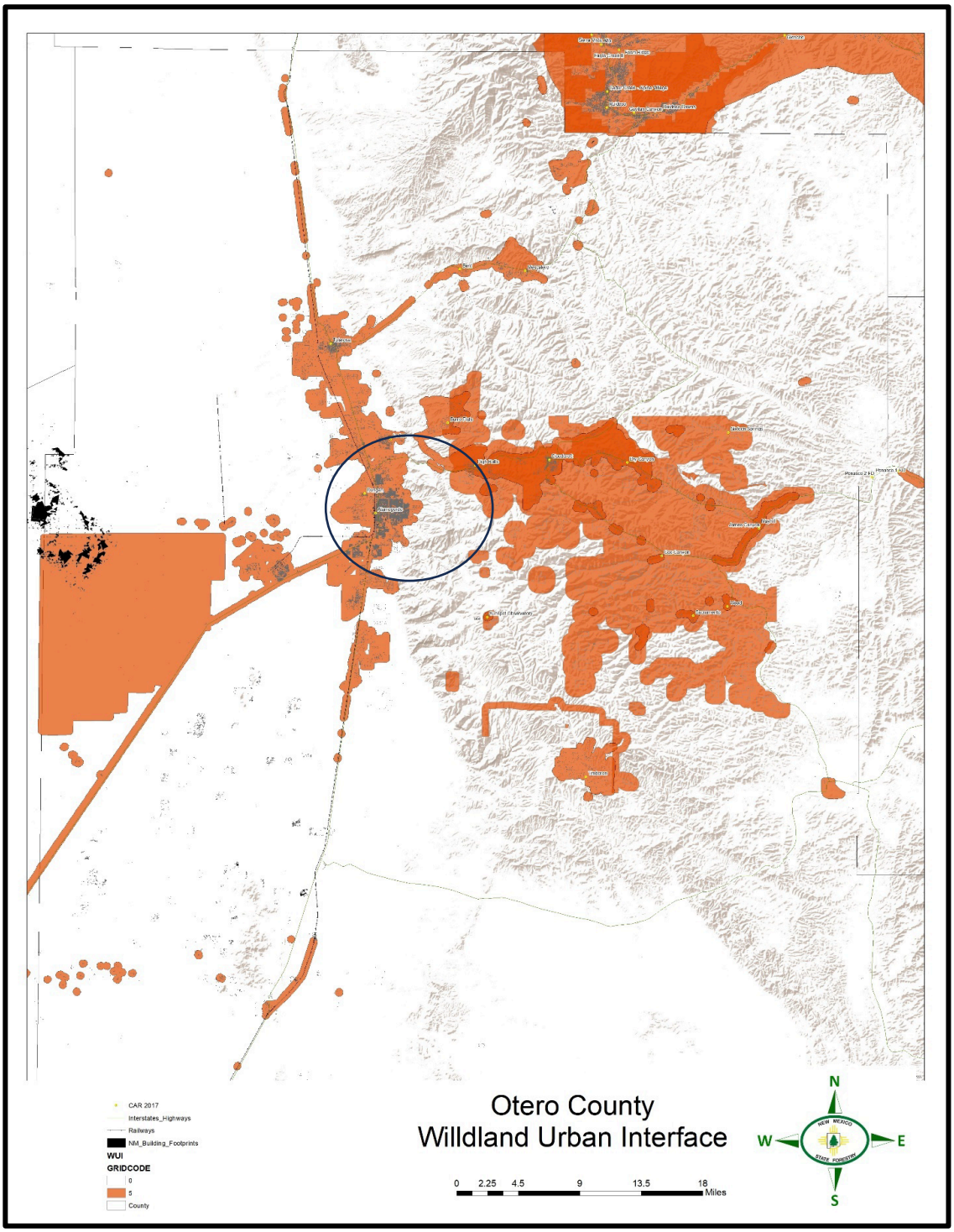
The City of Alamogordo is located at the foot of the Sacramento Mountains and has been subjected to numerous historical wildfires within Otero County and the region. The City has a land area of 21.39 square miles, which equals 13,689.6 acres, which makes it susceptible to wildfires within the planning area. This region encompasses the Lincoln National Forest to the north and east and another undeveloped or natural habitats. The Otero County, NM Community Wildfire Protection Plan (2020) mentions that a century record

of precipitation data from (1909-2009) reveals that annual precipitation is 10.95 inches, with an average yearly snowfall of 4.1 inches. The majority of the precipitation was received from July through September. The previous LHMP (2019) mentions that although wildfire may not directly present an immediate threat to the community, it has a propensity for long-term effects and impacts, resulting in a cascade effect. This underscores the need for sustained planning and action to mitigate the potential long-term effects of wildfires. An expansive area from which the community derives its water is attributed to a watershed prone to wildfire. A combination of low moisture, persistent drought, winds, and warm weather in southern New Mexico contributes to the increased frequency of wildfires. The following maps provides Wildland Urban Interface (WUI) for New Mexico Preparedness Area 6, which includes the planning area and Otero County which includes the City.



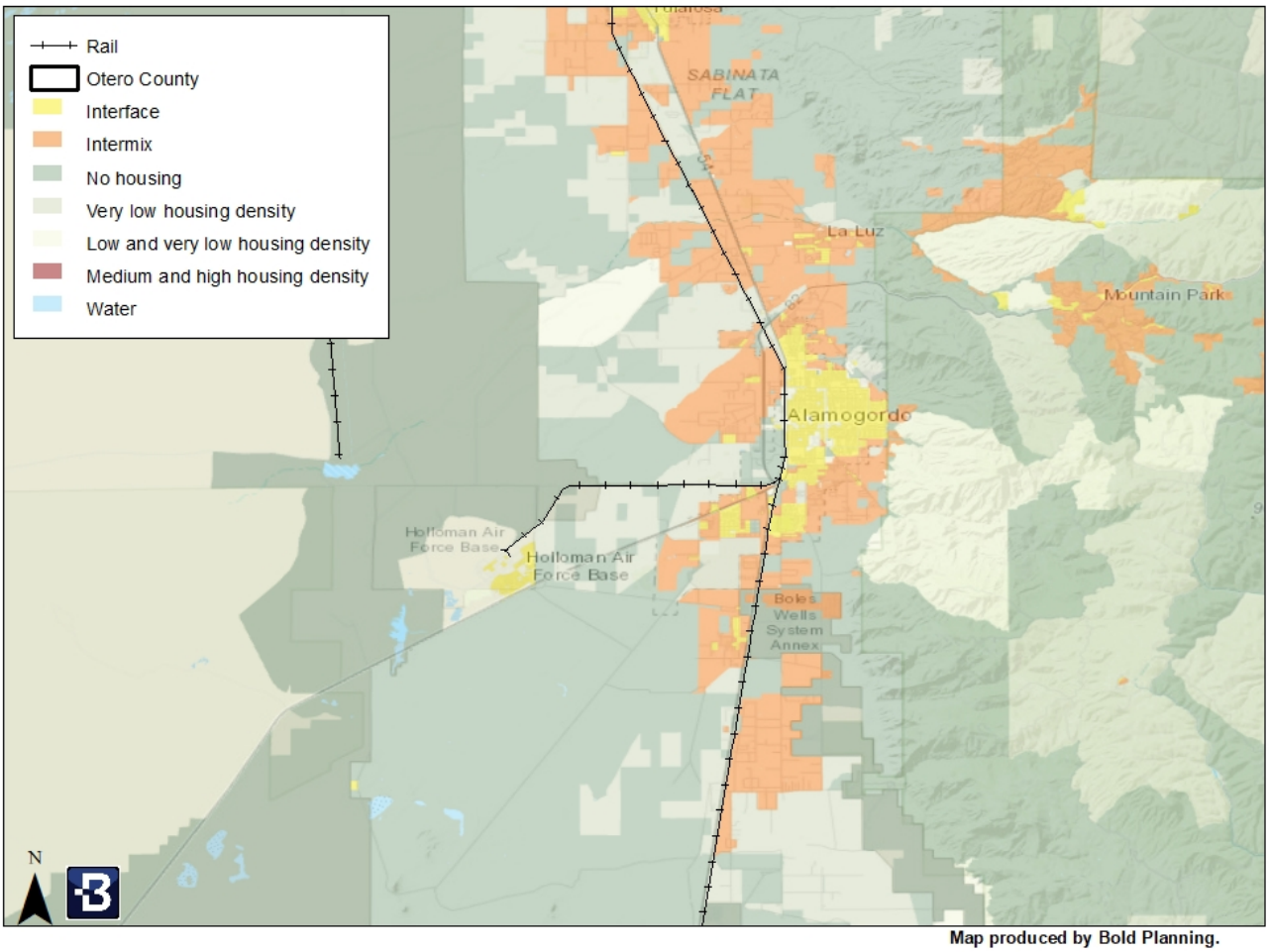
***Map Source**: State of New Mexico Hazard Mitigation Plan (2023)*

Map 28: Otero County, NM Wildland Urban Interface (WUI) Map



Map Source: *2020 Otero County Wildfire Protection Plan*

Map 29: City of Alamogordo, NM WUI Map



Map Source: *BOLDplanning, Inc.*

The United States Forest Service Wildland Fire Assessment System (USFS-WFAS) mentions that the Fire Danger Rating Level takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. (Deeming and others 1977, Bradshaw and others 1984). The potential fire conditions are described by the warning used by the NWS, as shown in the following table:

Table 50: NWS Wildland Fire Warnings

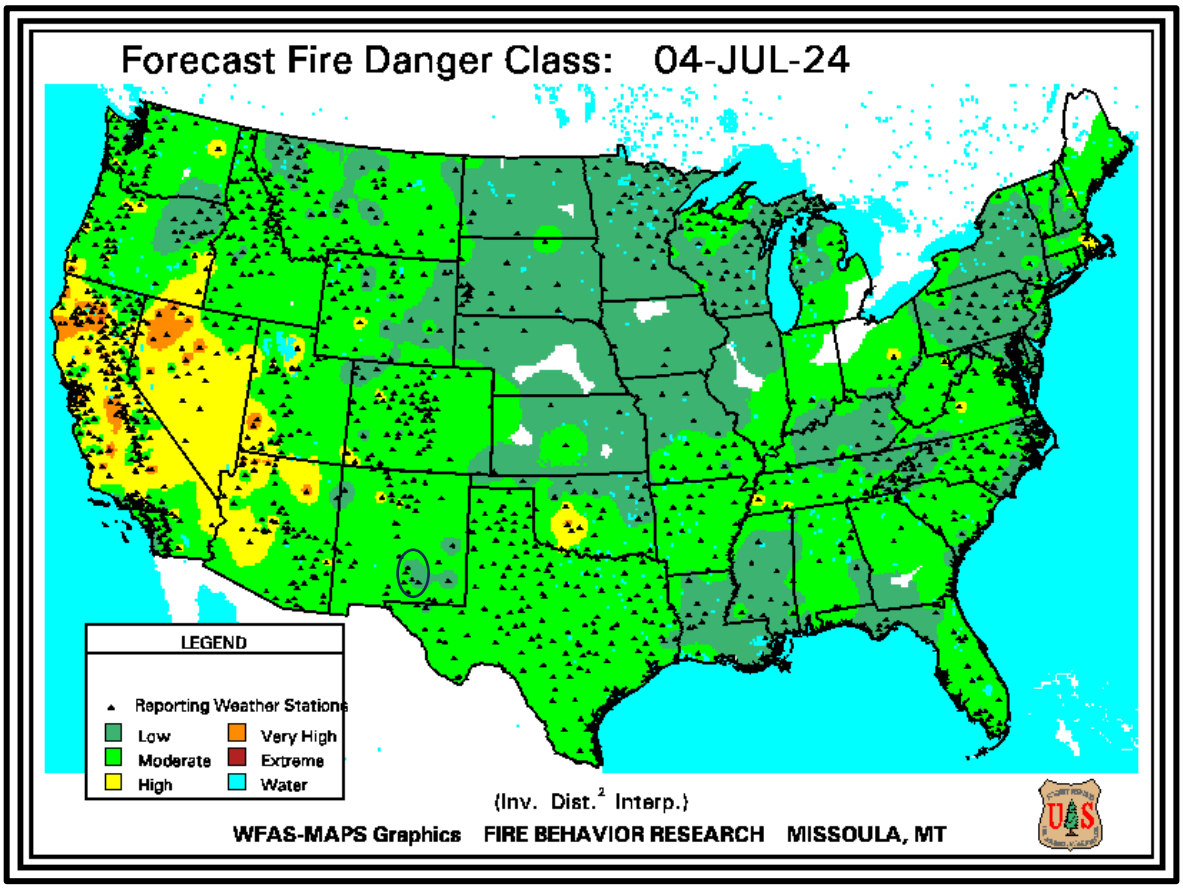
Warning Type	Warning Criteria	Zones Effected
R ***Map Source:*** *2020 Otero County Wildfire Protection Plan* **ed Flag Warning**	Combination of weather and fuels conditions for any three hours or more in a 12-hour period. Criteria may include: • Frequent gusts of 25 mph or greater; • Relative humidity of 15% or less; • Dry thunderstorms with 15% coverage or more, constituting an LAL 6. Additional criteria include:	A warning may be issued for all or portions of a fire weather zone or region. Zones impacted by the event will be listed within the Red Flag Warning product.

Table 50: NWS Wildland Fire Warnings

Warning Type	Warning Criteria	Zones Effected
	• Haines Index of 5 or 6, indicating a moderate or high potential for large, plume-dominated fire growth; • Wind shifts associated with frontal passages; • First significant lightning event (wet or dry) after an extended hot and dry period; • Poor relative humidity recovery overnight (40% or lower) ; Any combination of weather and fuel moisture conditions which, to the judgement of the forecaster, would cause extensive wildland fire occurrences.	
Fire Weather Watch	Alerts land management agencies to the high potential for development of the above Red Flag criteria in the next 12-72 hours.	A watch may be issued for all or portions of a fire weather zone or region. Zones impacted by the event will be listed within the Red Flag Warning
Data Source: The National Weather Service		

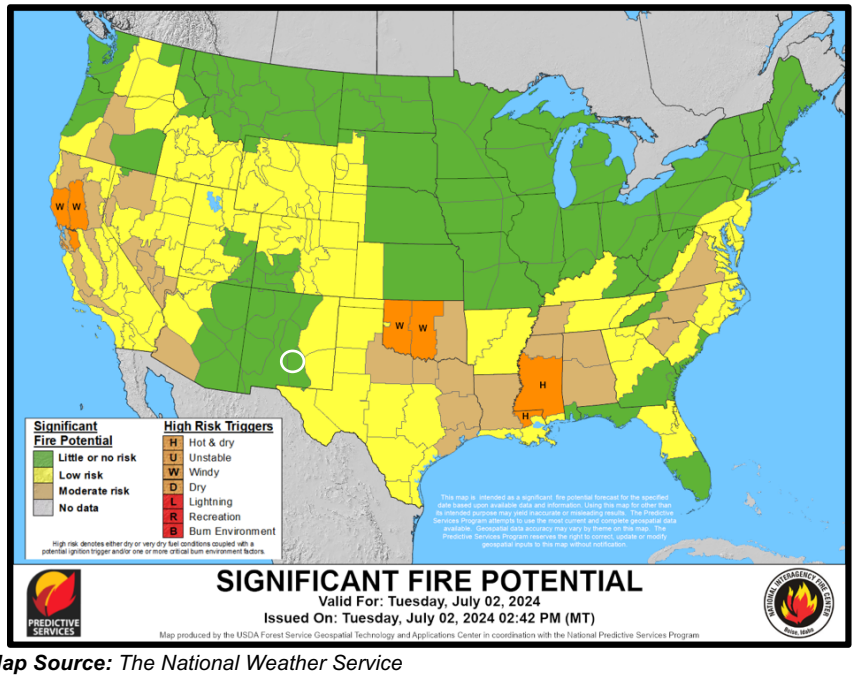
The NWS produces fire danger maps that depict current fire weather across the U.S. The United States Forest Service Wildland Fire Assessment (USFA-WFAS) also provides daily potential wildfire conditions throughout the County. The corresponding maps will show the current potential for Otero County, where the City of Alamogordo resides, currently within the Low-Moderate range:

Map 30: Fire Danger Index Map of the United States with Otero County Emphasized by a Circle



***Map Source**: USFS-WFAS*

Map 31: Significant Wildland Fire Potential Outlook Map with Otero County Emphasized by a Circle



***Map Source:** The National Weather Service*

The expansion of the WUI in recent decades has significant implications for wildland or brush fire management and its impacts. The WUI creates an environment where fire can move readily between structural and vegetation fuels. Two types of WUI are mapped: intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle; interface WUI are areas with housing near dense, contiguous wildland vegetation.

The WUI can also affect a wildland's duration depending on the weather conditions, how dry it is, the availability of fuel to spread, and the ability of responders to contain and extinguish the fire. Historically, some wildfires have lasted only hours, while others have continued to spread and grow for an entire season. They spread quickly and can go unnoticed until they have grown large enough to be seen by their dense smoke. If fuel is available and high wind speeds hit, a wildland or brush fire can quickly spread over a large area. These factors make the difference between small upstart fires easily controlled by local fire services and fires destroying thousands of acres requiring multiple State and federal assets for containment and suppression.

The previous LHMP (2019) included the table shown below, which details the range of wildfire damages. The severity of the wildfire depends on several quickly changing environmental factors. It is impossible to strategically estimate the severity of a wildfire as quickly evolving factors, drought conditions, and wind speed significantly influence the wildfire conditions. The exposed participating jurisdiction(s) could experience a wildland or brush fire ranging from 0 to 4 on the Burn Severity Index.

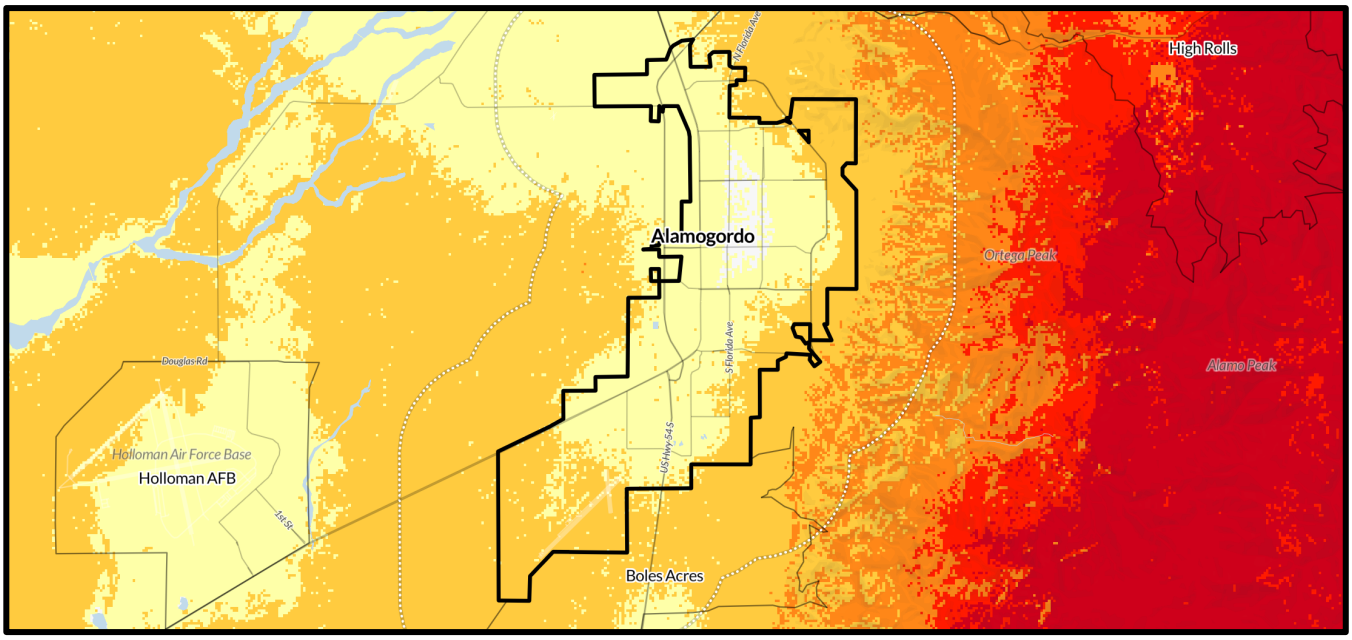
Table 51: Burn Severity Index

Rank	Warning Type	Warning Criteria	Zones Effected
0	**Unburned**	Fire extinguished before reaching microsite.	• Leaf litter from previous years intact and uncharred • No evidence of char around base of trees and shrubs • Pre-burn seeedlings and herbaceous vegetation present.
1	**Low Severity Burn**	Surface fire which consumes litter yet has little effect on trees and understory vegetation.	• Burned with partially consumed litter present • Evidence of low flame heights around base of trees • No significant decrease in overstory & understory basal area, diversity or species richness from pre-burn assessments
2	**Medium-Low Severity Burn**	No significant differences in overstory density and basal area, & and no significant differences in species richness. However, understory density, basal area, and species richness declined.	• No litter present and 100% of the area covered by duff • Flame lengths <2m • Understory mortality present, little or no overstory mortality
3	**Medium-High Severity Burn**	Flames that were slightly taller than those of medium-low intensity fires, but these fires had occassional hot spots that killed large trees with significant reduction in the understory.	• Soil exposure on 1-50% of the area. • Flame lengths <6m • High understory mortality with some overstory trees affected
4	**High Severity Burn**	Crown fires, usually a stand replacing burn with relatively high overstory mortality.	• Soil exposure >50% • Flame lengths >6m • Higher overstory mortality >20% • Usually burning above 800° C

Table 51: Burn Severity Index

Rank	Warning Type	Warning Criteria	Zones Effected
***Data Source*:** *City of Alamogordo Local Hazard Mitigation Plan (2019)*			

The Otero County, NM CWPP (2020) mentions that developed land is situated around Alamogordo and other larger communities in the central portion of the County. Developed is another generic vegetation type that describes human-made, developed areas can include structures, parking lots, dirt lots, and roads. Although these areas are not typically described in a natural fire regime, the structures built there can be a receptive fuel, so developed areas are typically central to WUI areas of concern. The following map from the USDA US Forestry Service's Wildfire Risk to Communities database illustrates the likelihood of a wildfire and wildfire intensity from a simulation modeling for the planning area.



***Map Source**: USDA, USFS Wildfire Risk to Communities*

At the time of this plan update, Community Wildfire Protection Plans (CWPP) for the State of New Mexico Division of Forestry list all the County & Community Wildfire Protection Plans (CWPP) that they have on file. At the time of this update, Otero County, where the City of Alamogordo is located, has a documented plan. The 2020 Otero County Wildfire Protection Plan was drafted in 2004 and updated in 2014 and 2020. The City of Alamogordo was included in the 2020 Otero County Wildfire Protection Plan.

4.8.3 Previous Occurrences

The previous LHMP (2019) mentions that according to the National Center for Environmental Information, the City of Alamogordo has zero recorded previous occurrences of wildfires from 1950-2018. At the time of this plan update, NOAA/NCEI still has no recent documented wildfires within the City of Alamogordo since the last LHMP update in 2018. However, multiple Federal declarations in the County of Otero have been issued since 2018 for fires impacting jurisdictions near the City of Alamogordo. At the time of this plan update, two wildfires occurred within the County, and the City of Alamogordo provided support and resources to provide aid and assistance.

- In June 2024, the Salt and South Lake Fires burned roughly 25,000 acres across private, public, and tribal lands between Otero County, Lincoln County, and the Mescalero Apache Tribe. The Village of Ruidoso, NM, government reported on June 29, 2024, that the cause of the South Fork Fire was a

lightning strike (https://www.ruidoso-nm.gov/news-info/xwa9ec275x28anktgmr99wnzy8wltc); however, the Salt Fire cause is still under investigation. Both fires needed the following resources to fight them: currently staffed with 18 crews, four helicopters, 31 engines, four bulldozers, and ten water tenders. The staff fighting these fires included resources from the City of Alamogordo Fire Department. Finally, NBC News reports that 29 people have been accounted for, and two deaths occurred due to this fire.

- In May 2024, the Blue 2 Fire (https://www.ruidoso-nm.gov/blue-2-fire) began in the Village of the County near the White Mountain Wilderness Area. As reported by the Village government, as of June 12, 2024, the fire burned 7,532 acres within the County, and the reported cause was a lightning strike. New Mexico Fire Information website reports the following resources were used to contain the fire: 118 personnel, one crew, two engines, three water tenders, and two masticators. The staff working to contain this fire included support and resources from the City of Alamogordo Fire Department.

Since the last LHMP update (2019), five (5) disaster declarations have been declared, including Otero County for fires. The events for fires that resulted in a state or federal disaster declaration are shown in the table below.

Table 52: State and Federal Disaster Declarations for Otero County (2004-Present)

Disaster Declaration	Hazard	Date	Details
New Mexico South Fork Fire and Salt Fire DR-4795-NM	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Incident Period: June 17, 2024 – continuing
New Mexico Salt Fire (FM-5498-NM)	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Fire Management Assistance Declaration declared on June 17, 2024 Incident Period: June 17, 2024 – continuing
New Mexico South Fork Fire (FM-5497-NM)	Fire	June 2024	At the time of this plan update, FEMA declared a fire emergency for Otero County, which includes the City of Alamogordo. The City assisted Otero County during this disaster event. Fire Management Assistance Declaration declared on June 17, 2024 Incident Period: June 17, 2024 – continuing
New Mexico Blue 2 Fires FM-5492-NM	Fire	May 2024	At the time of this plan update, the state declared a fire emergency for Lincoln County, NM, which neighbors the Otero County, which includes the City of Alamogordo. The City assisted Lincoln County during this disaster event. Fire Management Assistance Declaration Date: May 26, 2024 Incident Period: May 16, 2024 – continuing

Table 52: State and Federal Disaster Declarations for Otero County (2004-Present)			
Disaster Declaration	**Hazard**	**Date**	**Details**
New Mexico Soldier Canyon Fire FM-5240-NM	Fire	June 2018	Incident Period: Jun. 7, 2018 – Jun.19, 2019 Declaration Date: Jun 8, 2018
***Records of Disaster Declarations found at*: FEMA Disaster Information**			

4.8.4 Probability of Future Events

The previous LHMP update (2019) states that although historical fires in the planning are limited based on data, climatic conditions can change related to wildfires. Also, the Otero County, NM CWPP (2020) included a community wildfire hazard risk assessment to identify fire hazards and risks and prioritize areas requiring mitigation and detailed planning. The City of Alamogordo received a Moderate rating in the CWPP's community hazard ratings.

Also, calculating future probability is not the only predictor of future occurrences. The previous LHMP plan (2019) states that given the lack of historical evidence of wildfires, it is difficult to quantify the probability of future events in the planning area. However, at the time of this plan update, while there has been evidence of wildfires in the planning area due to the declared disasters within Otero County, which includes the City of Alamogordo since 2018, it is still likely that the City of Alamogordo will experience wildfires in the future.

4.8.5 Vulnerability and Impact

Table 53: Summary of Changes to Vulnerability, Wildfire			
2023 LHMP Update Hazards	**Decrease in Vulnerability**	**No Change in Vulnerability**	**Increase in Vulnerability**
Wildfire			X

- Wildfire was addressed in the 2019 LHMP update. As a result, Wildfire continues to be a priority for mitigation planning for the City.
- Since the last plan update in 2019, the population of Alamogordo has increased by 0.951%. This growth has significantly increased the city's vulnerability to hazards, particularly wildfires.
- Wildfire conditions have continued to impact Alamogordo and the State of New Mexico since the 2019 LHMP update. As a result, the wildfire hazard remains a top priority for ongoing mitigation planning for both the City and the State.
- Recent drought conditions have contributed to an increase in dry fuels (and tree mortality), and a general increase in wildfire conditions.

The City of Alamogordo is likely to experience wildfire events in the future. As mentioned in the previous section, calculating future probability is not the only predictor of future occurrences. As mentioned in the previous LHMP update (2019), given the data deficiency described in the Previous Occurrence and Probability of Future Events section of this hazard profile, the current impacts of wildland and brush fires throughout the planning are unknown but expected to be severe. This is still true today. At the time of this plan update, the City of Alamogordo will continue to seek out this data as soon as it can be made available and update this portion of the plan with that information.

4.8.5a Impact of Climate Change

The State of New Mexico Hazard Mitigation Plan (2023) states that, according to the Fourth National Climate Assessment (2018), wildfires burned twice as many acres across the western United States between 1985 and 2015 as they would have had climate change not occurred. The effects of climate change on this hazard are currently creating a year-round wildfire season within the State, which also affects the planning area.

Also, the New Mexico Climate and Adaption and Resilience Plan (2023) states that the risk of wildfires is expected to rise and will directly impact people and property within the State, including the planning area. The report also mentioned that prolonged drought coupled with increasing temperatures can increase the risk of wildfires. As mentioned, climate change can increase drought risk, exacerbated by groundwater depletion, and cause more frequent, intense, and lengthy droughts. Climate change is already profoundly impacting New Mexico's water resources. With increased temperatures within the State, droughts could become more frequent and severe. Because of this, the increase in drought within the planning area is a significant concern due to the stresses on water resources. The impacts of drought can also impact wildfires. The planning area needs water to fight wildfires. The City of Alamogordo 40-Year Water Development Plan 2005-2045 mentions that a significant reduction of surface water supply due to drought conditions has placed critical limitations on the long-term reliance on surface water. Because of this, Alamogordo's need for additional water supply is urgent. Water conservation efforts must be a planning consideration for the City of Alamogordo to mitigate the effects of drought and wildfire.

4.8.5b Critical Facilities & Infrastructure

Wildfires have the potential to affect the City of Alamogordo. A wildfire burning near a jurisdiction may cover it in soot, cause secondary fires from traveling coals, or directly engulf facilities, burning them to the ground. Facilities can be protected by creating defensible spaces or buffer zones, maintaining a fuel-free environment, and making structural modifications to prevent wildfire growth.

Potential Impact on Community Lifelines

- Structural damage or destruction: During a wildfire event, persons who are working or located within a critical facility could be at risk
- Electrical Transmission: Overhead electrical transmission has been known to spark wildfire events
- Reduced Water Availability: The reduction in water availability directly impacts the amount of water that water utilities can draw from local sources.

The City of Alamogordo's structures are valued at $5,208,407. The following map is the WUI impact on the planning area’s critical facilities and infrastructure.

Map 32: City of Alamogordo, NM WUI Map and Critical Facilities



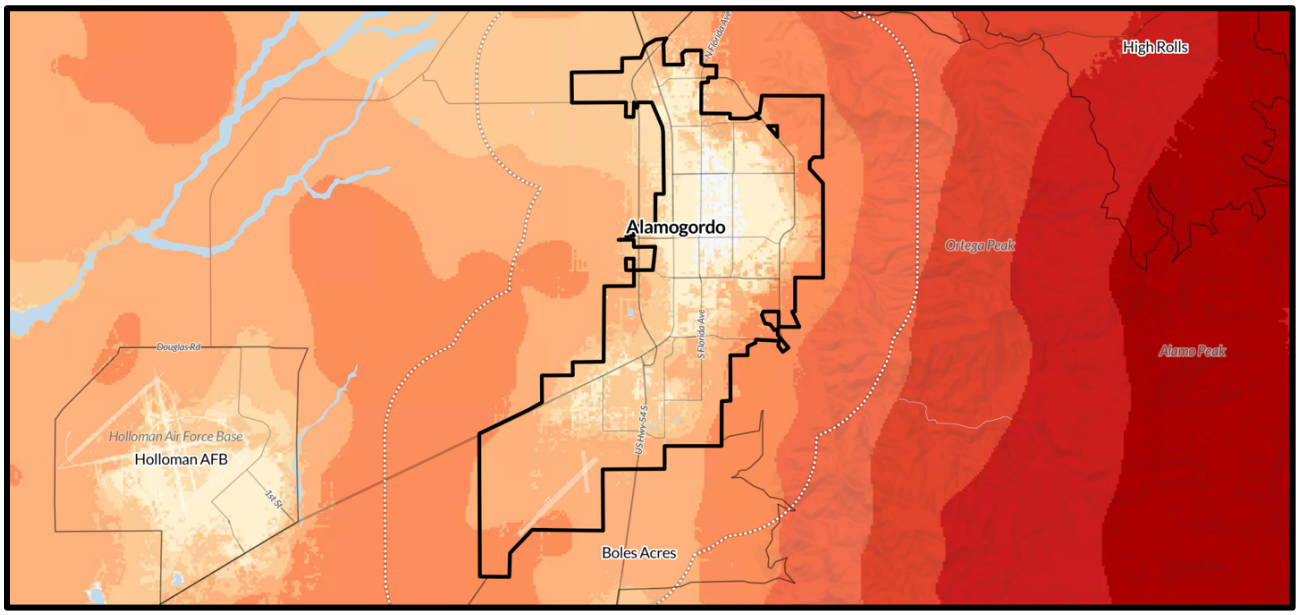
Map Source: *BOLDplanning, Inc*

Appendix D—Critical Facilities and Infrastructure—provides a complete list of critical facilities and infrastructure.

4.8.5c Land Use and Development

Wildland fires throughout the western United States have become larger, hotter, and more deadly over the past years. This is due to record drought, which has resulted in 100's millions of dead trees, hotter temperatures, and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area, since completion of the previous LHMP plan update (2019). The USDA US Forestry, Wildfire Risk to Communities database provides information for communities regarding the risk to homes to wildfires. Per the database, the City of Alamogordo has on average, a greater likelihood of wildfire than 75% of communities in the U.S. The following map illustrates that risk:

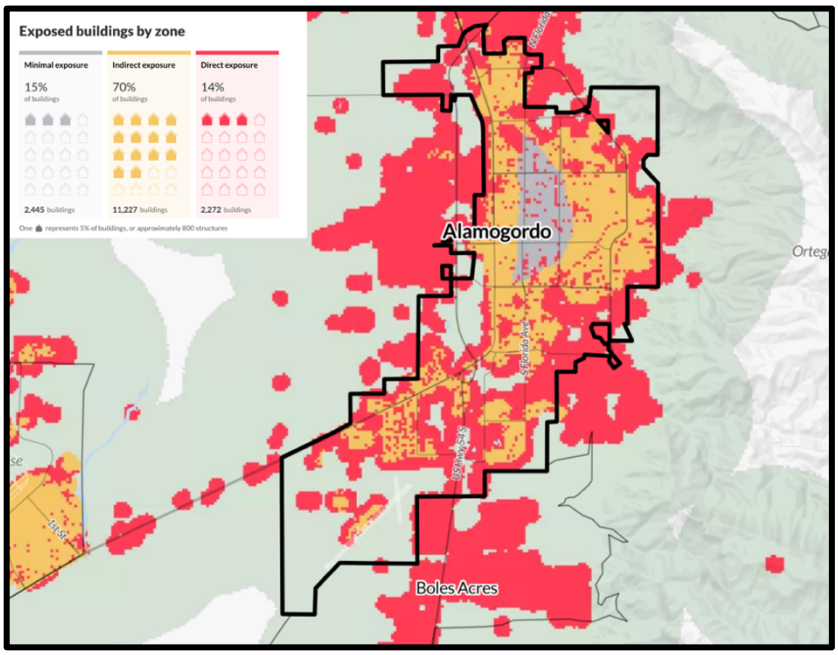
Map 33: USFS Wildfire Risk to Communities, Alamogordo, NM



Map Source: *USDA, USFS Wildfire Risk to Communities*

The previous LHMP Update (2019) indicated no significant land use and development projects, and the vulnerability had decreased due to land use, growth, or development trends in the City of Alamogordo. However, at the time of this plan update, the population has increased by 0.951%. Therefore, the vulnerability to hazards, like wildfire, has increased within the City of Alamogordo. The following map from the USDA US Forestry Service, Wildfire Risk to Communities, shows "Risk Reduction Zones: within the City of Alamogordo, 70% of the buildings are in the indirect exposure zone. The indirect exposure zone indicates homes may be ignited by indirect sources such as embers and home-to-home ignition. The following map illustrates this risk within the planning area:

Map 34: USFS Risk Reduction Zones, Alamogordo, NM



Map Source*: USDA, USFS Wildfire Risk to Communities*

Also, the Wildfire Risk Index score on the FEMA National Risk Index website states the wildfire expected annual loss score (represents the average economic loss in dollars resulting from natural hazards each year). For Otero County, NM, which includes the City of Alamogordo, the expected loss of data related to wildfire is as follows:

- Expected Annual Loss Score: 97.8 – Relatively High
- Expected Annual Loss: $9.6M
- Exposure: $133B
- Frequency: 0.952% events per year
- Historic Loss Ratio: Very Low

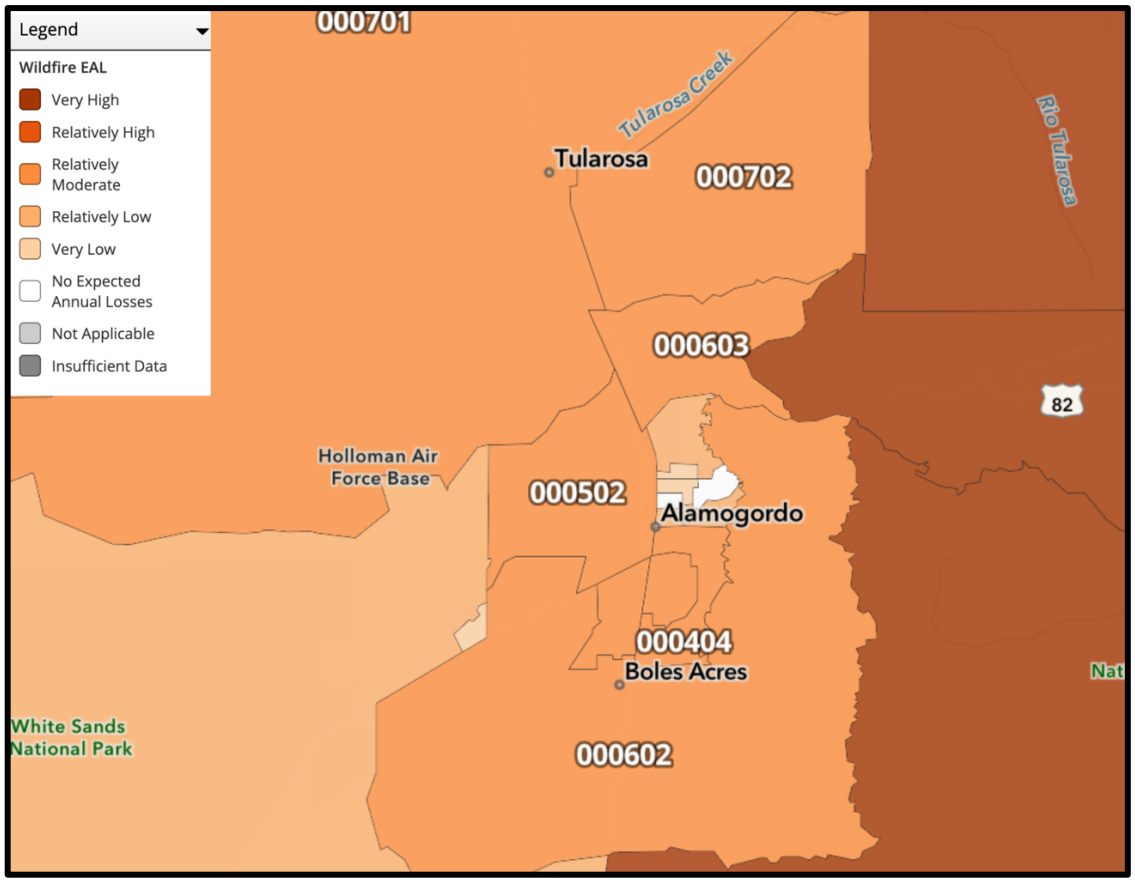
Table 54: Otero County EAL Data for Wildfire

Jurisdiction	EAL Value	EAL Rating	Exposure Building Value	Population Equivalence	Agriculture Value Exposure
Otero County	$9,614,330	Relatively High	$1,915,360,453	$66,350	$10,815,995

***Source**: FEMA NRI*

The following map illustrates the expected annual loss for wildfire in the planning area:

Map 35: FEMA National Risk Index, Wildfire, Otero County, NM



***Source**: FEMA NRI*

The City of Alamogordo structures are valued at $5,208,407. Since wildfire threatens the entire planning area, all structures are considered exposed and valuable. The following table provides a structural summary by sector for the City of Alamogordo, as identified by the FEMA HAZUS® database.

Table 55: Structural Summary: City of Alamogordo

Jurisdiction	Agriculture	Commercial	Government	Industrial	Residential	Education	Religious
Alamogordo	$8,377	$1,226,715	$204,201	$170,400	$3,207,679	$311,001	$80,034

Source: *FEMA HAZUS® Database*

Also, the previous plan update (2019) included the following eight (8) mitigation projects that addressed wildfire concerns in the planning area:

- Development of desalination plant
- Alternate Water Source
- Community Involvement Projects
- Hire Emergency Manager
- Watershed thinning project
- Re-design and construction of Coffer Dam

Section 6 — Mitigation Strategies contains Mitigation Project Updates and Project Prioritization Tables for this plan update.

4.8.5d Jurisdictional Risk and Vulnerability

Wildfires can affect all or a portion of the entire planning area. Drought conditions, also identified as a hazard in the plan, can add to this risk.

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. Each hazard's impact is evaluated in terms of disruption of operations, recovery challenges, and overall well-being of all City residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 56: Wildfire Consequence Analysis

Subject	Potential Impacts
Agriculture	Of all the hazards, wildfire is the most concerning to agriculture. Crops can be destroyed, agriculture commodities in storage can be destroyed, grazing land and the animals using it can be destroyed and agriculture infrastructure is vulnerable. Agriculture producer lives have been lost combatting wildfire.
Impact on Responders	The responders are at risk from heat exposure, burns, dehydration, smoke inhalation, etc.
Health and Safety of the Public	The public is at risk to injuries from heat and smoke.
Continuity of Operations	Those operations that are in or near the wildfire may be shut down or even destroyed by the fire. Operations outside the fire area may experience loss of electricity or communications if transmission lines and towers are damaged or shut down for safety reasons. Municipal water service may be interrupted if intakes are shut down due to ash or sediment.
Delivery of Services	Service delays are anticipated to operations within or near the fire areas.

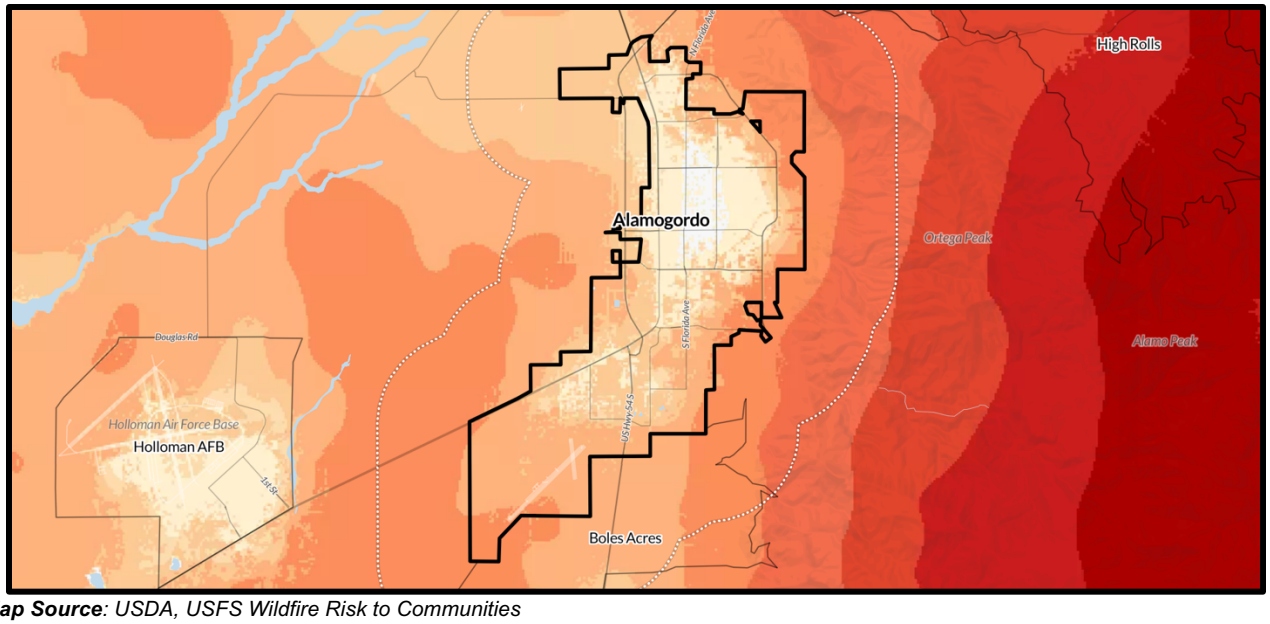
Table 56: Wildfire Consequence Analysis

Subject	Potential Impacts
Property, Facilities, and Infrastructure	Fire can cause damage or destruction of property and infrastructure. Infrastructure near the fire areas may be barricaded or restricted to use by responders.
Impact on Environment	High severity fires can cause large areas to be denuded of plant life and subsequently animal life. These bare areas are susceptible to erosion and post-fire runoff that can contaminate water supplies or fill waterways with contaminants or sediment. High temperature fires can cause the soils to be damaged and plant recovery may be delayed.
Economic Conditions	A wildfire can cause damages to residences, businesses, and other highly valued assets in a community that can have lasting effects.
Public Confidence in Governance	Not impacted by the event itself but may be damaged if the response to an event is poor.

Source: *2023 State of New Mexico Hazard Mitigation Plan*

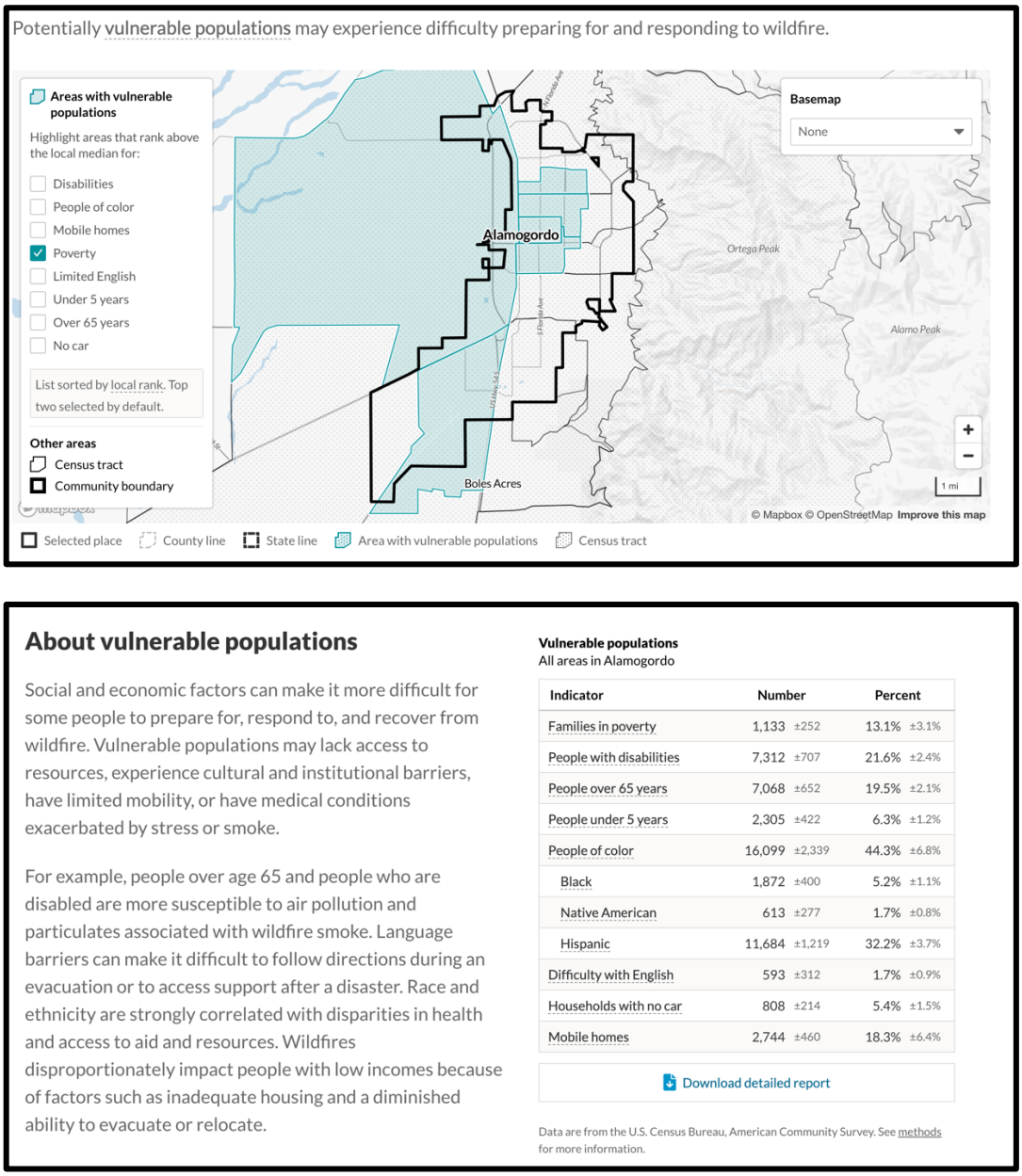
A wildfire could pose a risk to the vulnerable population within the planning area. The City of Alamogordo has a total population of 30,8898 in 15,118 housing units at risk of wildfires. This information should be considered when understanding how many citizens will potentially be displaced from their homes due to the hazard. The greatest vulnerability of a jurisdiction(s)' population is the inability to evacuate properly in an emergency. In particular, the population can be caught off guard due to slow or improper warning systems, erratic weather conditions, etc., and become trapped in a rapidly growing wildfire. The following map from the USDA US Forestry Service's Wildfire Risk to Communities database illustrates the likelihood of a wildfire event occurring within the populated areas of the planning area and how a wildfire event can affect the vulnerable population within the City.

Map 36: USFS Wildfire Risk to Communities, Alamogordo, NM



Map Source*: USDA, USFS Wildfire Risk to Communities*

Map 37: USFS, Vulnerable Population to Wildfire – City of Alamogordo



***Map Source**: USDA, USFS Wildfire Risk to Communities*

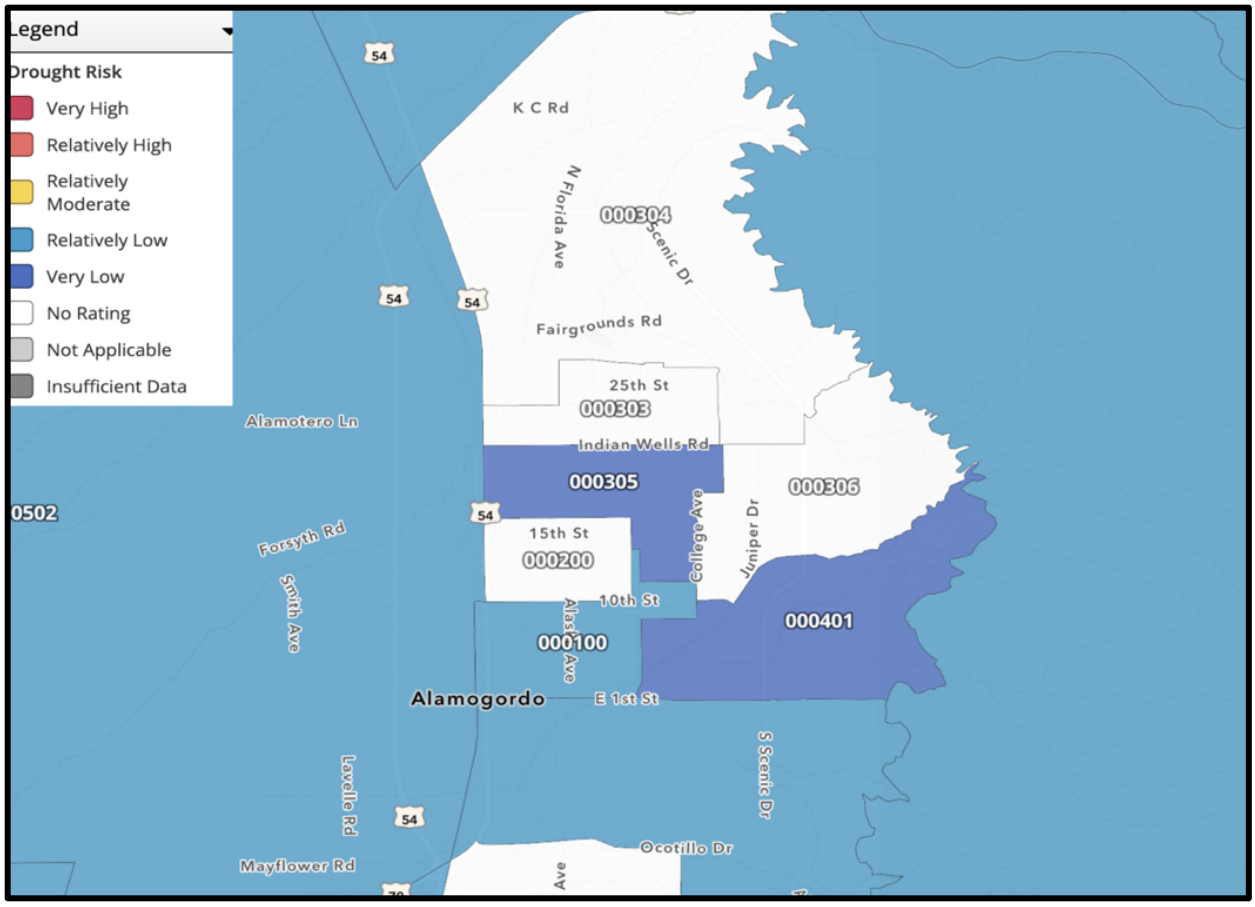
The following table details potentially vulnerable populations for participating jurisdictions within Alamogordo:

Table 57: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2022)	Population Over 65 (2022)	Estimated People in Poverty (2022)
Alamogordo	1,823	7,689	5,592

***Data Source**: U.S. Census Bureau – 2022 ACS 5-Year Estimate Subject Tables*

Using the FEMA NRI and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map indicates the potential risk to participating jurisdictions from wildfire.



Source: *FEMA NRI*

The following table indicates the FEMA NRI and EAL analysis for wildfires in Otero County, which includes the City of Alamogordo.

Table 58: Otero County FEMA EAL and NRI for Wildfire

Jurisdiction	EAL Value	Risk Index	Social Vulnerability	Community Resilience
Otero County	$9,614,330	Relatively Moderate	Very High	Very Low

Source: *FEMA NRI*

4.8.6 Repetitive Loss Structures

Not Applicable.

4.8.7 HAZUS® Models

Not Applicable.

4.9 Wind

4.9.1 Hazard Description



Photo Source: ***KVIA.com – High Wind Warning for parts of Otero County and Culberson Counties***

Naturally occurring, wind is simply moving air that is caused by differences in air pressure within the Earth's atmosphere. Air under high pressure moves toward areas of low pressure. The greater the difference in pressure, the faster the air flows.

The National Oceanic and Atmospheric Administration (NOAA) and its National Centers for Environmental Information (NCEI) divide wind into several types including High Wind, Strong Wind, Thunderstorm Wind, Tornado, and Hurricane. For the purposes of this risk assessment, the Wind Hazard will include data from High Wind, Strong Wind, and Thunderstorm Wind only. The definitions of the three wind types addressed in this section, 4.9 Wind, come from the NOAA/NCEI Storm Data Preparation document:

- **High Wind:** Sustained, non-convective winds of 40 mph or greater lasting for one hour or longer, or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.
- **Strong Wind**: Non-convective winds gusting less than 58 mph, or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.
- **Thunderstorm Wind**: Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury, or damage.

Downbursts, including dry or wet microbursts or macrobursts, are classified as Thunderstorm Wind events. In some cases, the downburst may travel several miles from the parent thunderstorm, or after the parent thunderstorm may have dissipated.

A gustnado is a small and usually weak whirlwind that forms as an eddy in thunderstorm outflows. It does not connect with any cloud-base rotation and is not a tornado. Since their origin is associated with cumuliform clouds, gustnadoes are classified as Thunderstorm Wind events.

Unlike other hazards with loss estimation tools such as HAZUS®, there are no widely used tools for predicting or assessing risks or potential losses due to wind events. To assess wind hazards, communities may need to rely on historical wind hazards documented in local or regional hazard mitigation plans or made available through various and often third-party data sources.

4.9.2 Location & Extent

Wind events (high wind, strong wind, and thunderstorm wind) are typical in New Mexico. In fact, NOAA/NCEI recorded more than 500 of them for the State in 2023 alone. Thus, the entirety of the City of Alamogordo, including all assets located within the City, can be considered at risk. This includes its entire population – 2020 U.S. Census (presently 30,898), all critical facilities, buildings (commercial, residential, etc.), and infrastructure. The following illustration provides the conversion for integer values of wind speed in knots to mph.

Knots to MPH WindSpeed Conversion

1 Knot = 1.152 MPH **1 MPH = 0.868 Knot**

Knots	MPH	Knots	MPH	Knots	MPH	Knots	MPH
1	1	31	36	61	70	91	105
2	2	32	37	62	71	92	106
3	3	33	38	63	73	93	107
4	5	34	39	64	74	94	108
5	6	35	40	65	75	95	109
6	7	36	41	66	76	96	111
7	8	37	43	67	77	97	112
8	9	38	44	68	78	98	113
9	10	39	45	69	79	99	114
10	12	40	46	70	81	100	115
11	13	41	47	71	82	101	116
12	14	42	48	72	83	102	118
13	15	43	50	73	84	103	119
14	16	44	51	74	85	104	120
15	17	45	52	75	86	105	121
16	18	46	53	76	88	106	122
17	20	47	54	77	89	107	123
18	21	48	55	78	90	108	124
19	22	49	56	79	91	109	126
20	23	50	58	80	92	110	127
21	24	51	59	81	93	111	128
22	25	52	60	82	94	112	129
23	26	53	61	83	96	113	130
24	28	54	62	84	97	114	131
25	29	55	63	85	98	115	132
26	30	56	65	86	99	116	134
27	31	57	66	87	100	117	135
28	32	58	67	88	101	118	136
29	33	59	68	89	103	119	137
30	35	60	69	90	104	120	138

***Source**: Bluehill.org – Knots to MPH Wind Speed Conversion*

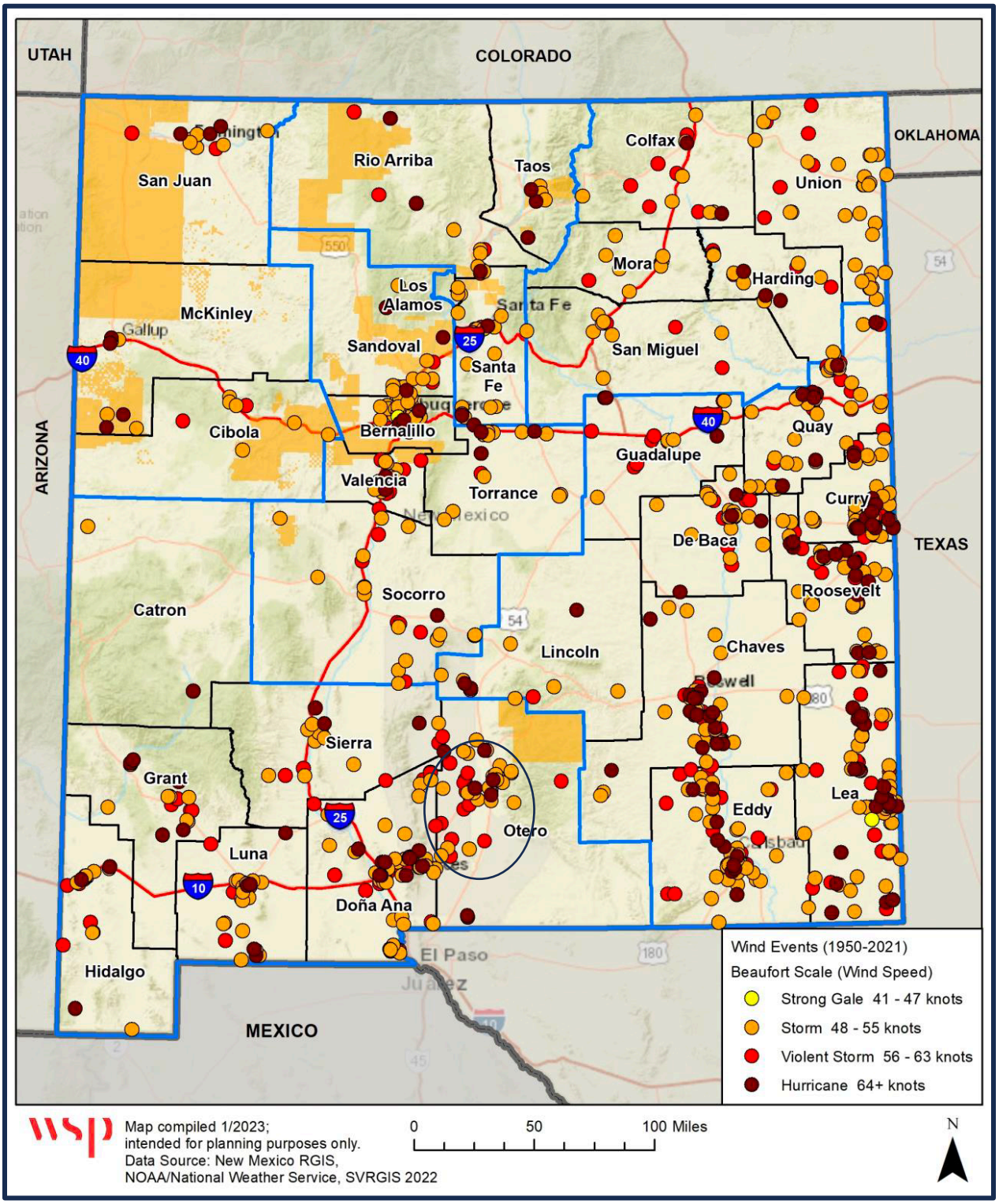
Wind observations and measurements are not just a part of the planning process but a critical step in understanding the probability of wind damage and estimating wind energy. To help with the planning, design, and construction of buildings for residential and commercial purposes, as well as mitigation efforts, the American Society of Civil Engineers (ASCE) calculates Average Hazard Wind Scores. The following table shows that the wind speeds correspond with the assigned hazard score, which ranges from one to five.

Table 59: ASCE Average Hazard Wind Scores

Wind Score(s)	Wind Speeds (mph)
1	<90
2	91-100
3	101-110
4	111-120
5	>120

***Data Source:** ASCE*

As documented in the State Hazard Mitigation Plan (2023), wind events can affect the entire State but are most vulnerable where the population is concentrated, and buildings are of older design. The following map from the State Hazard Mitigation Plan provides the wind events, primarily high wind events, by magnitude from 1950 to 2023. The events circled below depicts the number of high wind events within the planning area.



Map Source: *State of New Mexico Hazard Mitigation Plan (2023)*

The Otero County, NM Hazard Mitigation Plan (2011) mentions that the County, which includes the City of Alamogordo, is susceptible to wind speeds of 200 mph. Most windstorms in the region occur in June and July, with many spring and fall events associated with dry microbursts and small concentrated downbursts of damaging winds at the surfaces with maximum wind speeds of up to 168 mph. The National Weather Service (NWS) – Albuquerque Weather Office mentions that the State of New Mexico's windiest time of the

year is during the Spring months of April and May, with March and June often not far behind. This data is the same for the planning area. Otero County can experience severe wind and gap or canyon wind events during this time frame. The Otero County Hazard Mitigation Plan (2011) mentions *that gap or canyon wind occurs as the wind rushes over mountain passes, "gaps," in the ridgeline of a mountain chain. Wind speeds are generally strongest at narrow canyon openings. Spillover wind occurs when cold air to the east of the mountains has a sufficient depth (approximately 10,000 feet above sea level) to overtop the Sandia and Manzano Mountain ranges and spill over to the west, typically downslope toward the Albuquerque metropolitan area. As a consequence of severe wind, large-scale dust storms occasionally occur in the White Sands region of New Mexico, in the northeastern portions of the County. During the windy season, frequent dust storms are occurring over the Tularosa Basin and White Sands National Monument, with wind averaging 25 to 45 mph and occasionally gusting to 60 to 70 mph. Approximately three weeks a year, the visibility is greatly reduced, often to six miles or less, due to blowing dust. Major dust events can transport mineral aerosols (dust) for long distances, obscuring vision for motorists and causing breathing problems for people with respiratory difficulties.*

Also, thunderstorm winds are reported yearly in nearly all New Mexico countries. The State Hazard Mitigation Plan (2023) mentioned that thunderstorms vary according to the types of secondary hazards they produce. During the spring, the County, including the City of Alamogordo, may experience microburst winds that can cause damage due to its association with powerful downdrafts that begin from a thunderstorm wind event. Damage from these events within the planning area, include downed trees, roof damage, and vehicular accidents due to difficulty controlling drivers' vehicles on the highway.

In recent years, wind events (high wind, strong wind, and thunderstorm wind) have become an increased hazard of concern for the planning area. With this shift in mitigation efforts, the City of Alamogordo MPT has identified these hazards as a concern. It has added them to the plan update to include previous occurrences and future probability. The goal in including wind events (high wind, strong wind, and thunderstorm wind), is to allow the City of Alamogordo to identify future mitigation actions related to wind events (high wind, strong wind, and thunderstorm wind) in the planning area.

4.9.3 Previous Occurrence

There has been a history of wind (high wind, strong wind, and thunderstorm wind) events within Otero County, where the City of Alamogordo resides. The following events are summary of the historical events related to this hazard:

- **Thunderstorms, Otero County** – Otero County experienced 78 severe thunderstorm (wind) events between 1964 and 2024. This, on average, is about four severe thunderstorm events per year (1,22/yr.). NOAA/NCEI does not have a specific classification for thunderstorms. In order to paint a picture of historical occurrences for this event type, heavy rain and thunderstorms (wind) events were compiled for Otero County from January 1, 2000, to March 31, 2024. According to NOAA/NCEI, eleven (11) heavy rain events occurred in this period for Otero County. Thunderstorm winds, however, turned up more events than heavy rain. NOAA/NCEI reports 61 thunderstorm wind events in Otero County during this particular timeframe. According to NOAA/NCEI, these events caused four (4) injuries, $492,500 in property damage and $10,000 in crop damage.
- **Wind, Otero County** – NOAA/NCEI does not have a specific classification for wind. In order to paint a picture of historical occurrences for this event type, strong wind and high wind events were compiled for Otero County from January 1, 2000, to March 31, 2024. According to NOAA/NCEI, zero (0) strong wind events occurred in Otero County during this time period. High winds, however, turned up more events than strong winds. NOAA/NCEI reports 146 high wind events in Otero County during this particular timeframe. According to NOAA/NCEI, these events caused $570,000 in property damage, and no injuries or deaths were reported.

Thunderstorm Wind Previous Occurrence Events

From January 1, 1964, to March 31, 2024, NOAA/NCEI recorded 78 thunderstorm wind events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the thunderstorm winds experienced by Otero County, including the jurisdictions located within, and is the only source of data accessible.

***Note**: NP = Not Provided*

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Otero County	5/30/65	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	5/19/66	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	5/26/66	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	8/7/66	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	8/9/66	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/19/68	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/25/74	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	8/14/74	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/23/81	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	7/27/81	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/15/84	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	7/16/86	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	5/23/87	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	8/27/88	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	5/9/89	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	7/24/92	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	8/4/98	Thunderstorm Wind	0	0	$0.00	$0.00	A line of strong thunderstorms accompanied by very strong winds moved through the Alamogordo area during the late afternoon and early evening hours. Wind gusts of 112 mph were reported from at least one automated sensor site on the White Sands Missile Range and winds of at least 75 mph were reported at Holloman AFB before the station's wind equipment broke. Considerable tree damage was noted around the area however damage to structures was limited. The worst damage was

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							found in the Alamogordo subdivision of Bolles Acres. The back porch/deck of a residence was destroyed, as was a 20 foot long trailer, and a small barn constructed of sheet metal on a 2X4 frame. Debris from the barn was carried about 100 yds and struck a site-built stucco home with enough force to penetrate an exposed wall and protrude into the inside of the structure.
Otero County	7/2/02	Thunderstorm Wind	0	0	$25,000.00	$0.00	Thunderstorm outflow blew down billboards, power lines and trees, and left at least one house without a roof.
Otero County	6/5/03	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/9/03	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	6/27/03	Thunderstorm Wind	0	0	$0.00	$0.00	Not provided.
Otero County	7/26/03	Thunderstorm Wind	0	0	$2,000.00	$0.00	Two carport roofs were blown off near the southeast edge of Chaparral (extreme southwest Otero County).
Otero County	9/29/04	Thunderstorm Wind	0	0	$2,000.00	$0.00	Not provided.
Otero County	6/22/06	Thunderstorm Wind	0	0	$0.00	$0.00	Strong thunderstorms developed over the southern Sacramento Mountains and along the eastern heights of Alamogordo. One storm in particular dropped about an inch and a half of rain in 40 minutes

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							over Marble Canyon, which drains into eastern Alamogordo. Other storms added heavy rain and several inches of drifting small hail to that section of town. Strong winds blew shingles off houses, but flooding was the main problem. Roads along the eastern heights turned into raging torrents which flowed westward into the center of town. Mud flowed into numerous houses and several vehicles were swept into arroyos. A gas main was broken which led to the evacuation of residents in the vicinity. The state of NM put the damage total at about $1.3 million.
Otero County	7/13/07	Thunderstorm Wind	0	0	$1,000.00	$0.00	An upper impulse on the east side of an upper high moved southward into a very moist and unstable air mass over southern New Mexico. Strong thunderstorm winds blew down a few trees in Alamogordo.
Otero County	8/9/07	Thunderstorm Wind	0	0	$0.00	$0.00	Severe thunderstorms formed within a moist and unstable air mass. Winds estimated at 60 mph

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							downed power poles in Boles Acres. Power was knocked out in parts of nearby Alamogordo.
Otero County	5/28/08	Thunderstorm Wind	0	0	$360,000.00	$10,000.00	A high precipitation supercell split over the Holloman AFB area, with the left moving cell tracking northeastward into Tularosa and the right moving cell eastward into Alamogordo. Hail up to tennis ball size (but mostly half dollar size) accumulated to a depth of nearly 3 inches in Tularosa accompanied by a wet microburst with wind gusts estimated at 80 mph. The other cell produced golf ball to lime size hail in Alamogordo, though with much less intensity than the Tularosa cell. A wet microburst estimated at 80 mph destroyed a double wide mobile home, flipped several others, unroofed a few homes, and blew down several trees, power poles and power lines.
Otero County	7/2/08	Thunderstorm Wind	0	0	$0.00	$0.00	An upper impulse within a north to northeast flow moved through a moist, unstable air mass and triggered severe thunderstorms.

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Otero County	8/10/08	Thunderstorm Wind	0	0	$0.00	$0.00	Monsoonal moisture within an unstable atmosphere led to pulse thunderstorms producing severe weather and heavy rain.
Otero County	7/5/09	Thunderstorm Wind	0	0	$15,000.00	$0.00	A very moist southerly flow was in place over the area. The atmospheric moisture content was almost twice the normal value for early July. The flow was such that thunderstorm movement was slow, subjecting locations to very heavy rainfall for long periods of time. Occasional wet microbursts were also observed. Damaging winds blew part of a roof off of a Baptist church in Boles Acres. A gust of 67 mph was measured at the nearby Alamogordo Airport.
Otero County	7/21/09	Thunderstorm Wind	0	0	$0.00	$0.00	High pressure aloft centered over Arizona put southern New Mexico under a northwest flow, which contained upper waves that destabilized the atmosphere and triggered strong thunderstorms. A Skywarn Spotter estimated winds gusting to 60 mph northeast of La Luz, NM.

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Otero County	7/27/09	Thunderstorm Wind	0	0	$0.00	$0.00	High pressure aloft was centered over Arizona resulting in northerly flow aloft over southern New Mexico. In addition, a weak back door cold front moved southwestward across the area and stalled near the international border. Trees and large limbs were blown down in the Mayhill area. Also, 1.25 inches of rain fell within 15 minutes.
Otero County	8/4/09	Thunderstorm Wind	0	0	$40,000.00	$0.00	High pressure aloft migrated eastward across central New Mexico during the period, putting southern New Mexico under an easterly mid level flow. A weak inverted trough was embedded in this flow. At the surface, dewpoint depressions were in the 40 to 50 degree F. range, encouraging damaging straight line winds. At the end of the period, the lower levels had moistened up, which facilitated stronger cells and wet microbursts. A microburst with a wind gust measured at 74 mph by the Alamogordo Airport ASOS blew a roof off a trailer and a

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							steeple off a church in nearby Boles Acres. Power lines were also blown down.
Otero County	8/6/09	Thunderstorm Wind	0	0	$0.00	$0.00	High pressure aloft migrated eastward across central New Mexico during the period, putting southern New Mexico under an easterly mid-level flow. A weak inverted trough was embedded in this flow. At the surface, dewpoint depressions were in the 40-to-50-degree F. range, encouraging damaging straight-line winds. At the end of the period, the lower levels had moistened up, which facilitated stronger cells and wet microbursts. A mesonet site on White Sands Missile Range measured a gust of 70 mph.
Otero County	6/6/10	Thunderstorm Wind	0	4	$1,000.00	$0.00	A dryline setup along the Rio Grande and combined with a weak trough in the upper levels to produce several strong to severe thunderstorms across southern New Mexico. A peak gust of 82 mph was reported 10 miles north of El Paso at the KQMG ASOS on the McGregor Range. The Fort Bliss Weather

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							section reported four soldiers were injured when a field tent collapsed during the storm.
Otero County	10/20/10	Thunderstorm Wind	0	0	$0.00	$0.00	A strong cutoff low was located over far Southwest Arizona. The nose of a 100-knot jet was rounding the low and moving into Southern New Mexico and Far West Texas. A surface trough was also located near the Rio Grande Valley. All of these features combined to produce severe thunderstorms with hail to the size of baseballs reported. A 58-mph wind gust was reported 10 miles east-northeast of the White Sands Main Post at a SAMS Mesonet site.
Otero County	6/1/11	Thunderstorm Wind	0	0	$0.00	$0.00	An upper trough was moving onshore while a strong ridge was located over the eastern United States. This setup a moist southerly flow at mid-levels and a dry line was located over the Rio Grande Valley, allowing for severe thunderstorms to develop. A 65 mph gust was estimated at the Border Patrol

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							Checkpoint north of Orogrande.
Otero County	6/1/11	Thunderstorm Wind	0	0	$0.00	$0.00	An upper trough was moving onshore while a strong ridge was located over the eastern United States. This setup a moist southerly flow at mid-levels and a dry line was located over the Rio Grande Valley, allowing for severe thunderstorms to develop. The KQMG ASOS reported a wind gust of 60 mph.
Otero County	6/1/11	Thunderstorm Wind	0	0	$0.00	$0.00	An upper trough was moving onshore while a strong ridge was located over the eastern United States. This setup a moist southerly flow at mid-levels and a dry line was located over the Rio Grande Valley, allowing for severe thunderstorms to develop. A wind gust of 72 mph was reported 3 miles southwest of Holloman Air Force Base.
Otero County	9/21/11	Thunderstorm Wind	0	0	$0.00	$0.00	A weak surface low was located over far Southern New Mexico with a weak upper level disturbance crossing the region. Low dew points allowed for strong wind gusts to develop with thunderstorms.
Otero County	6/15/12	Thunderstorm Wind	0	0	$0.00	$0.00	An upper low over southern

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							California brought mid and high-level moisture to the area while at the same time surface high pressure to the east was allowing for a southeasterly surface flow of moist air into the region. A combination of daytime heating and a passing shortwave embedded in the southwesterly flow aloft triggered a round of strong to severe thunderstorms during the late afternoon and evening hours. The KQMG ASOS on McGregor Range recorded a peak gust of 82 mph.
Otero County	6/2/13	Thunderstorm Wind	0	0	$0.00	$0.00	A back door cold front setup along the Rio Grande Valley and an upper-level disturbance combined with it to produce wind gusts to 67 mph. A peak gust of 64 mph was reported 9 miles east-northeast of White Sands Main Post.
Otero County	6/6/13	Thunderstorm Wind	0	0	$0.00	$0.00	A dryline was setup along the Rio Grande Valley with a weak upper-level disturbance moving through a northwest flow aloft which helped to trigger some isolated severe thunderstorms. A

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							SAMS site from the White Sands Missile Range reported a 68-mph wind gust.
Otero County	6/14/13	Thunderstorm Wind	0	0	$0.00	$0.00	A dryline was setup near the Rio Grande Valley with a broad upper low over Southwest Texas. Thunderstorms developed over the higher elevations of the Organ and San Andres Mountains and moved southeast producing wind gusts over 60 mph. A Mesonet site on the White Sands Missile Range recorded a peak gust of 62 mph.
Otero County	6/30/13	Thunderstorm Wind	0	0	$0.00	$0.00	The Borderland Region was in between an upper low over the Mississippi River Valley and a strong ridge over the Great Basin. A weak disturbance in the northwest flow aloft combined with dry low levels to create an environment favorable for strong downdrafts with thunderstorms. One of these thunderstorms produced a wind gusts to 80 mph at Holloman Air Force Base. The Holloman Air Force Base ASOS recorded a peak gust of 80 mph

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							with a thunderstorm moving through the area.
Otero County	7/1/14	Thunderstorm Wind	0	0	$0.00	$0.00	A back door cold front moved into the region with east winds bringing in deep moisture up to about the Rio Grande Valley. Upper-level flow was out of the northwest providing sufficient shear for some severe thunderstorms to develop and some isolated flash flooding. Wind gusts up to 66 mph and hail up to an inch and a half in diameter were reported. Site on McGregor Range.
Otero County	7/17/14	Thunderstorm Wind	0	0	$20,000.00	$0.00	A stationary boundary was setup near the Rio Grande Valley with easterly surface winds bringing dew points around 60F to the area. Upper-level flow was out of the northwest on the back side of a trough which provided sufficient shear for isolated severe thunderstorms to develop. Numerous trees and power lines were reported down in Alamogordo. Reports of trees down across the county from

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							winds. Car windows were broken, and a roof was blown off a trailer home in Alamogordo. A transformer fell into a tree and the tree then fell into a house. About 2000 people in the area were without power for several hours. Some locally dense blowing dust was also reported with the storm.
Otero County	7/30/14	Thunderstorm Wind	0	0	$0.00	$0.00	A weak upper-level trough was moving through the region with sufficient moisture still in place from previous days. The northwest flow aloft and weak south to southwest winds at the surface provided sufficient shear for severe thunderstorms with heavy rain to develop across Otero County. A SAMS tower 5 miles west-northwest of Orogrande recorded a peak gust of 63 mph.
Otero County	5/21/15	Thunderstorm Wind	0	0	$0.00	$0.00	A weak upper low was located over Northern California with west-southwest flow across the Borderland. The dryline pushed back toward the Rio Grande Valley with dew points into the 50s east of it and teens to

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							the west. A severe thunderstorm developed along the dryline and produced a wind gust to 62 mph at Holloman AFB.
Otero County	8/16/15	Thunderstorm Wind	0	0	$500.00	$0.00	A strong upper high was located over Southern Arizona with north to northeast flow aloft across Southern New Mexico. Low level flow was out of the east providing good low level moisture and sufficient shear for severe thunderstorms to develop. Wind damage was reported around Silver City and Tularosa. Winds blew a fence down in Tularosa. An inch of rain also fell in about 20 minutes with the storm.
Otero County	6/7/17	Thunderstorm Wind	0	0	$0.00	$0.00	A weak disturbance moved through northwest flow aloft. This disturbance combined with some moderate instability, as dew points were in the lower to mid 50s across the region. This was enough to get a severe thunderstorm gust reported in Alamogordo. The Alamogordo ASOS recorded a peak gust of 60 mph.

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Otero County	5/21/18	Thunderstorm Wind	0	0	$0.00	$0.00	An upper low was digging into southern California with a surface low located over northwest Chihuahua. Southeast winds east of the surface low brought low level gulf moisture into the region with southwest winds aloft helping to produce ample shear for severe thunderstorms with hail up to an inch in diameter and wind gusts over 60 mph. Some flash flooding was also reported in Sunland Park. Mesonet site in High Rolls recorded a peak gust of 63 mph.
Otero County	8/22/18	Thunderstorm Wind	0	0	$25,000.00	$0.00	Gulf of Mexico moisture was being drawn up aloft and low level moisture from Baja combined over southern New Mexico and helped to produce strong to severe thunderstorms around Holloman AFB. KHMN AWOS reported a peak gust of 66 mph with a wet microburst detected on radar. Considerable wind damage on base.
Otero County	6/1/19	Thunderstorm Wind	0	0	$0.00	$0.00	An upper low was located over Nevada into Southern

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							California while a dryline pushed into Otero County. A weak disturbance moved through the southwest flow aloft to help trigger storms along the dryline. Severe hail and wind were reported with these storms around Alamogordo and Tularosa. A White Sands Missile Range site located 9 miles west of Tularosa recorded a 60-mph gust.
Otero County	6/4/19	Thunderstorm Wind	0	0	$0.00	$0.00	Upper low was moving into southeastern Arizona with moderately deep low-level moisture pushing west toward the Rio Grande. A disturbance in the southwest flow across the Borderland helped to fire off thunderstorms across northern Otero county into northern Dona Ana county. Everything from severe hail to a flash flood and tornado were reported with these storms. The Alamogordo AWOS recorded a peak gust of 66 mph.
Otero County	6/4/19	Thunderstorm Wind	0	0	$0.00	$0.00	Upper low was moving into southeastern Arizona with

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							moderately deep low-level moisture pushing west toward the Rio Grande. A disturbance in the southwest flow across the Borderland helped to fire off thunderstorms across northern Otero County into northern Dona Ana county. Everything from severe hail to a flash flood and tornado were reported with these storms. Social media report of 59 mph 2 miles north of Alamogordo.
Otero County	7/11/19	Thunderstorm Wind	0	0	$0.00	$0.00	Deep easterly flow over southern New Mexico brought some modest moisture back into the region. Storms developed over the Sacramento Mountains and moved off toward Alamogordo and produced damaging wind gusts. A tree fell on top of the public library.
Otero County	3/18/20	Thunderstorm Wind	0	0	$0.00	$0.00	A strong upper low was moving through the Great Basin with strong southwest flow over southern New Mexico including an approaching 125-knot jet. A surface low was deepening over eastern Colorado and modestly

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							moist low-level air was in place across the area. These features led to unusual March overnight severe thunderstorms across the area.
Otero County	6/23/20	Thunderstorm Wind	0	0	$0.00	$0.00	A surface low was located over northern Chihuahua bringing southeast winds to south-central New Mexico. A disturbance in northwest flow aloft provided ample shear and lift for severe storms to develop over Otero County.
Otero County	6/23/20	Thunderstorm Wind	0	0	$0.00	$0.00	A surface low was located over northern Chihuahua bringing southeast winds to south-central New Mexico. A disturbance in northwest flow aloft provided ample shear and lift for severe storms to develop over Otero County.
Otero County	6/23/20	Thunderstorm Wind	0	0	$0.00	$0.00	A surface low was located over northern Chihuahua bringing southeast winds to south-central New Mexico. A disturbance in northwest flow aloft provided ample shear and lift for severe storms to develop over Otero

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							County. Tactical weather sensor blown down at Holloman Air Force Base.
Otero County	6/23/20	Thunderstorm Wind	0	0	$1,000.00	$0.00	A surface low was located over northern Chihuahua bringing southeast winds to south-central New Mexico. A disturbance in northwest flow aloft provided ample shear and lift for severe storms to develop over Otero County. Power line blown down in Alamogordo.
Otero County	6/26/20	Thunderstorm Wind	0	0	$0.00	$0.00	Dry air was located at the low levels while an upper trough was moving through Arizona which provided enough lift for a few thunderstorms to develop. Dew point depressions of over 50 degrees allowed for severe wind gusts up to 67 mph to be recorded.
Otero County	6/26/20	Thunderstorm Wind	0	0	$0.00	$0.00	Dry air was located at the low levels while an upper trough was moving through Arizona which provided enough lift for a few thunderstorms to develop. Dew point depressions of over 50 degrees allowed for severe wind gusts up to 67 mph to be

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							recorded. Recorded at Holloman Air Force Base.
Otero County	7/7/20	Thunderstorm Wind	0	0	$0.00	$0.00	A hot, dry day across the Borderland with high temperatures near 100 over the lowlands and dew points in the mid 40s to lower 50s. A weak mid-level trough was moving through the region helping to trigger thunderstorms that produced gusty winds due to the dry low levels. Mesonet site on the White Sands Missile Range.
Otero County	7/31/20	Thunderstorm Wind	0	0	$0.00	$0.00	Recorded 3 miles northeast of White Sands, NM. Modest mid 40s to mid 50s dew points were located across southern New Mexico with a weak disturbance moving through northerly flow aloft. Temperatures during the day warmed to near 100 degrees over the lowlands resulting in a high temperature-dew point spread which contributed to severe wind gusts to 74 mph.
Otero County	8/1/20	Thunderstorm Wind	0	0	$0.00	$0.00	Storm moved south across the White Sands Missile Range. A weak disturbance in northerly flow aloft combined

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							with a dry low-level atmosphere to produce a couple of severe wind reports in southern New Mexico.
Otero County	9/8/20	Thunderstorm Wind	0	0	$0.00	$0.00	Reported at the High Rolls CWOP station. An extremely deep upper low was moving into the Four Corners region while a back door cold front moved into the region bringing record low temperatures to the Borderland. Southwest flow aloft combined with the cold front to bring severe thunderstorms on the afternoon and early evening of the 8th while prolonged lift over the stalled front around Luna County brought flooding rains during the first half of the day on the 9th.
Otero County	5/19/21	Thunderstorm Wind	0	0	$0.00	$0.00	The public reported some wind damage south of Boles Acres which was likely the result of a microburst or gustnado. An upper-level trough was located over eastern New Mexico with a very dry atmosphere in place over south-central New Mexico. Just enough instability existed for some

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							isolated thunderstorms to develop and produce some damaging winds around Boles Acres.
Otero County	7/11/21	Thunderstorm Wind	0	0	$0.00	$0.00	Mesonet station on White Sands Missile Range. A weak back door front pushed in from the east as a strong upper low moved into the Upper Midwest. Good shear and instability across southern New Mexico allowed numerous storms to become severe with wind gusts over 80 mph and hail up to golf ball size. In addition, a nighttime haboob caused a multi-car accident along Interstate 10 east of Lordsburg.
Otero County	7/11/21	Thunderstorm Wind	0	0	$0.00	$0.00	Mesonet station LC-35 North on White Sands Missile Range. A weak back door front pushed in from the east as a strong upper low moved into the Upper Midwest. Good shear and instability across southern New Mexico allowed numerous storms to become severe with wind gusts over 80 mph and hail up to golf ball size. In addition, a nighttime haboob caused a multi-car accident along Interstate

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							10 east of Lordsburg.
Otero County	9/15/21	Thunderstorm Wind	0	0	$0.00	$0.00	Report from the Frequency Mesonet station. A dryline was setup through central New Mexico with a weak disturbance moving southeast through the region. A few thunderstorms developed and a wind gust of 58 mph was reported near Holloman AFB.
Otero County	6/8/22	Thunderstorm Wind	0	0	$0.00	$0.00	Reported at the ABCI Mesonet station on the White Sands Missile Range. The dryline brought deeper moisture back into areas east of the Rio Grande Valley. A deep upper low was located over the Baja peninsula and an upper-level disturbance lifting north out of it helped to trigger several severe thunderstorms over South Central New Mexico producing hail up to the size of quarters and 74 mph wind gusts.
Otero County	6/8/22	Thunderstorm Wind	0	0	$0.00	$0.00	Recorded at the Salt Creek Mesonet site on the White Sands Missile Range. The dryline brought deeper moisture back into areas east of the Rio Grande Valley. A deep

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							upper low was located over the Baja peninsula and an upper-level disturbance lifting north out of it helped to trigger several severe thunderstorms over South Central New Mexico producing hail up to the size of quarters and 74 mph wind gusts.
Otero County	6/8/22	Thunderstorm Wind	0	0	$0.00	$0.00	Reported at Tula Mesonet site on the White Sands Missile Range. The dryline brought deeper moisture back into areas east of the Rio Grande Valley. A deep upper low was located over the Baja peninsula and an upper-level disturbance lifting north out of it helped to trigger several severe thunderstorms over South Central New Mexico producing hail up to the size of quarters and 74 mph wind gusts.
Otero County	6/8/22	Thunderstorm Wind	0	0	$0.00	$0.00	Recorded at the Holloman Air Force Base AWOS. The dryline brought deeper moisture back into areas east of the Rio Grande Valley. A deep upper low was located over the Baja peninsula and an upper-level disturbance lifting north out of it

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							helped to trigger several severe thunderstorms over South Central New Mexico producing hail up to the size of quarters and 74 mph wind gusts.
Otero County	6/8/22	Thunderstorm Wind	0	0	$0.00	$0.00	Reported by LC-32 Mesonet site on the White Sands Missile Range. The dryline brought deeper moisture back into areas east of the Rio Grande Valley. A deep upper low was located over the Baja peninsula and an upper-level disturbance lifting north out of it helped to trigger several severe thunderstorms over South Central New Mexico producing hail up to the size of quarters and 74 mph wind gusts.
Otero County	10/2/23	Thunderstorm Wind	0	0	$0.00	$0.00	A peak gust of 60 mph was recorded about 10 miles east-northeast of the Main Post. An upper trough was moving through the Great Basin with modest southwest flow aloft over the Borderland. A dryline had moved into the areas east of the Rio Grande with some low level convergence along it. A few thunderstorms

Table 60: Thunderstorm Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							developed around the White Sands Missile Range and produced severe wind gusts up to 61 mph.
77 Total Impact of Thunderstorm Wind Events			**0**	**0**	**$492,500.00**	**$10,000.00**	
Data Source: *NOAA/NCEI Storm Event Database*							

Strong Wind Previous Occurrence Events

From January 1, 1964, to March 31, 2024, NOAA/NCEI recorded 0 strong wind events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the high winds experienced by Otero County, including the jurisdictions like the City of Alamogordo located within, and is the only source of data accessible.

Note: NP *= Not Provided*

Table 61: Strong Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Not provided.	Not provided.	Not provided.	NP	NP	NP	NP	Not provided.
Total Impact of Strong Wind Events			**0**	**0**	**0**	**0**	
Data Source: *NOAA/NCEI Storm Event Database*							

High Wind Previous Occurrence Events

From January 1, 1964, to March 31, 2024, NOAA/NCEI recorded 146 high wind events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the high winds experienced by Otero County, including the jurisdictions like the City of Alamogordo located within, and is the only source of data accessible.

Note*: NP = Not Provided*

Note: *The NOAA NCEI Storm Events Database mentions that Otero County contains the following zones: Central Tularosa Basin, Southern Tularosa Basin, West Slopes Sacramento Mountains below 7500 feet, Sacramento Mountains above 7500 feet, East Slopes Sacramento Mountains below 7500 feet, Otero Mesa, West Central Tularosa Basin/White Sands, East Central Tularosa Basin/Alamogordo, and Southeast Tularosa Basin. The zones in the table below will represent the jurisdiction.*

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	1/21/17	High Wind	0	0	$0.00	$0.00	A peak gust of 88 mph was recorded at San Augustin Pass. Other strong wind reports included 71 mph 5 miles northeast of San Augustin Pass and 68 mph at Condron Field.
Central Tularosa Basin (Zone)	1/21/17	High Wind	0	0	$0.00	$0.00	A peak gust of 65 mph was reported 1 mile southeast of the White Sands Missile Range Main Post. Other gusts included 61 mph 6 miles east-southeast of the

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							WSMR Main Post, and 60 mph at the Main Post.
Southern Tularosa Basin (Zone)	2/12/17	High Wind	0	0	$0.00	$0.00	A peak gust of 65 mph was recorded by the White Sands Missile Range at San Augustin Pass.
Southern Tularosa Basin (Zone)	2/23/17	High Wind	0	0	$0.00	$0.00	The Mesonet site at San Augustin Pass by the White Sands Missile Range recorded a peak gust of 81 mph. Other gusts across the zone included 69 mph 1 miles southeast of the White Sands Main Post and 59 mph about 5 miles northeast of San Augustin Pass.
Central Tularosa Basin (Zone)	2/23/17	High Wind	0	0	$0.00	$0.00	A peak wind gust of 68 mph was reported at the Northrup Strip site on the White Sands Missile Range. A peak gust of 59 mph was also reported at Condron Field on the range.
Central Tularosa Basin (Zone)	3/23/17	High Wind	0	0	$0.00	$0.00	A peak gust of 82 mph was reported at San Augustin Pass. Other wind reports across the zone included 70 mph 1 mile southeast of the White Sands Main Post, 64 mph 5 miles northeast of San Augustin Pass and 18 miles northeast of the White Sands Main Post and 59 mph at the White Sands Main Post.
Central Tularosa Basin (Zone)	3/23/17	High Wind	0	0	$0.00	$0.00	A peak gust of 61 mph was recorded at a mesonet site 16 miles northwest of Northrup Strip. A gust of 59 mph was also recorded 19 miles west-northwest of Tularosa.
Southern Tularosa Basin (Zone)	3/23/17	High Wind	0	0	$0.00	$0.00	A peak gust of 65 mph was recorded 5 miles northeast of Road Forks.
Central Tularosa Basin (Zone)	5/16/17	High Wind	0	0	$0.00	$0.00	A peak gust of 65 mph was reported at two mesonet sites located 19 miles west-northwest of Tularosa and 22 miles northwest of Tularosa.
Sacramento Mountains Above 7500 Feet (Zone)	5/16/17	High Wind	0	0	$0.00	$0.00	A 58-mph gust was recorded on a Weather Underground site located 1 mile south of Sunspot.
Otero Mesa (Zone)	5/16/17	High Wind	0	0	$0.00	$0.00	A RAWS site located 28 miles east-northeast of Orogrande reported a peak gust of 59 mph.
Southern Tularosa Basin (Zone)	2/19/18	High Wind	0	0	$0.00	$0.00	A peak gust of 75 mph was recorded at San Augustin Pass. Other gusts in the

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							zone included 73 mph 5 miles southeast of San Augustin Pass and 71 mph 1 mile southeast of the White Sands Missile Range Main Post.
Central Tularosa Basin (Zone)	2/20/18	High Wind	0	0	$0.00	$0.00	A mesonet site 11 miles southwest of Northrup Strip recorded a peak gust of 60 mph.
Central Tularosa Basin (Zone)	3/15/18	High Wind	0	0	$0.00	$0.00	The Northrup Strip mesonet site recorded a peak gust of 70 mph.
Sacramento Mountains Above 7500 Feet (Zone)	3/15/18	High Wind	0	0	$0.00	$0.00	A mesonet site 1 mile south of Sunspot recorded a peak gust of 60 mph.
Southern Tularosa Basin (Zone)	3/15/18	High Wind	0	0	$0.00	$0.00	San Augustin Pass recorded a peak gust of 90 mph. Other peak gusts included 64 mph 1 mile southeast of the White Sands Missile Range Main Post, 59 mph at Orogrande and 58 mph 5 miles southeast of San Augustin Pass.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/15/18	High Wind	0	0	$0.00	$0.00	A mesonet station 1 mile southwest of High Rolls recorded a peak gust of 66 mph.
Southern Tularosa Basin (Zone)	3/24/18	High Wind	0	0	$0.00	$0.00	A peak gust of 73 mph was recorded at San Augustin Pass.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	4/12/18	High Wind	0	0	$0.00	$0.00	A peak gust of 58 mph was recorded at a mesonet site 1 mile southwest of High Rolls.
Southern Tularosa Basin (Zone)	4/12/18	High Wind	0	0	$0.00	$0.00	A peak gust of 84 mph was recorded at San Augustin Pass. Other peak gusts in the zone included 70 mph at the White Sands Missile Range Main Post, 66 mph 1 miles southeast of the White Sands Main Post, and 61 mph 6 miles east-southeast of the Main Post.
Central Tularosa Basin (Zone)	4/13/18	High Wind	0	0	$0.00	$0.00	A peak gust of 68 mph was recorded at the Condron Field Mesonet station. Other peak gusts included 59 mph 16 miles north-northwest of Northrup Strip, and 58 mph at both the mesonet site 11 miles southwest of Northrup Strip and 22 miles northwest of Tularosa.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Sacramento Mountains Above 7500 Feet (Zone)	4/13/18	High Wind	0	0	$0.00	$0.00	The peak gust 1 mile south of Sunspot was 61 mph.
Southern Tularosa Basin (Zone)	1/21/19	High Wind	0	0	$0.00	$0.00	A peak gust of 80 mph was reported at San Augustin Pass at 235 PM. Other gusts in the zone included 68 mph one mile southeast and one mile northwest of the White Sands Missile Range Main Post, 60 mph seven miles southwest of Northrup Strip and at Condron Field.
Central Tularosa Basin (Zone)	1/21/19	High Wind	0	0	$0.00	$0.00	A peak gust of 60 mph was reported seven miles southwest of Northrup Strip.
Southern Tularosa Basin (Zone)	3/8/19	High Wind	0	0	$0.00	$0.00	A peak gust of 88 mph was reported at San Augustin Pass. Other peak wind gusts included 67 mph a Condron Field, 63 mph at the White Sands Missile Range Main Post, 5 miles northeast of San Augustin Pass, 18 miles northeast of the Main Post and 59 mph 14 miles west-northwest of Orogrande.
Central Tularosa Basin (Zone)	3/8/19	High Wind	0	0	$0.00	$0.00	A peak gust of 64 mph was reported 16 miles north-northwest of Northrup Strip. Other gusts included 63 mph 22 miles northwest of Tularosa, 61 mph 11 miles southwest of Northrup Strip and 60 mph at Northrup Strip.
Sacramento Mountains Above 7500 Feet (Zone)	3/8/19	High Wind	0	0	$0.00	$0.00	A mesonet site one mile south of Sunspot recorded a peak gust of 65 mph. A nearby RAWS station recorded a peak gust of 62 mph.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/8/19	High Wind	0	0	$0.00	$0.00	A peak gust of 59 mph was recorded one mile southwest of High Rolls.
Central Tularosa Basin (Zone)	3/13/19	High Wind	0	0	$0.00	$0.00	A mesonet site at Northrup Strip recorded a peak gust of 71 mph. Other sites in the zone with strong wind gusts included 70 mph 20 miles west-northwest of Tularosa, 69 mph three miles north-northeast of Capitol Peak and 58 mph nine miles west of Tularosa.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	3/13/19	High Wind	0	0	$0.00	$0.00	A mesonet site at San Augustin Pass recorded a peak gust of 104 mph. Other gusts included 76 mph eighteen miles northeast of the White Sands Missile Range Main Post, 75 mph eleven miles northeast of Organ, 69 mph at the White Sands Main Post and 59 mph fourteen miles west-northwest of Orogrande.
Sacramento Mountains Above 7500 Feet (Zone)	3/13/19	High Wind	0	0	$500,000.00	$0.00	NWS Storm survey revealed hundreds of ponderosa pines were either uprooted or snapped in the Village of Cloudcroft which resulted in damage to 30 structures, 10 vehicles and blocking 15 roads. Prior to the damage occurring, light to moderate frozen precipitation fell which led to rime ice buildup on the windward side of exposed trees. Across the entire area, over 1000 trees were snapped or uprooted due to sustained winds of 60 to 70 mph through much of the day with gusts over 100 mph. Cloudcroft lost power for over 24 hours starting around 11 am on 3/13. ||The most significant damage was located along a north to south exposed ridge line on the windward side of the mountain. Most of the damage was located at the edge of canyons, where funneling of up-canyon winds resulted in the higher wind gusts responsible for the most extensive damage.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/13/19	High Wind	0	0	$0.00	$0.00	A peak gust of 74 mph was recorded 1 mile southwest of High Rolls. The Mescalero RAWS recorded a gust of 68 mph.
Otero Mesa (Zone)	3/13/19	High Wind	0	0	$0.00	$0.00	A RAWS site located 28 miles east-northeast of Orogrande recorded a peak gust of 66 mph.
Southern Tularosa Basin (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	Extremely strong winds occurred at San Augustin Pass with a peak gust of 102 mph. Other gusts included 78 mph 1 mile northwest of White Sands Missile Range

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							Main Post and 6 miles east-southeast of the Main Post, 66 mph eighteen miles northeast of the Main Post and 61 mph eleven miles northeast of Organ and 14 miles west-northwest of Orogrande.
Central Tularosa Basin (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	Wind gusts up to 71 mph were reported across the zone with the peak occurring 7 miles southwest of Northrup Strip. Other gusts included 69 mph at Northrup Strip, 63 mph at Holloman Air Force Base and 68 mph 3 miles north-northeast of Capitol Peak.
Otero Mesa (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	A RAWS site 28 miles east-northeast of Orogrande recorded a peak gust of 59 mph.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	A peak gust of 66 mph was recorded at a mesonet site 1 mile southwest of High Rolls.
Sacramento Mountains Above 7500 Feet (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	A peak gust of 70 mph was recorded in Cloudcroft. A peak gust of 63 mph was recorded 1 mile south of Sunspot and 61 mph in Sunspot.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	4/10/19	High Wind	0	0	$0.00	$0.00	At a location three miles northwest of Mayhill, a peak gust of 69 mph was recorded.
Southern Tularosa Basin (Zone)	5/20/19	High Wind	0	0	$0.00	$0.00	A peak gust of 72 mph was recorded at San Augustin Pass with a couple 60 mph gusts at the White Sands Missile Range Main Post and 5 miles east-northeast of the Main Post.
Central Tularosa Basin (Zone)	5/20/19	High Wind	0	0	$0.00	$0.00	A 61-mph peak gust was recorded 11 miles southwest of Northrup Strip and a 59-mph gust was recorded at Lookout Peak.
Southern Tularosa Basin (Zone)	5/27/19	High Wind	0	0	$0.00	$0.00	A Mesonet site 5 miles northeast of San Augustin Pass recorded a peak gust of 82 mph. Other gusts included 77 mph at San Augustin Pass, 67 mph at the White Sands Missile Range Main Post and 58 mph northeast of the Main Post.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	11/29/19	High Wind	0	0	$0.00	$0.00	San Augustin Pass recorded a peak gust of 76 mph. Other gusts included 72 mph five miles northeast of San Augustin Pass, 65 mph five miles east-northeast of the White Sands Missile Range Main Post and 62 mph one mile southeast of White Sands Missile Range Main Post.
Central Tularosa Basin (Zone)	11/29/19	High Wind	0	0	$0.00	$0.00	A peak gust of 69 mph was recorded 11 miles southwest of Northrup Strip. Other gusts across the zone included 68 mph at Northrup Strip, 61 mph 16 miles north-northwest of Northrup Strip and 60 mph 20 miles west-northwest of Tularosa.
Sacramento Mountains Above 7500 Feet (Zone)	11/29/19	High Wind	0	0	$0.00	$0.00	A mesonet station one mile south of Sunspot recorded a peak gust of 64 mph.
Central Tularosa Basin (Zone)	3/27/20	High Wind	0	0	$0.00	$0.00	A peak gust of 61 mph was recorded 18 miles northeast of the White Sands Missile Range main post. A gust of 60 mph was also recorded 3 miles north-northeast of Capitol Peak.
Southern Tularosa Basin (Zone)	3/27/20	High Wind	0	0	$0.00	$0.00	A peak gust of 88 mph was reported at San Augustin Pass. Other gusts across the zone included 65 mph at Condron Field and 60 mph at the White Sands Missile Range main post.
Sacramento Mountains Above 7500 Feet (Zone)	3/27/20	High Wind	0	0	$0.00	$0.00	A Mesonet site 1 mile south of Sunspot recorded a peak gust of 61 mph.
Central Tularosa Basin (Zone)	11/8/20	High Wind	0	0	$0.00	$0.00	A peak gust of 67 mph was recorded on the White Sands Missile Range at the Brillo West site. The Pony site also recorded a gust of 63 mph.
Southern Tularosa Basin (Zone)	11/8/20	High Wind	0	0	$0.00	$0.00	A peak gust of 83 mph was recorded at the White Sands Missile Range Main Post. Other gusts included 73 mph at San Augustin Pass and Emre, 66 mph at the White Sands Missile Range Museum and 61 mph at Building 1830 on the range as well.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Central Tularosa Basin (Zone)	1/30/21	High Wind	0	0	$0.00	$0.00	A peak gust of 70 mph occurred at Condron Field or 5 miles east-southeast of White Sands. The White Sands Missile Range Main Post reported a peak gust of 59 mph.
Southern Tularosa Basin (Zone)	3/16/21	High Wind	0	0	$0.00	$0.00	A peak gust of 87 mph occurred at San Augustin Pass. Some other gusts that occurred included 70 mph at the White Sands Missile Range Main Post, 66 mph at EMRE and 62 mph at the White Sands Missile Range Museum as well as the C-Station.
Sacramento Mountains Above 7500 Feet (Zone)	3/16/21	High Wind	0	0	$0.00	$0.00	A gust of 60 mph was recorded on Sacramento Peak.
Southern Tularosa Basin (Zone)	10/12/21	High Wind	0	0	$0.00	$0.00	The site at San Augustin Pass reported a peak gust of 88 mph. Some other peak gusts in the zone included 76 mph 5 miles northeast of San Augustin Pass, 69 mph at the White Sands Missile Range Main Post and 66 mph at Condron Field.
Central Tularosa Basin (Zone)	10/12/21	High Wind	0	0	$0.00	$0.00	A Mesonet site 11 miles southwest of Northrup Strip recorded a peak gust of 65 mph. Another site 7 mile southwest of Northrup Strip recorded a gust of 63 mph.
Sacramento Mountains Above 7500 Feet (Zone)	10/12/21	High Wind	0	0	$0.00	$0.00	The Sunspot RAWS recorded a peak gust of 65 mph.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	10/12/21	High Wind	0	0	$0.00	$0.00	A Mesonet site 1 mile southwest of High Rolls recorded a peak gust of 59 mph.
Central Tularosa Basin (Zone)	12/10/21	High Wind	0	0	$0.00	$0.00	The Salinas Peak Mesonet site reported a peak gust of 64 mph. The Apache site on the White Sands Missile Range recorded a gust to 59 mph.
Southern Tularosa Basin (Zone)	12/10/21	High Wind	0	0	$0.00	$0.00	A peak gust of 71 mph was recorded at the White Sands Missile Range Main Post. A gust of 62 mph was recorded at the White Sands Museum and 60 mph at the Globe Mesonet site.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	12/15/21	High Wind	0	0	$0.00	$0.00	A peak gust of 72 mph was recorded at San Augustin Pass. Other peak gusts included 65 mph at the White Sands Missile Range Main Post, 64 mph at the Rad Mesonet site on the missile range and 60 mph at the White Sands Museum.
Central Tularosa Basin (Zone)	12/15/21	High Wind	0	0	$0.00	$0.00	A peak wind gust of 63 mph was recorded at the Apache site on the White Sands Missile Range.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	12/24/21	High Wind	0	0	$0.00	$0.00	The High Rolls Mesonet site recorded a peak gust of 66 mph.
Southern Tularosa Basin (Zone)	2/16/22	High Wind	0	0	$0.00	$0.00	A peak gust of 87 mph was recorded at San Augustin Pass. Other peak gusts included 65 mph at the White Sands Missile Range Museum and 58 mph at the White Sands Missile Range Building 1830.
Sacramento Mountains Above 7500 Feet (Zone)	2/16/22	High Wind	0	0	$0.00	$0.00	The Cosmic Mesonet site recorded a peak gust of 63 mph.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/16/22	High Wind	0	0	$0.00	$0.00	The High Rolls Mesonet site reported a peak gust of 58 mph.
Southern Tularosa Basin (Zone)	2/23/22	High Wind	0	0	$0.00	$0.00	A peak gust of 77 mph was recorded at San Augustin Pass. Other gusts included 69 mph at the EMRE site on the White Sands Missile Range, 66 mph at Condron Field and 59 mph at the Dripping Springs RAWS site.
Southern Tularosa Basin (Zone)	3/29/22	High Wind	0	0	$0.00	$0.00	A peak gust of 84 mph was recorded at San Augustin Pass. Other gusts in the zone included 59 mph at White Sands Missile Range Building 1830 and 58 mph at the White Sands Museum.
Central Tularosa Basin (Zone)	3/29/22	High Wind	0	0	$0.00	$0.00	Salinas Peak recorded a gust of 64 mph while the Delta Clipper Mesonet site recorded a gust of 62 mph and 58 mph at the White Sands Missile Range Pony site.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	4/12/22	High Wind	0	0	$0.00	$0.00	A peak gust of 80 mph was recorded at San Agustin Pass. Other gusts across the zone included 64 mph at the White Sands Missile Range LC-32 site, 63 mph at the Main Post and 62 mph at Building 1830.
Central Tularosa Basin (Zone)	4/12/22	High Wind	0	0	$0.00	$0.00	A peak gust of 62 mph was recorded at the Brillo West mesonet site located on the White Sands Missile Range. The Pony and Delta Clipper sites, also on the range, recorded a peak gust of 60 mph.
Central Tularosa Basin (Zone)	4/22/22	High Wind	0	0	$0.00	$0.00	A peak gust of 64 mph was recorded at the Rad mesonet site on the White Sands Missile Range. Other wind gusts across the zone included 63 mph at the Brillo West and Delta Clipper sites also on the missile range.
Southern Tularosa Basin (Zone)	4/22/22	High Wind	0	0	$0.00	$0.00	The Mesonet site at San Augustin Pass recorded a peak gust of 70 mph.
Southern Tularosa Basin (Zone)	10/23/22	High Wind	0	0	$10,000.00	$0.00	A tree was blown onto a power line and roofing materials were flying off and damaging cars.
Sacramento Mountains Above 7500 Feet (Zone)	11/29/22	High Wind	0	0	$0.00	$0.00	The Sacramento Peak Mesonet station reported a peak gust of 59 mph.
Southern Tularosa Basin (Zone)	12/12/22	High Wind	0	0	$0.00	$0.00	A peak wind gust of 81 mph was reported at San Augustin Pass. Other peak gusts across the zone included 79 mph at Salinas Peak, 76 mph at the White Sands Missile Range Emre site, 66 mph at Delta Clipper and 61 mph at the Pony site on the missile range.
Southern Tularosa Basin (Zone)	1/15/23	High Wind	0	0	$0.00	$0.00	The mesonet site at the White Sands Missile Range Museum recorded a peak gust of 76 mph. Other gusts included 75 mph at the White Sands Missile Range Building 1830 and 70 mph at the Main post, San Augustin Pass and Globe mesonet sites. Several car windows on the base also sustained broken windows due to the wind.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Southern Tularosa Basin (Zone)	2/14/23	High Wind	0	0	$0.00	$0.00	The Mesonet site at San Augustin Pass recorded a peak gust of 75 mph at 610am. Other peak gusts included 72 mph at the White Sands Missile Range Building 1830, 68 mph at the WSMR Main Post and 59 mph at Condron Field.
Central Tularosa Basin (Zone)	2/15/23	High Wind	0	0	$0.00	$0.00	Salinas Peak recorded a peak gust of 74 mph.
Southern Tularosa Basin (Zone)	2/15/23	High Wind	0	0	$0.00	$0.00	A peak wind gust of 77 mph was reported at San Augustin Pass.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/22/23	High Wind	0	0	$0.00	$0.00	A Mesonet site in Mayhill recorded a peak gust of 62 mph.
Central Tularosa Basin (Zone)	2/22/23	High Wind	0	0	$0.00	$0.00	The Salinas Peak Mesonet site on White Sands Missile Range recorded a peak gust of 111 mph. Other peak gusts across the zone included 88 mph at Delta Clipper, 74 mph at Brillo West, 67 mph at Salt Creek and 63 mph at Apache. All of these other gusts were also on White Sands Missile Range.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/22/23	High Wind	0	0	$0.00	$0.00	The High Rolls CWOP Mesonet site recorded a peak gust of 66 mph. The Mescalero RAWS recorded a peak gust of 64 mph.
Southern Tularosa Basin (Zone)	2/22/23	High Wind	0	0	$0.00	$0.00	The San Augustin Pass Mesonet site recorded a peak gust of 97 mph. Other gusts across the zone included 70 mph at the White Sands Main Post, Building 1830 Denver WIT and Pony all on the missile range. The mesonet site at the Orogrande Gate had a peak gust of 58 mph.
Southern Tularosa Basin (Zone)	2/26/23	High Wind	0	0	$0.00	$0.00	The San Augustin Pass Mesonet site recorded a peak gust of 111 mph. Other gusts included 69 mph at the San Andres RAWS, 66 mph at the White Sands Missile Range Building 1830 and 59 mph at the White Sands Missile Range Museum.
Central Tularosa Basin (Zone)	2/26/23	High Wind	0	0	$10,000.00	$0.00	The Brillo West Mesonet site on the White Sands Missile Range reported a peak gust of 72 mph. Salinas Peak had

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							a peak gust of 69 mph, Holloman Air Force Base reported a gust of 67 mph, the Apache site on the missile range recorded a gust of 66 mph and the Alamogordo AWOS had a gust of 59 mph. A report from the public said that a roof was blown off of a home 1 mile north of La Luz around 2 PM.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/26/23	High Wind	0	0	$0.00	$0.00	The Mescalero RAWS reported a peak gust of 81 mph. A Mesonet site in High Rolls recorded a gust of 78 mph.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/26/23	High Wind	0	0	$0.00	$0.00	The Mayhill RAWS recorded a peak gust of 58 mph.
Southern Tularosa Basin (Zone)	3/1/23	High Wind	0	0	$0.00	$0.00	A peak gust of 79 mph was recorded at Salinas Peak on the White Sands Missile Range. Other gusts included 67 mph at San Augustin Pass and 59 mph at the White Sands Missile Range Museum.
Southern Tularosa Basin (Zone)	3/30/23	High Wind	0	0	$0.00	$0.00	A peak wind gust of 74 mph was recorded at San Augustin Pass. Other gusts included 59 mph at the White Sands Missile Range Main Post and 58 mph at Condron Field.
Central Tularosa Basin (Zone)	3/30/23	High Wind	0	0	$0.00	$0.00	A peak gust of 58 mph was recorded at the Brillo West Mesonet site on the White Sands Missile Range.
Southern Tularosa Basin (Zone)	4/4/23	High Wind	0	0	$0.00	$0.00	San Augustin Pass recorded a peak gust of 82 mph. Other gusts in the zone included 69 mph at the White Sands Missile Range Main Post, 65 mph at Building 1830 and 60 mph at Condron Field.
Central Tularosa Basin (Zone)	4/4/23	High Wind	0	0	$0.00	$0.00	A peak gust of 96 mph was recorded on the White Sands Missile Range Salinas Peak site. Other gusts included 70 mph at the Pony site, 68 mph at the Delta Clipper site and 59 mph at Apache.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	4/4/23	High Wind	0	0	$0.00	$0.00	A Mesonet site at High Rolls recorded a peak gust of 64 mph. A RAWS site at Mescalero recorded a 58 mph gust.

Table 62: High Wind Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Sacramento Mountains Above 7500 Feet (Zone)	1/11/24	High Wind	0	0	$25,000.00	$0.00	Numerous electric power fluctuations and communications outages occurred around Cloudcroft.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	1/11/24	High Wind	0	0	$0.00	$0.00	The High Rolls Mesonet site recorded a peak gust of 65 mph. The Mescalero RAWS also recorded a peak gust of 58 mph.
West Central Tularosa Basin/White Sands (Zone)	1/11/24	High Wind	0	0	$0.00	$0.00	A peak gust of 96 mph was recorded at San Augustin Pass. Other gusts around the area included 76 mph at Salinas Peak, 74 mph at the White Sands Missile Range Main Post and 66 mph at the WSMR Apache site.
Otero Mesa (Zone)	2/3/24	High Wind	0	0	$0.00	$0.00	The McGregor Range RAWS recorded a peak gust of 58 mph.
West Central Tularosa Basin/White Sands (Zone)	2/27/24	High Wind	0	0	$0.00	$0.00	A peak gust of 93 mph was reported at San Augustin Pass. Other gusts across the zone included 91 mph at Salinas Peak, 78 mph at the White Sands Main Post and 66 mph at Condron Field on the White Sands Missile Range.
West Central Tularosa Basin/White Sands (Zone)	3/24/24	High Wind	0	0	$0.00	$0.00	A peak gust of 93 mph was recorded at San Augustin Pass. Other gusts across the zone included 88 mph at Salinas Peak, 69 mph at the White Sands Missile Range Main Post, 66 mph at the Missile Range Apache location and 63 mph at Delta Clipper.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/24/24	High Wind	0	0	$0.00	$0.00	A peak gust of 71 mph was recorded 2 miles west-southwest of High Rolls.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/24/24	High Wind	0	0	$0.00	$0.00	A peak gust of 68 mph was recorded at the Mescalero RAWS.
East Central Tularosa Basin/Alamogordo (Zone)	3/24/24	High Wind	0	0	$0.00	$0.00	A Mesonet site west of Tularosa recorded a peak gust of 58 mph.
Total Impact of High Wind Events			**0**	**0**	**$570,000.00**	**$0.00**	
Data Source: *NOAA/NCEI Storm Event Database*							

4.9.4 Probability of Future Events

The following table provides a summary of the wind (high wind, strong wind, and thunderstorm wind) events recorded by Otero County, where the City of Alamogordo resides, between January 1, 1964, and March 31, 2024:

Table 63: Probability of Future Events, Wind Events, Otero County, NM

Event Year	Event Count		
	High Wind	Strong Wind	Thunderstorm Wind
1964	-	-	-
1965	-	-	1
1966	-	-	4
1967	-	-	-
1968	-	-	1
1969	-	-	-
1970	-	-	-
1971	-	-	-
1972	-	-	-
1973	-	-	-
1974	-	-	2
1975	-	-	-
1976	-	-	-
1977	-	-	-
1978	-	-	-
1979	-	-	-
1980	-	-	-
1981	-	-	2
1982	-	-	-
1983	-	-	1
1984	-	-	1
1985	-	-	-
1986	-	-	1
1987	-	-	1
1988	-	-	1
1989	-	-	1
1990	-	-	-
1991	-	-	-
1992	-	-	1
1993	-	-	-
1994	-	-	-
1995	-	-	-
1996	-	-	-
1997	-	-	-
1998	-	-	1
1999	-	-	-
2000	-	-	-

Table 63: Probability of Future Events, Wind Events, Otero County, NM			
Event Year	**Event Count**		
	High Wind	**Strong Wind**	**Thunderstorm Wind**
2001	-	-	-
2002	-	-	1
2003	-	-	4
2004	-	-	1
2005	-	-	-
2006	-	-	-
2007	-	-	2
2008	-	-	3
2009	-	-	5
2010	-	-	2
2011	11	-	4
2012	12	-	1
2013	5	-	4
2014	3	-	3
2015	12	-	2
2016	12	-	-
2017	11	-	1
2018	23	-	2
2019	5	-	4
2020	12	-	11
2021	13	-	4
2022	18		5
2023	9		1
2024	11		-
Total Recorded Events =	146	0	78
Total Years =	61	61	61
Probability over Time Frame of 61 Years	**239.34%**	**0%**	**127.87%**
Annual Probability =	**47.87%**	**0%**	**25.57%**
Average Hazard Probability	**47.4+0+25.57= $\frac{73.27}{3}$ = 24.42%**		

Probability of Future Events Mathematical Equation of Wind (High Wind, Strong Wind, and Thunderstorm Wind)

- High Wind: $\frac{146}{61} x\ 100 = \frac{239.3\%}{5} = 47.87\%$ / $\frac{91}{7} x\ 100 = \frac{1300\%}{5} = 260\%$
- Strong Wind: $\frac{0}{61} x\ 100 = \frac{0\%}{5} = 0\%$
- Thunderstorm Winds: $\frac{78}{61} x\ 100 = \frac{1128.6\%}{5} = 25.57\%$ / $\frac{27}{7} x\ 100 = \frac{385.7\%}{5} = 77.14\%$

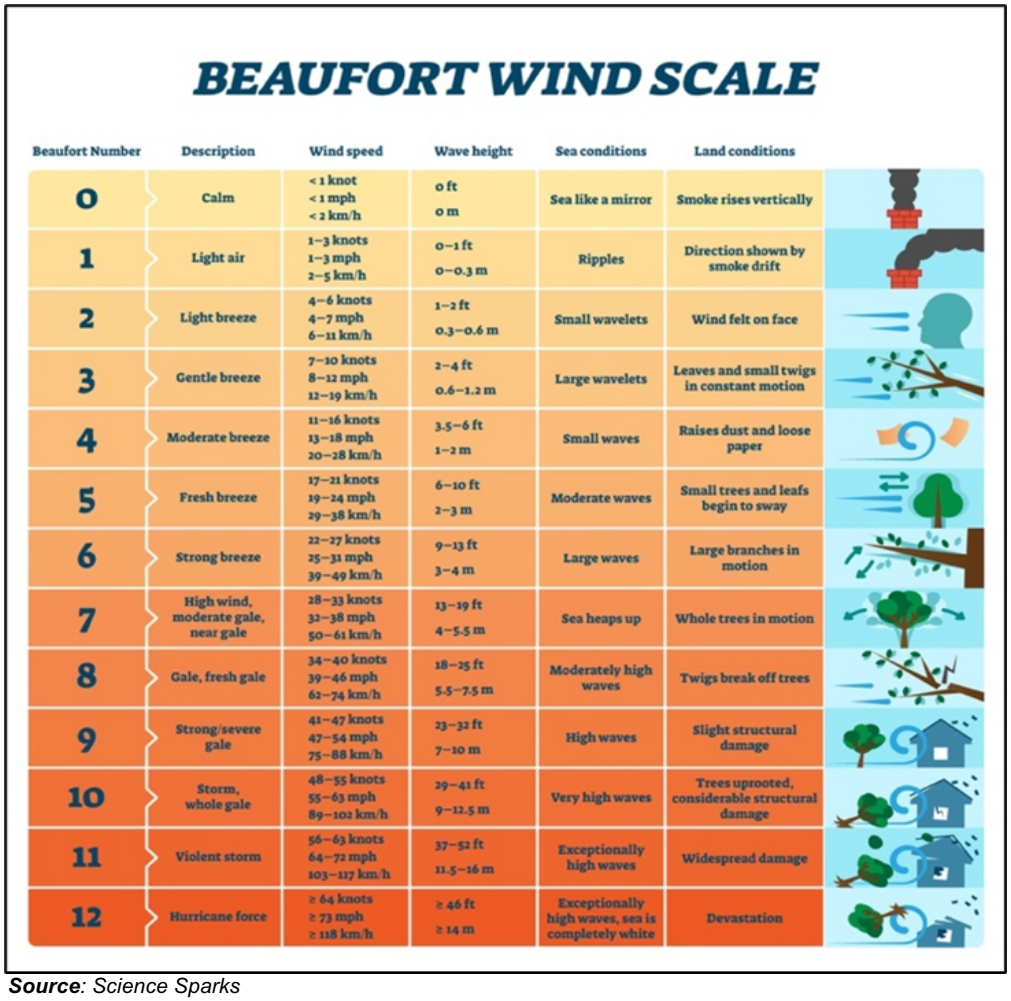
Using the NOAA/NCEI database and calculating probability based on past events for the planning area, the likelihood of a single wind event (high wind, strong wind, and thunderstorm wind) event occurring in the City of Alamogordo on an annual basis over the next LHMP planning cycle is as follows:

- High Wind: 47.87%, Likely/ 260%, Highly Likely
- Strong Wind: 0%, Unlikely
- Thunderstorm Wind: 25.57%, Likely/ 77.14%, Highly Likely

The annual probability of occurrence for a single wind event over the next LHMP planning cycle is 24.42%, 112.38% categorizing the hazard's probability as **Highly Likely**.

4.9.5 Vulnerability and Impact

Wind is a regular aspect of normal weather conditions in the planning area. However, the hazard being explained is an abnormal gust or length of time wind. The wind is also not more susceptible to one part of the City than any other; therefore, it can (and does) affect the entire planning area based on the Beaufort Scale below. If the wind is strong enough, it can adversely affect any building, system, or person located within the planning area.



***Source**: Science Sparks*

Table 64: Summary of Changes to Vulnerability, Wind (High Wind, Strong, Wind, and Thunderstorm Wind) Events			
202X LHMP Update Hazards	**Decrease in Vulnerability**	**No Change in Vulnerability**	**Increase in Vulnerability**
Wind			X

- Wind was identified as a hazard of concern for this plan update cycle. Therefore, this new hazard is a priority for mitigation planning for the City.
- With the increase in hazard events, and the fact that the population has increased 0.951%; therefore, the City of Alamogordo is more vulnerable to hazards, like wind (high wind, strong wind, and thunderstorm wind) events.
- With this shift in mitigation efforts, the City of Alamogordo MPT has identified these hazards as a concern and have added them to the plan to include previous occurrences and future probability to identify future mitigation actions related to wind in the planning area.

Based on the data provided from the NOAA/NCEI Storm Events Database and highlighted in this hazard profile's Previous Occurrences section, the City of Alamogordo can expect the following relevant to wind (high wind, strong wind, and thunderstorm wind) events.

Table 65: City of Alamogordo High Wind Impact Summary

Data	Recorded Impact
Deaths or Injuries (1964-2024)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (1964-2024)	$77,857.14
Average Property Damage per Year	$285,030.50
Total Reported NCEI Crop Damage (1964-2024)	$0.00
Average Crop Damage per Year	$0.00

Source: *NOAA/NCEI Storm Events Database*

Table 66: City of Alamogordo Strong Wind Impact Summary

Data	Recorded Impact
Deaths or Injuries (2000-2024)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2000-2024)	$0.00
Average Property Damage per Year	$0.00
Total Reported NCEI Crop Damage (1964-2024)	$0.00
Average Crop Damage per Year	$0.00

Source: *NOAA/NCEI Storm Events Database*

Table 67: City of Alamogordo Thunderstorm Wind Impact Summary

Data	Recorded Impact
Deaths or Injuries (1964-2024)	4
Average Number of Deaths or Injuries	32.5
Total Reported NCEI Property Damage (1964-2024)	$246,280.00
Average Property Damage per Year	$127,214.29
Total Reported NCEI Crop Damage (1964-2024)	$10,000.00
Average Crop Damage per Year	$5,030.50

Source: *NOAA/NCEI Storm Events Database*

According to Table 92: Hazard Risk Summary, the overall hazard priority for wind (high wind, strong wind, and thunderstorm wind) is **Highly Likely** in the planning area.

4.9.5a Impact of Climate Change

It is important to know how climate change affects the intensity and frequency of wind events (and their potential impacts). It is uncertain and is being studied intensively. New Mexico Hazard Climate Adaptation & Resilience Plan (2023) indicates that communities throughout New Mexico are already experiencing extreme weather events like (wind) and other effects of changing climate. It also states that increasing temperatures and greater variability in precipitation have profoundly influenced the level of exposure and likelihood of several of the state's climate hazards, including wind. It is important to note that damage to life and property will likely increase due to population and financial growth across the state, including the City of Alamogordo.

4.9.5b Critical Facilities & Infrastructure

All critical facilities and infrastructure are equally at risk since wind events indiscriminately affect the entire planning area. Facilities on higher ground may also be more exposed to wind damage or damage from falling trees. The most common problem associated with wind events, such as high winds, strong winds, and thunderstorm winds, is the loss of utilities. Downed power lines can cause blackouts, leaving large areas isolated and phone, water, and sewer systems inoperable. Roads may become impassable due to flooding and downed trees. High winds can knock down critical infrastructure, such as powerlines, preventing information communication systems from functioning sufficiently. Severe winds can also cause structural and non-structural damage to critical facilities. Heavy rains, especially when accompanied by a windstorm, can cause water damage to critical facilities and compromise functionality.

Potentially Vulnerable Community Lifelines

- Electrical lines: As mentioned previously, wind events can cause downed power lines that can cause blackouts. The cost of replacing electrical lines can widely be based on several factors, including the type of electrical lines, the distance of the replacement, local labor and materials cost, the complexity of the project, and any specific requirements and challenges involved. Additional costs for residential, commercial, or industrial projects can significantly differ. As a rough estimate, the cost to replace electrical lines can range from a few thousand dollars to several thousand dollars per mile.
- Communication Systems: Communication systems within the City may have an increased vulnerability to wind events. Wind events can disrupt vital communication systems, affecting reliability and functionality. Some of the key vulnerabilities include:
    - Structural Damage to Communication Towers: Wind events can cause direct structural damage to communication towers, including cellular, television, radio, and microwave towers. Toppled or damaged towers can disrupt signal transmission and reception.
    - Power Outages: Wind events often cause power outages by damaging electrical infrastructure. Communication facilities, including cell towers and data centers, rely on a stable power supply. Power failures can lead to service interruptions.
    - Fiber Optic Cable Damage: Flying debris and tornado-related destruction can damage underground and aerial fiber optic cables. Severed cables can disrupt data transmission and internet connectivity.
    - Microwave Link Disruptions: Wind events, such as high winds and debris, can interfere with microwave communication links used for long-distance communication. These events can disrupt the line of sight needed for these links.
    - Equipment Damage: Communication equipment located outdoors, such as antennas, dishes, and amplifiers, can be damaged by wind events, affecting the performance of communication systems.

- Loss of Communication Nodes: Wind events can damage communication nodes, exchanges, and network switching centers. Loss of these critical components can lead to widespread service disruptions.
- Cellular Network Congestion: In the aftermath of a significant wind event, there is often an increased demand for cellular communication as individuals seek information and contact loved ones. This surge in demand can lead to network congestion and reduced service quality.

The cost to repair the City of Alamogordo communications network can vary widely depending on the damage's extent, the network's size, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. The following data from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency indicates cost ranges for communications system components:

Table 68: Summary of Communication System Component Costs

Components	Examples	Cost	Expected Lifespan
Infrastructure	Towers, shelters, commercial and backup power equipment,	$$$–$$$$$	20–25 years
Fixed Station Equipment	Antennas, repeaters, towers on wheels, consoles, mobile stations, servers, computers, physical and electronic security elements (e.g., fencing, cameras, monitors, environmental conditions)	$$-$$$	3-15 years
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	$-$$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, aircards, intercoms	$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliant services, Over-the-Air-Programming, automatic roaming	$-$$$	-
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	$-$$	-

Source: *U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency*

Wind (high wind, strong wind, and thunderstorm wind) events can significantly affect emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. These impacts can impact emergency response through:

- Transportation Disruptions: Debris on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- Road Closures: Wind events can lead to the closure of roads due to debris accumulation and hazardous conditions. This can limit access to emergency vehicles and impede the evacuation of residents.
- Communication Disruptions: Wind events, like high winds and strong winds, can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- Power Outages: Wind events downing power lines can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.

- Resource Allocation Challenges: Wind Events can often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- Increased Demand for Services: Wind events can increase the demand for emergency services, including medical assistance, search and rescue operations, and accident responses. Emergency response organizations may need to manage a higher volume of incidents simultaneously.

The major hospital identified in the City of Alamogordo is the Gerald Champion Regional Medical Center, a part of the CHRISTUS Health family. The total in-patient bed capacity of these facilities is approximately 100 staff beds (https://www.ahd.com/free_profile/320004/Gerald_Champion_Regional_Medical_Center/Alamogordo/New_Mexico/). This is considered a small regional medical center, and it may see an increase of wind-related injuries during an event. It is possible there could be an increased impact or overloaded capacity, and the injured will need to be diverted to other facilities within the County.

A complete list of critical facilities and infrastructure can be found in Appendix D.

4.9.5c Land Use and Development

Structural vulnerability to wind events, specifically high wind and thunderstorm wind, are the same throughout the entire planning area. Wind events create flying debris that can significantly damage infrastructure and buildings. There are, however, various characteristics of structures, like roof profile, the type and strength of windows, and the nature of the structural system, that make them more (or less) vulnerable to the effects of high wind. To date, modern building codes are very effective in ensuring that structures can withstand all but the most extreme weather events.

FEMA National Risk Index EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to the community's risk. For Otero County, NM, which includes the City of Alamogordo, the expected loss of data related to wind, primarily strong wind, is as follows:

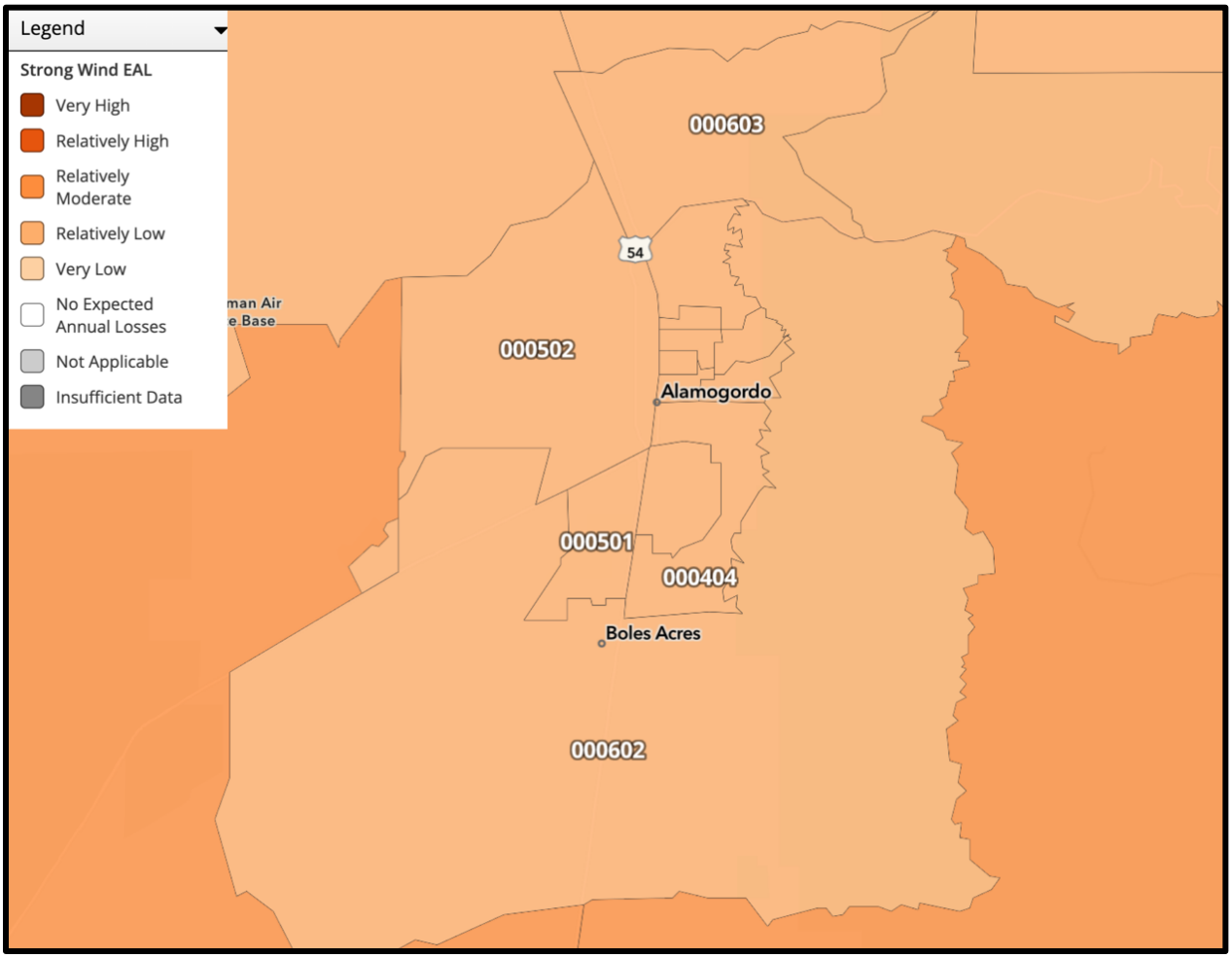
Note: Related to EAL, the FEMA Risk Index references strong winds in its analysis, not high winds or thunderstorm winds.

- Expected Annual Loss Score: 35.0 – Relatively Low
- Expected Annual Loss: $184,000
- Exposure: $798B
- Frequency: 0.4% events per year
- Historic Loss Ratio: Relatively Moderate

Table 69: Otero County EAL Data for Strong Wind

Jurisdiction	EAL Value	EAL Rating	Exposure Building Value	Population Equivalence	Agriculture Value Exposure
Otero County	$183,511	Relatively Low	$12,866,269,081	$785,304,400,00	$20,830,943

The following map illustrates the expected annual loss for strong wind in the planning area:



Source: *FEMA NRI*

From January 1, 1964, to March 31, 2023, Otero County, where the City resides, experienced 224 wind (high wind, strong wind, and thunderstorm wind) events combined with property damage equaling $1,062,500.00. The City of Alamogordo structures are valued at $5,208,407. Since wind threatens the entire planning area, all structures are considered exposed and valuable. The following table provides a structural summary by sector for the City of Alamogordo, as identified by the FEMA HAZUS® database.

Table 70: Structural Summary: City of Alamogordo

Jurisdiction	Agriculture	Commercial	Government	Industrial	Residential	Education	Religious
Alamogordo	$8,377	$1,226,715	$204,201	$170,400	$3,207,679	$311,001	$80,034

Source: *FEMA HAZUS® Database*

The City of Alamogordo must build, bolster, and maintain safe and secure communities. Improved and consistent building codes have been considered a critical measure by FEMA to mitigate such property losses. At the time of this plan update, the City of Alamogordo has adopted the New Mexico Building Codes, which correspond to the International Building Code, to meet New Mexico mandates. This code is equipped to deal with impacts like wind events like high winds. With these tools, the City is well-equipped to deal with future growth and associated effects of wind events.

4.9.5d Jurisdictional Risk and Vulnerability

Wind events have historically affected all of the planning area. Therefore, the City of Alamogordo is equally at risk of mitigating and responding to wind events.

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. Each hazard's impact is evaluated in terms of disruption of operations, recovery challenges, and overall well-being of all City residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

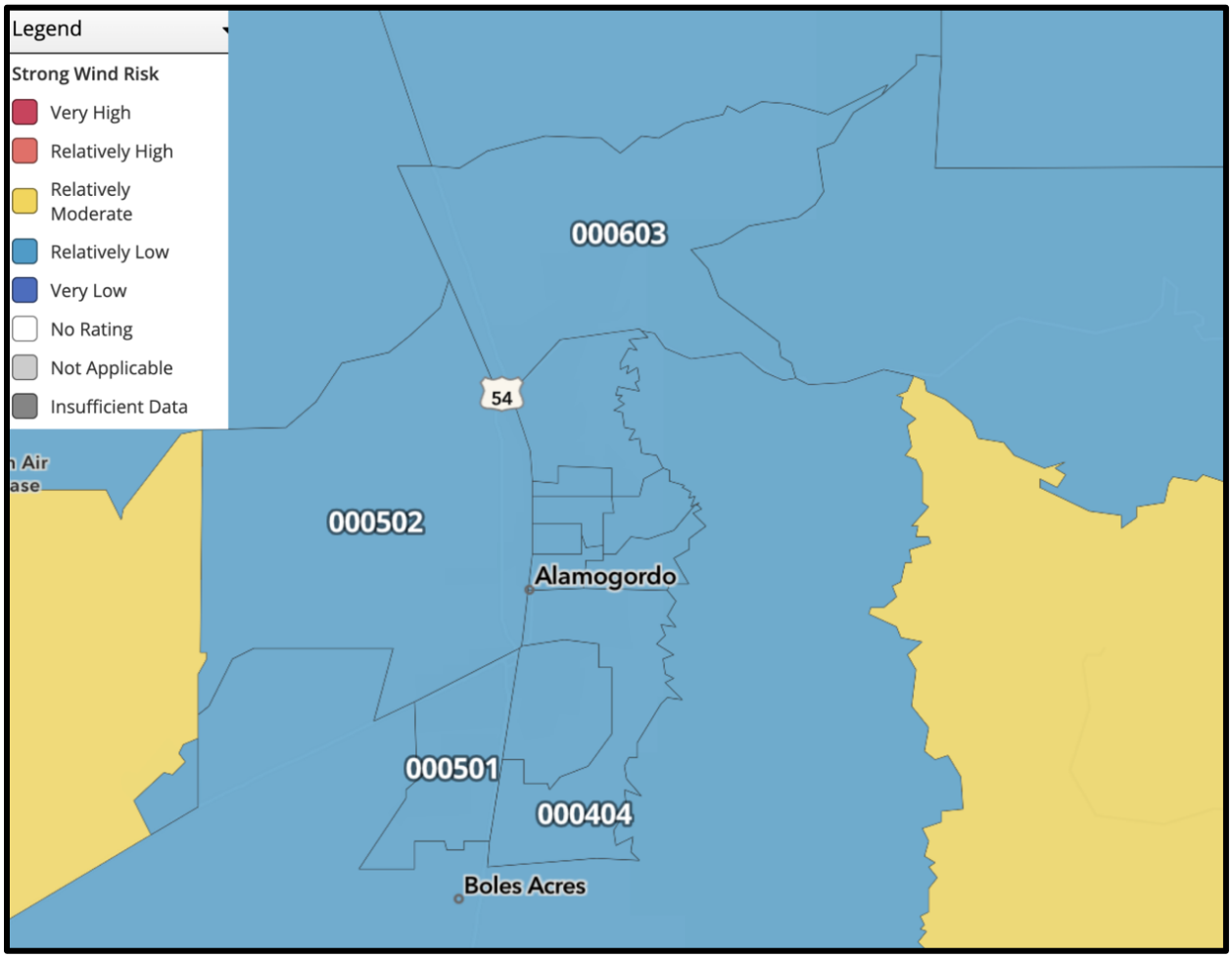
Table 71: Wind (High Wind, Strong Wind, and Thunderstorm Wind) Events Consequence Analysis

Subject	Potential Impacts
Agriculture	Row crops, those standing above ground level, are most susceptible to wind damage, especially high winds. Agriculture infrastructure such as grain silos and windmills can be damaged or destroyed.
Health and Safety of the Public	The public can face severe injuries and even death because of wind events like high winds.
Impact on Responders	Responders face the same risk as the public. Responders may be more at risk as their call to duty often places them into hazardous conditions and scenarios the general public don't find themselves in.
Continuity of Operations	Little to no impacts anticipated, except for facilities that may be damaged or during an event.
Delivery of Services	Little to no impacts anticipated, except for facilities that may be damaged or during an event.
Property, Facilities, and Infrastructure	High wind can cause anywhere from minor damage to total destruction of facilities and infrastructure depending on the size of the event. Extensive damages are anticipated.
Impact on Environment	Wind can cause widespread extensive damage to the environment in the form of damaged or downed trees and crops, and debris or contamination dispersal.
Economic Conditions	A small community can be heavily damaged by wind. The economic base (businesses) and individuals can lose everything, and recovery may require substantial investment.
Public Confidence in Governance	Not impacted by the event itself, but may be damaged if the response to an event is poor.

***Source**: 2023 State of New Mexico Hazard Mitigation Plan*

To help understand the risk and vulnerability to wind events in Otero County, where the City of Alamogordo is located, mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdictions, like the City's conditions.

Using the FEMA NRI, consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to the planning area from wind events, primarily strong winds:



Source: *FEMA NRI*

Table 72: Otero County FEMA EAL and NRI for Strong Wind

Jurisdiction	EAL Value	Risk Index	Social Vulnerability	Community Resilience
Otero County	$183,511	Relatively Low	Very High	Very Low

Source: *FEMA NRI*

Lower-income communities, including communities with a large percentage of mobile homes, may suffer disproportionate impacts from wind (high wind, strong wind, and thunderstorm wind) events. The following table indicates mobile home data for the planning area:

Table 73: City of Alamogordo Mobile Home Data

Jurisdiction	Occupied Housing Stock as Mobile Homes (2010)	Occupied Housing Stock as Mobile Homes (2022)	Percentage Change in Mobile Homes (2010-2020)
Alamogordo	14.5%	15.3%	5.528%
Source: U.S Census, American Community Survey, Physical Housing Characteristics for Occupied Housing Units (S2504) ; Percent of Population Change Calculator: https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change			

Since wind events threaten the entire planning area equally, all municipal and City school district structures are considered exposed and vulnerable. Data from the FEMA HAZUS® system indicates the total value of property within the City of Alamogordo structures is $5,208,407.

4.9.6 Repetitive Loss Structures
Not Applicable.

4.9.7 HAZUS® Models
Not Applicable.

4.10 Winter Storms



Photo Courtesy: City of Alamogordo LHMP 2018

4.10.1 Hazard Description

A winter storm encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

This plan defines winter storms as a combination of the following winter weather effects as defined by NOAA and the NWS.

- **Ice Storm**: An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater.
- **Heavy Snow**: This generally means snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less.
- **Winter Storm**: Hazardous winter weather in the form of heavy snow, freezing rain, or heavy sleet. It may also include extremely low temperatures and increased wind.
- **Cold Wave/Extreme Cold**: As described by NWS, a cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. As evidenced by past incidents across the U.S., extreme cold can cause impact to human life and property.

4.10.2 Location & Extent

Winter storms occur regularly throughout New Mexico, including its counties, and often affect the planning area. These events occur on a large geographical scale, frequently involving multiple counties, regions, and states.

Winter storms, while typically forming with a warning, are often unpredictable in their severity. The notification window is often short, sometimes just a few hours to under an hour. This unpredictability underscores the need for constant vigilance and preparedness. Each resident and authority must be prepared and aware of the potential impact. Although meteorologists estimate the amount of snowfall a winter storm will drop, it is not known exactly how many feet of snow will fall, whether or not it will form an ice storm, or how powerful the winds will be until the storm is already affecting a community.

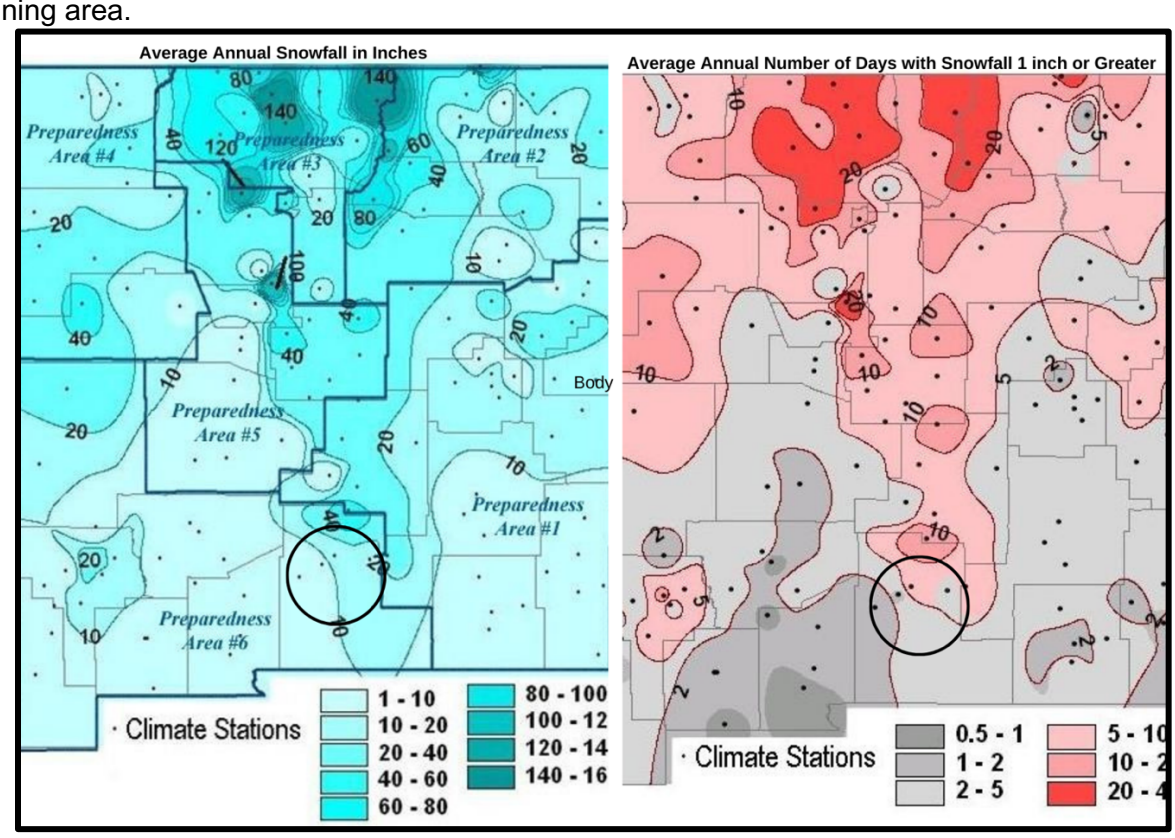
Winter storms can range from moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow, and extremely cold temperatures that last several days. The State of New Hazard Mitigation Plan (2023) states that the entire State of New Mexico experiences some severe winter storm events. The topography of the State, such as elevation and land contours, plays a significant part in how winter weather affects a particular area. Most winter precipitation within the State is associated with Pacific Ocean storms as they move across the region from west to east. As the storms move inland, moisture falls on the coastal and inland mountain ranges of California, Nevada, Arizona, and Utah. If conditions are right, the remaining moisture falls on the slopes of New Mexico's high mountain chains, significantly influencing the local weather. Much precipitation that falls as snow in the mountain areas may occur as either rain or snow in the valleys. The average annual snowfall ranges from about three inches in the southern desert and southeastern plains to over 100 inches in the northern mountains. For the planning area, the Otero County HMP (2011) mentions that average snowfall ranges

from three (3) inches in the Southern desert to the southeastern plains in Otero County. The following table provides information about NOAA's Regional Snowfall Index (RSI).

Table 74: NOAA Regional Snowfall Index (RSI)

Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme
Source: *NOAA NCEI*		

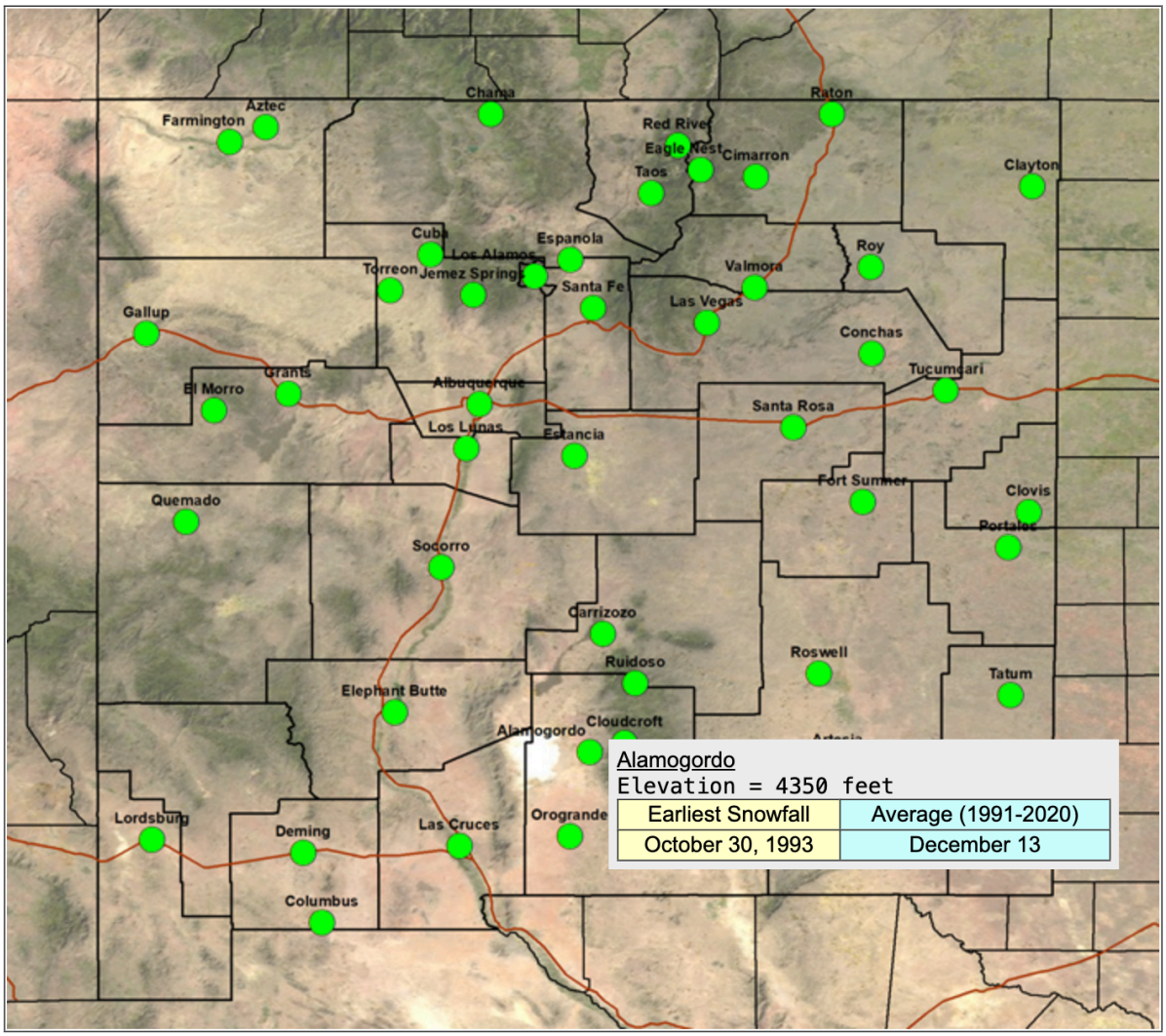
The following maps from the State of New Mexico Hazard Mitigation Plan (2023) depict State snowfall distributions by average inches and the average number of days over one inch. These maps visually represent the State's 30-year snow climatology from 1981 to 2010, providing a comprehensive understanding of the typical snowfall patterns in New Mexico and the first snowfall dates within the State. The circles depict the planning area.



Source: *The State of New Mexico Hazard Mitigation Plan (2023)*

The graphic below will display first snowfall climatology for locations across New Mexico (1991-2020), including the earliest on record and the average first dates. Place your cursor over a location to view the data. For a tabular view of the same data shown below, **click here**. Snowfall records are incomplete at some locations and may not provide an accurate depiction of the more recent changes in the climatology for the period from 1991 to 2020.

For helpful tips on preparing for snow and staying safe this winter please visit: Winter Weather Safety



Source: *The National Weather Service – Albuquerque, NM Office*

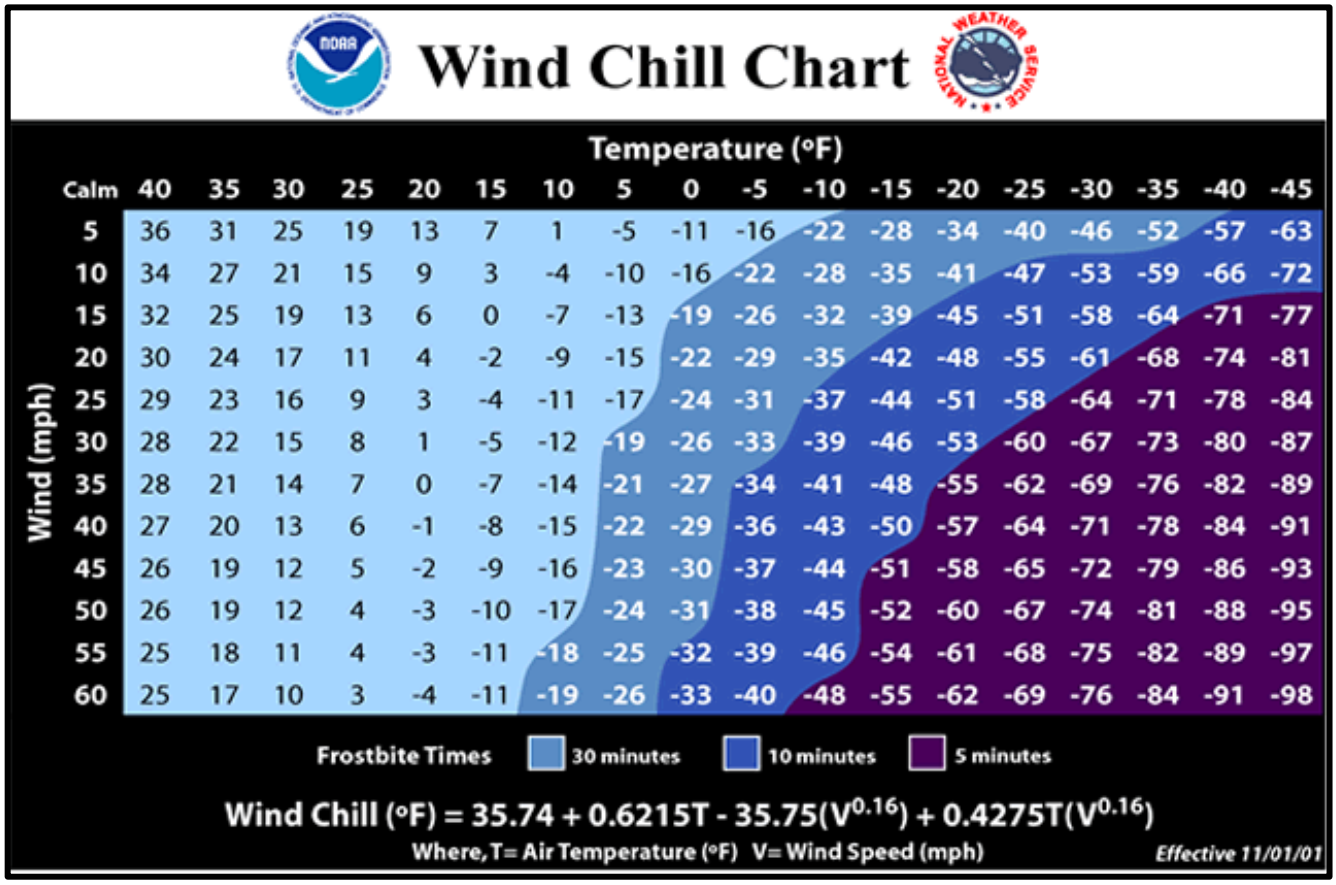
The previous LHMP (2019) mentions that historically, according to NOAA, the planning area will typically receive an average of 10 inches of snow during a winter storm. Still, it can see up to 10 to 15 inches throughout the City in extreme cases. The City of Alamogordo has recorded snowstorm events. Based on these historical values, the City of Alamogordo should be prepared to experience an ice storm with an accumulation of up to 15 inches of snow.

Extreme Cold can be defined as temperatures at or below freezing for an extended period. Extreme cold temperatures can result in a variety of concerns, including:

- **Frostbite:** The freezing of skin and the body tissue just beneath it
- **Hypothermia:** Dangerously low body temperature (and the most common winter weather killer)

When extremely cold temperatures are accompanied by strong winds, the result can be potentially lethal wind chills. The wind chill is the temperature your body feels when the air temperature is combined with the

wind speed and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop. The wind chill chart shows the difference between the actual air temperature and the perceived temperature due to wind and the time until frostbite occurs.



***Source**: The National Weather Service (NWS)*

The coldest month in the planning area is January, with an average temperature during the winter months (Jan-March) of 33.66°F degrees. The following table and chart present the average climate data for the City of Alamogordo.

Table 75: Average Climate Data for Alamogordo

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg High (°F)	55	61	67	75	84	94	93	90	85	76	64	56
Avg Low (°F)	29	33	39	46	55	63	66	64	58	48	36	29

***Source**: U.S. Climate Data website, May 2024*

Ice storms are characterized by the accumulation of freezing rain or freezing drizzle, which coats surfaces with a layer of ice. These storms can significantly impact transportation, infrastructure, and the environment. Ice storms occur when there's a layer of warm air above a layer of cold air near the surface. Precipitation falls as rain in the warm layer and then freezes upon contact with surfaces at or below freezing temperatures in the cold layer. The most common type of precipitation during an ice storm is freezing rain. This rain falls as a liquid but freezes upon contact with cold surfaces, forming a layer of ice.

The Sperry–Piltz Ice Accumulation Index is an ice accumulation and ice damage prediction index that, combined with NWS data, predicts the projected footprint, total ice accumulation, and resulting potential damage from approaching ice storms.

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Source: *Sperry-Pitz Ice Accumulation Index*

4.10.3 Previous Occurrence

The previous LHMP (2019) states that since 1950, NOAA NCEI has recorded eight (8) winter storm events in Otero County. Those events recorded $15,000 of property damage, zero injuries, and zero fatalities within the planning area.

The following table presents NCEI identified winter storm events (ice storm, heavy snow, winter storm, and extreme cold) and resulting damage totals for Otero County, where the City of Alamogordo is located, from 2000 to 2023. Please note that as these storm events tend to cover larger areas occurrence data is being represented as representative of all participating jurisdictions in the County which includes the City of Alamogordo.

Table 76: Otero County NCEI Winter Storm Events, 2000 – 2024

Event Type	Number of Events	Property Damage	Deaths	Injuries
Ice Storm	0	$0.00	0	0
Heavy Snow	23	$0.00	0	0
Winter Storm	0	$0.00	0	0
Extreme Cold	0	$0.00	0	0

Source*: NOAA NCEI Storm Event Database*

To gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. From January 1, 2018, to March 31, 2024, NOAA/NCEI recorded 28 winter storm (ice storm, heavy snow, winter storm, and extreme cold) events in Otero County, where the City of Alamogordo is located. The following information was obtained by accessing the NOAA database. https://www.ncdc.noaa.gov/stormevents/. This information represents all the events and extent of

the flood experienced by Otero County, including the jurisdictions located within, and is the only data source accessible.

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

Ice Storm Previous Occurrence Events

From January 1, 2018, to March 31, 2024, NOAA/NCEI recorded 0 ice storm events in Otero County, which includes the City of Alamogordo. The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the strong winds experienced by Otero County, including the jurisdiction, like the City of Alamogordo, located within, and is the only source of data accessible.

Note: *NP = Not Provided*

Table 77: Ice Storm Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Not provided.	Not provided.	Not provided.	NP	NP	NP	NP	Not provided.
Total Impact of Ice Storm Events			**0**	**0**	**0**	**0**	
Data Source: *NOAA/NCEI Storm Event Database*							

Heavy Snow Previous Occurrence Events

From January 1, 2018, to March 31, 2024, NOAA/NCEI recorded 28 heavy snow events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the high winds experienced by Otero County, including the jurisdictions, like the City of Alamogordo, located within, and is the only source of data accessible.

Note: *NP = Not Provided*
Note: *The NOAA NCEI Storm Events Database mentions that Otero County contains the following zones: Central Tularosa Basin, Southern Tularosa Basin, West Slopes Sacramento Mountains below 7500 feet, Sacramento Mountains above 7500 feet, East Slopes Sacramento Mountains below 7500 feet, Otero Mesa, West Central Tularosa Basin/White Sands, East Central Tularosa Basin/Alamogordo, and Southeast Tularosa Basin. The zones in the table below will represent the jurisdiction.*

Table 78: Heavy Snow Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Sacramento Mountains Above 7500 Feet (Zone)	12/26/18	Heavy Snow	0	0	$0.00	$0.00	Significant snowfall reports over the Sacramento Mountains ranged from 9.0 inches 4 miles east of Cloudcroft to 13.5 inches in Sunspot.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	12/28/18	Heavy Snow	0	0	$0.00	$0.00	The total snowfall three miles west-northwest of Mayhill was 10.3 inches.
Sacramento Mountains Above 7500 Feet (Zone)	12/28/18	Heavy Snow	0	0	$0.00	$0.00	Some significant snowfall totals from the higher elevations of the Sacramento Mountains included 17.5 inches two miles south of

Table 78: Heavy Snow Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
							Cloudcroft, 23.0 inches in Sunspot and 25.5 inches two miles southwest of Cloudcroft.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	12/28/18	Heavy Snow	0	0	$0.00	$0.00	Total snowfall of 16.0 inches was reported 6 miles east-northeast of La Luz at an elevation of 6100 feet.
Sacramento Mountains Above 7500 Feet (Zone)	12/28/19	Heavy Snow	0	0	$0.00	$0.00	Snowfall around the Cloudcroft area ranged from 6 to 8 inches.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/3/20	Heavy Snow	0	0	$0.00	$0.00	The COOP observer in Sacramento reported a total of 18 inches of snow with unconfirmed reports of up to 2 feet in the vicinity. Other snowfall totals included 10 to 12 inches around Mayhill.
Sacramento Mountains Above 7500 Feet (Zone)	3/3/20	Heavy Snow	0	0	$0.00	$0.00	Total snowfall reports across the higher elevations of the Sacramento Mountains included 16 inches 4 miles east of Cloudcroft, 10.5 inches in Cloudcroft, 9.7 inches in Sunspot, and 6 inches about 2 miles southwest of Cloudcroft.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	10/26/20	Heavy Snow	0	0	$0.00	$0.00	The COOP Observer recorded 7.0 inches of snow in Sacramento. Mayhill also received 6.5 inches of snow.
Central Tularosa Basin (Zone)	10/26/20	Heavy Snow	0	0	$0.00	$0.00	Four to 4.5 inches of snow was reported at numerous sites around Alamogordo.
Sacramento Mountains Above 7500 Feet (Zone)	1/25/21	Heavy Snow	0	0	$0.00	$0.00	The maximum amount of snow reported was 8.5 inches in Sunspot. Areas around Cloudcroft received 5.0 inches to 7.7 inches.
Sacramento Mountains Above 7500 Feet (Zone)	2/14/21	Heavy Snow	0	0	$0.00	$0.00	Reports across the higher elevations of the Sacramento Mountains reported between 8.9 inches in Sunspot and between 5 inches and 7.2 inches around Cloudcroft.
Central Tularosa Basin (Zone)	2/14/21	Heavy Snow	0	0	$0.00	$0.00	An observer in Tularosa reported 4.5 inches of snow.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/14/21	Heavy Snow	0	0	$0.00	$0.00	Observers across the western slopes of the Sacramento Mountains reported 5.5 inches 6 miles east-northeast of La Luz and in Mountain Park.

Table 78: Heavy Snow Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Central Tularosa Basin (Zone)	2/16/21	Heavy Snow	0	0	$0.00	$0.00	A maximum snowfall amount reported was 11.0 inches 2 miles southwest of Cloudcroft. Other reports included 10.4 inches in Sunspot and 7.3 inches in Cloudcroft.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/16/21	Heavy Snow	0	0	$0.00	$0.00	The Cooperative Observer in Sacramento reported 7.0 inches of snow.
Sacramento Mountains Above 7500 Feet (Zone)	4/29/21	Heavy Snow	0	0	$0.00	$0.00	The highest snowfall report around Cloudcroft was 11.0 inches 0.4 miles east-southeast of town. Other reports included 10.2 inches 1.8 miles southwest of Cloudcroft and 9.9 inches in Sunspot.
Sacramento Mountains Above 7500 Feet (Zone)	1/1/22	Heavy Snow	0	0	$0.00	$0.00	A CoCoRaHS observer 1.8 miles southwest of Cloudcroft reported 12.5 inches of snow. Other reports around the area included 8 inches 2.3 miles south and 1.1 miles northwest of Cloudcroft.
Sacramento Mountains Above 7500 Feet (Zone)	2/2/22	Heavy Snow	0	0	$0.00	$0.00	Total snowfall around Cloudcroft was a consistent 9 inches with 8 inches at Sunspot.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/2/22	Heavy Snow	0	0	$0.00	$0.00	A CoCoRaHS observer reported 5.5 inches of snow about 3 miles west-northwest of Mayhill.
West Slopes Sacramento Mountains Below 7500 Feet (Zone)	2/2/22	Heavy Snow	0	0	$0.00	$0.00	A report of 16 inches was reported 5 miles south-southeast of High Rolls.
Central Tularosa Basin (Zone)	2/2/22	Heavy Snow	0	0	$0.00	$0.00	A spotter reported 4 inches of snow 2 miles north-northeast of Boles Acres.
Sacramento Mountains Above 7500 Feet (Zone)	11/24/22	Heavy Snow	0	0	$0.00	$0.00	A Cooperative Observer reported 7 inches of snow about 2 miles south of Cloudcroft. Another observer reported 7 inches in Cloudcroft.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	11/24/22	Heavy Snow	0	0	$0.00	$0.00	An observer 3 miles west-northwest of Mayhill reported a total of 11.5 inches of snow.
East Slopes Sacramento Mountains	1/23/23	Heavy Snow	0	0	$0.00	$0.00	A total of 5.8 inches of snow fell 4 miles south-southeast of Mayhill. Another observer reported 5.1 inches of snow 3

Table 78: Heavy Snow Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Below 7500 Feet (Zone)							miles west-northwest of Mayhill.
Sacramento Mountains Above 7500 Feet (Zone)	1/4/24	Heavy Snow	0	0	$0.00	$0.00	The Cloudcroft Cooperative Observer about 2 miles south of town recorded 10 inches of snow. A CoCoRaHs observer 2 miles southwest of town recorded 9 inches of snow.
Sacramento Mountains Above 7500 Feet (Zone)	2/2/24	Heavy Snow	0	0	$0.00	$0.00	Snow amounts of 6 to 12 inches of snow fell within a couple miles of Cloudcroft. Twelve inches was reported 1.8 miles southwest of Cloudcroft.
East Slopes Sacramento Mountains Below 7500 Feet (Zone)	3/8/24	Heavy Snow	0	0	$0.00	$0.00	Social Media photos showed around 9 inches of snow in Sixteen Springs Canyon. Six inches of snow was also snow about 4 miles west-northwest of Mayhill where there were reports of cars sliding off of Highway 82 east of Cloudcroft.
Sacramento Mountains Above 7500 Feet (Zone)	3/8/24	Heavy Snow	0	0	$0.00	$0.00	A spotter reported 6 inches of new snow at the Waterfall Lodge about 4 miles southeast of Cloudcroft.
28 Total Impact of Heavy Snow Events			**0**	**0**	**$0.00**	**$0.00**	
Data Source: *NOAA/NCEI Storm Event Database*							

Winter Storms Previous Occurrence Events

From January 1, 2018, to March 31, 2024, NOAA/NCEI recorded 0 winter storms events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the strong winds experienced by Otero County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 79: Ice Storm Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Not provided.	Not provided.	Not provided.	NP	NP	NP	NP	Not provided.
Total Impact of Strong Wind Events			**0**	**0**	**0**	**0**	
Data Source: *NOAA/NCEI Storm Event Database*							

Extreme Cold Previous Occurrence Events

From January 1, 2018, to March 31, 2024, NOAA/NCEI recorded 0 extreme cold events in Otero County, which includes the City of Alamogordo). The following information was obtained by accessing the NOAA Storm Events Database: https://www.ncdc.noaa.gov/stormevents/. This information represents all events and extents of the strong winds experienced by Otero County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 80: Extreme Cold Events, Otero County, NM

Jurisdiction	Date	Event Type	Death	Injuries	Property Damage	Crop Damage	Extent/Impact Description
Not provided.	Not provided.	Not provided.	NP	NP	NP	NP	Not provided.
Total Impact of Strong Wind Events			**0**	**0**	**0**	**0**	
Data Source: *NOAA/NCEI Storm Event Database*							

4.10.4 Probability of Future Events

The following table provides a summary of the winter storm (ice storm, heavy snow, winter storms, and extreme cold) events recorded by Otero County, where the City of Alamogordo resides, between January 1, 2018, and March 31, 2024:

Table 81: Probability of Future Events, Winter Weather Events, Otero County, NM

Event Year	Event Count			
	Ice Storm	Heavy Snow	Winter Storms	Extreme Cold
2018	-	4	-	-
2019	-	1	-	-
2020	-	4	-	-
2021	-	7	-	-
2022	-	7	-	-
2023	-	1	-	-
2024	-	4	-	-
Total Recorded Events =	**0**	**28**	**0**	**0**
Total Years =	**7**	**7**	**7**	**7**
Probability over Time Frame of 7 Years	**0%**	**400%**	**0%**	**0%**
Annual Probability =	**0%**	**80%**	**0%**	**0%**
Average Hazard Probability	**0+80+0+0+= $\frac{80}{5}$ = 16%**			

Probability of Future Events Mathematical Equation of Winter Storm (Ice Storm, Heavy Snow, Winter Storms, and Extreme Cold)

- Ice Storms: $\frac{0}{7} x\ 100 = \frac{0\%}{5} = 0\%$
- Heavy Snow $\frac{28}{7} x\ 100 = \frac{400\%}{5} = 80\%$
- Winter Storms: $\frac{0}{7} x\ 100 = \frac{0\%}{5} = 0\%$
- Extreme Cold: $\frac{0}{7} x\ 100 = \frac{0\%}{5} = 0\%$

Using the NOAA/NCEI database and calculating probability based on past events for the planning area, the likelihood of a single winter storm (ice storm, heavy snow, winter storm, and extreme cold wind) event occurring in the City of Alamogordo on an annual basis over the next LHMP planning cycle is as follows:

- Ice Storm: 0%, Unlikely
- Heavy Snow: 80%, Highly Likely
- Strong Wind: 0%, Unlikely
- Extreme Cold: 0%, Unlikely

Predicting the probability of winter storm occurrences is tremendously challenging due to the many factors involved and the random nature of formation. The previous probably indicated in the last LHMP (2019) was 11.76% (likely). At the time of this plan update, the annual probability of occurrence for a single winter storm event over the next LHMP planning cycle is 16%, categorizing the hazard's probability as **likely**.

4.10.5 Vulnerability and Impact

Table 82: Summary of Changes to Vulnerability, Winter Storm Events			
202X LHMP Update Hazards	**Decrease in Vulnerability**	**No Change in Vulnerability**	**Increase in Vulnerability**
Winter Storms			X

- Winter Storms was addressed in the 2019 LHMP update. As a result, Winter Storms continues to be a priority for mitigation planning for the City.
- Since the last plan update in 2019, the population of Alamogordo has increased by 0.951%. This growth has significantly increased the city's vulnerability to hazards, particularly winter storms.
- The City of Alamogordo could experience milder winters as average temperatures rise due to climate change. Warmer temperatures can lead to a higher snowfall threshold, meaning that storms that would have produced snow in the past may now bring more rain or a mix of precipitation types. This can affect the accumulation of snow in the state.

Data from the NCEI Storm Events Database indicated that Otero County, where the City of Alamogordo is located, can expect on a yearly basis, relevant to Winter Storm (ice storm, heavy snow, winter storms, and extreme cold) events:

Table 83: City of Alamogordo Winter Storm Impact Summary

Data	Recorded Impact
Deaths or Injuries (2000-2024)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2000-2024)	$0.00
Average Property Damage per Year	$0.00
Total Reported NCEI Crop Damage (2000-2024)	$0.00
Average Crop Damage per Year	$0.00

Source: NOAA/NCEI Storm Events Database

As previously mentioned, the annual probability of occurrence for a single winter storm event over the next LHMP planning cycle is 16%, categorizing the hazard's probability as **likely**. Based on future probability, the City of Alamogordo can expect 0.16 winter storms per year, which could impact heavy accumulated snow, accumulated ice, extreme and prolonged cold temperatures, or any combination of the three.

4.10.5a Impact of Climate Change

Climate change can lead to more significant variability in precipitation patterns. The State of New Mexico Hazard Mitigation Plan (2023) mentions that winter storms may become more intense as the atmosphere holds more moisture, producing heavier than normal precipitation, including heavier snowfall. The City of Alamogordo may result in more erratic and intense winter storms with periods of heavy snowfall. Warmer temperatures can lead to a higher snowfall threshold, meaning that storms that would have produced snow in the past may now bring more rain or a mix of precipitation types. This can affect snow accumulation in the State and the planning area. Changes in atmospheric circulation patterns associated with climate change can influence the tracks of winter storms. This could lead to a shift in the amounts of heavy snowfall, ice, and other winter weather hazards.

4.10.5b Critical Facilities & Infrastructure

The previous LHMP (2019) mentions that structural vulnerability to winter storms is the same throughout the City of Alamogordo. Heavy snow accumulation can cause roofing to collapse on old or poorly constructed facilities. Ice storms will coat a facility's exterior but is unlikely to cause anything more than superficial damage. Prolonged, extremely cold temperatures can cause significant damage to poorly insulated or heated facilities. The cold temperatures can cause a facility's pipes to burst.

Potential Impact on Community Lifelines

Extreme cold temperatures often associated with winter weather can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that winter weather places on infrastructure, resources, and operational processes. Winter storms can have significant impacts on road infrastructure, creating challenging conditions for transportation and necessitating proactive measures for maintenance and safety. Winter storms can impact road infrastructure:

- Snow Accumulation: Snowfall can accumulate on road surfaces, creating slippery and hazardous conditions for drivers. Accumulated snow can reduce road visibility and make travel difficult.
- Ice Formation: Freezing temperatures can lead to the formation of ice on roadways, increasing the risk of accidents and making roads slippery. Black ice, which is nearly invisible, poses a particular hazard.
- Snowdrifts: Strong winds during winter storms can lead to the formation of snowdrifts on roads, especially in open areas. These drifts can obstruct visibility and impede traffic flow.
- Road Surface Damage: The freeze-thaw cycle, where melted snow refreezes, can lead to the formation of ice patches and potholes on road surfaces. This cycle can contribute to the deterioration of road infrastructure over time.
- Freeze-Thaw Cycling: Alternating freezing and thawing can cause the expansion and contraction of water within pavement cracks, leading to the formation and enlargement of potholes.
- Snowplow and Deicing Operations: Snowplows and deicing operations are necessary to clear roads and improve driving conditions. However, the use of salt and chemicals for deicing can contribute to corrosion and deterioration of road surfaces and infrastructure.
- Infrastructure Stress: Bridges and overpasses are particularly susceptible to ice formation due to the lack of ground contact. Winter storms can stress these structures, potentially leading to structural issues over time.

In Alamogordo, X miles of roads are maintained during winter weather by (Insert Department Name). For winter operations, the roads are maintained by (insert number of units and the title of those units). Crews remove accumulated snow and ice from roadways by plowing and/or applying salt depending on weather conditions. Also, the City's Public Works Department – Street Maintenance Division is responsible for most street and ally-related maintenance within the planning area.

Also, winter storms can impact electrical utilities in various ways, potentially leading to disruption in service. These impacts include:

- Power Outages: High temperatures can strain electrical systems, leading to increased demand for cooling systems like air conditioners. This heightened demand can overload power grids, resulting in power outages.
- Equipment Failure: Electrical equipment, such as cables and switches, may experience higher resistance and increased stress during extreme heat, increasing the likelihood of equipment failures.
- Reduced Efficiency in Power Plants: Power generation facilities may experience reduced efficiency during heatwaves due to elevated ambient temperatures. This can affect the output of power plants and potentially lead to supply shortages.
- Icing on Power Lines: Ice accumulation on power lines can lead to increased weight, potentially causing lines to sag or break. This can result in power outages and safety hazards.

The electricity provider for the City of Alamogordo is Public Service Company of New Mexico (PNM), which is the State of New Mexico's largest electricity provider. The cost to replace electrical lines can vary widely based on several factors, including the type of electrical lines, the distance of the replacement, local labor and material costs, the complexity of the project, and any specific requirements or challenges involved. Costs can be significantly different for residential, commercial, or industrial projects. Additionally, urban and rural locations may have varying cost factors. As a rough estimate, the cost to replace electrical lines can range from a few thousand dollars to several thousand dollars per mile.

Winter storms can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. Winter storms can impact emergency response through:

- Transportation Disruptions: Snow and ice accumulation on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- Road Closures: Winter storms can lead to the closure of roads due to snow accumulation, ice, and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- Communication Disruptions: Snow and ice can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- Power Outages: Severe winter weather, including ice storms, can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- Exposure: Emergency responders face increased health and safety risks in winter conditions. Exposure to extreme cold, snow, and ice can impact the well-being of responders and affect their ability to provide effective assistance.
- Resource Allocation Challenges: Winter storms often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- Logistical Challenges: Snow accumulation and icy conditions may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.

- Increased Demand for Services: Winter storms can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously.

As mentioned previously in other hazard profiles of this plan update, the major hospital identified in the City of Alamogordo is the Gerald Champion Regional Medical Center, a part of the CHRISTUS Health family. The total in-patient bed capacity of these facilities is approximately 100 staff beds (https://www.ahd.com/free_profile/320004/Gerald_Champion_Regional_Medical_Center/Alamogordo/New_Mexico/). This is considered a small regional medical center, and it may see an increase of severe winter weather-related injuries during an event, it is possible there could be an increased impact or overloaded capacity and the injured will need to be diverted to other facilities within the County.

Winter storms can increase the demand for emergency shelters, particularly in cases of widespread power outages or extreme cold temperatures. Setting up and managing these shelters can strain resources.

Winter and ice storms can have significant impacts on government facilities and assets. These impacts may include:

- Property Damage: Ice accumulation on buildings and structures can lead to structural damage, including roofing collapses and damage to exterior elements. Frozen pipes and water mains can cause interior damage.
- Communication Challenges: Ice accumulation on communication infrastructure, such as antennas and transmission towers, can disrupt communication services, affecting the ability of government agencies to convey critical information.
- Infrastructure Maintenance Challenges: The need for snow and ice removal, as well as the maintenance of roads and public spaces, can be challenging during severe winter weather. This requires additional resources and coordination.

All the infrastructure and critical facilities are equally at risk, since winter storms indiscriminately affect the entire planning area Including all City of Alamogordo structures valued at $5,208,407.

A complete list of infrastructure and critical facilities can be found in Appendix D.

410.5c Land Use and Development

The City of Alamogordo's previous LHMP (2019) states at the time of that update, there were no significant development projects in the City of Alamogordo. FEMA National Risk Index EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to the community's risk. For Otero County, NM, which includes the City of Alamogordo, the expected loss of data related to winter weather and ice storms, is as follows:

Winter Weather

- Expected Annual Loss Score: 58.1 – Relatively Moderate
- Expected Annual Loss: $67,000
- Exposure: $798B
- Frequency: 1.8% events per year
- Historic Loss Ratio: Relatively Low

Table 84: Otero County EAL Data for Winter Weather

Jurisdiction	EAL Value	EAL Rating	Exposure Building Value	Population Equivalence	Agriculture Value Exposure
Otero County	$67,000	Relatively Moderate	$12,866,269,081	$785,304,400,00	$20,830,943

Source: FEMA NRI

Ice Storms

- Expected Annual Loss Score: 59.9 – Relatively Moderate
- Expected Annual Loss: $93,000
- Exposure: $798B
- Frequency: 0.3 events per year
- Historic Loss Ratio: Relatively Low

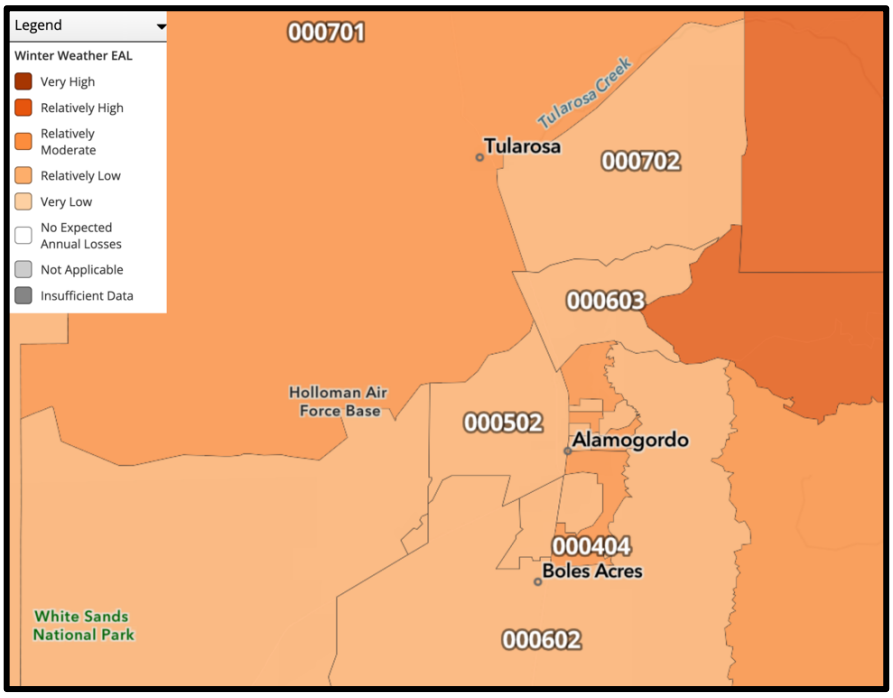
Table 85: Otero County EAL Data for Ice Storms

Jurisdiction	EAL Value	EAL Rating	Exposure Building Value	Population Equivalence	Agriculture Value Exposure
Otero County	$93,487	Relatively Moderate	$12,866,269,081	$785,304,400,00	N/A

Source: FEMA NRI

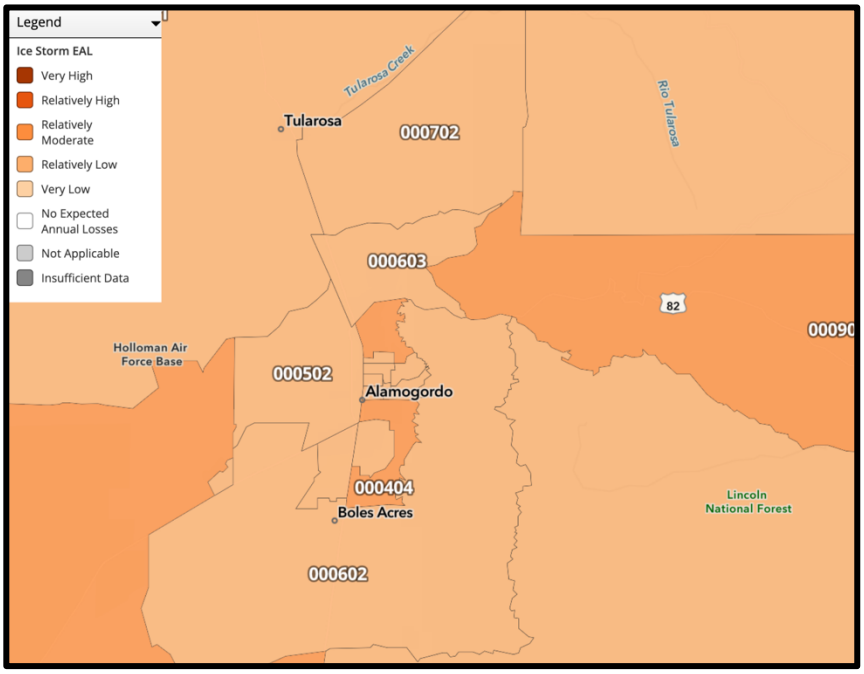
The following maps illustrate the expected annual loss for both ice storms and winter weather in the planning area:

Winter Weather



Source: FEMA NR

Ice Storms



***Source**: FEMA NRI*

Currently, the City of Alamogordo's current land-use regulations require the consideration of building codes during the development review process. A building-by-building structural review, including roof profile and strength assessment is needed to be to determine the structural risk to snow and ice loads. However, building codes enforcement can ensure that newly built and renovated structures can better withstand these loads. Therefore, the vulnerability to hazards, like winter storms, has increased within the City of Alamogordo. Also, the previous plan update (2019) included the following mitigation project addressed winter storms concerns in the planning area:

- Re-Design and construction of Coffer Dam

Mitigation Project Updates and Project Prioritization Tables for this plan update can be found in Section 6 – Mitigation Strategies.

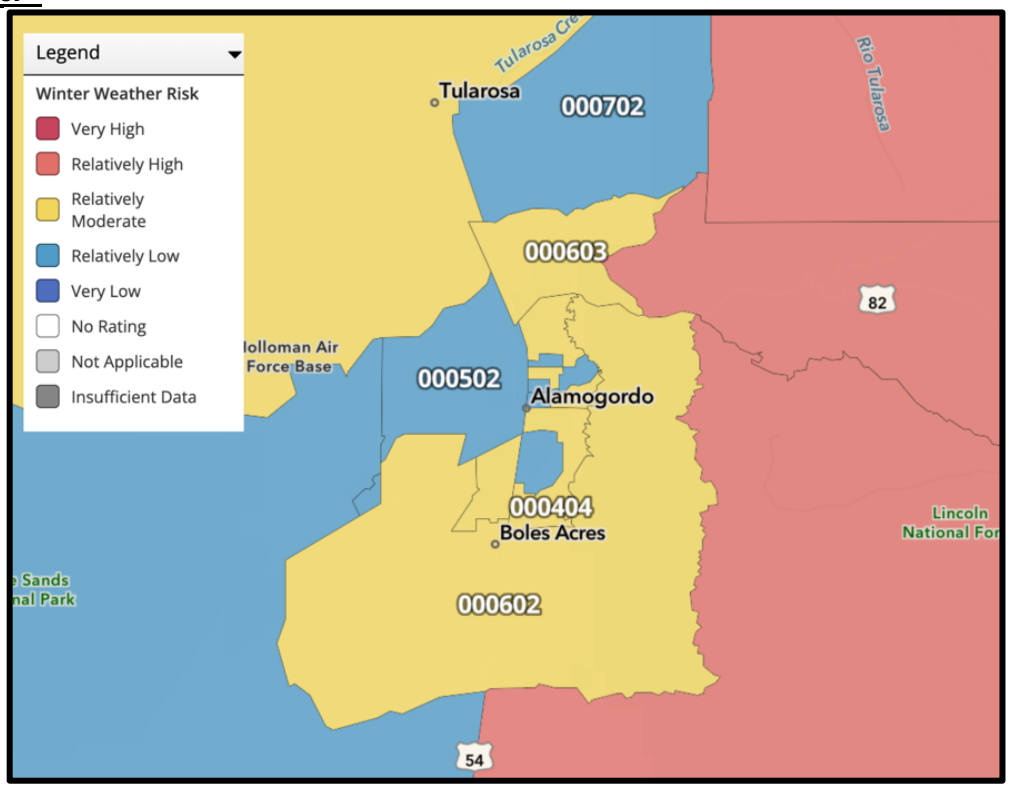
4.10.5d Jurisdictional Risk and Vulnerability

Winter storms have the potential to affect a portion of the entire planning area. Unfortunately, there is no accurate method of predicating the location and extent of a winter storm's impact. If it will affect the planning area it affects the entire planning area.

To help understand the risk and vulnerability to winter storms of participating jurisdictions, mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

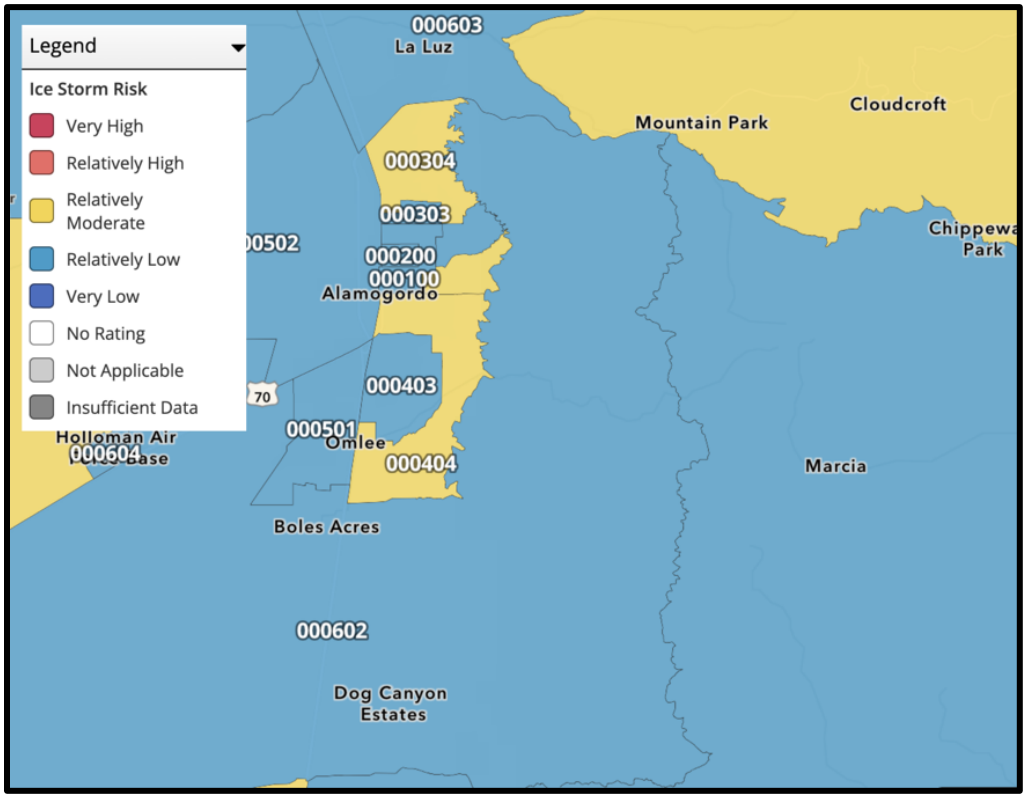
Using the FEMA NRI, and utilizing the three input components (expected annual loss, social vulnerability, and community resilience), the following maps were created indicating the potential risk to participating jurisdictions from winter weather and ice storms:

Winter Weather



***Source**: FEMA NRI*

Ice Storms



***Source:** FEMA NRI*

The following table indicates the FEMA NRI and EAL analysis for winter weather for Otero County, where the City of Alamogordo is located:

Table 86: Otero County FEMA EAL and NRI for Winter Weather

Jurisdiction	Ice Storm EAL	Ice Storm Risk Index	Winter Storm EAL	Winter Storm Risk Index
Otero County	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate

Source: *FEMA NRI*

Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. Each hazard's impact is evaluated in terms of disruption of operations, recovery challenges, and overall well-being of all City residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

Table 87: Winter Weather Events Consequence Analysis

Subject	Potential Impacts
Impact on the Public	Freezing temperatures coupled with heavy snow accumulation can cause dangerous travel conditions, leading to accidents and road closures. Downed power lines can lead to a loss of electricity and heat, with the young and the elderly especially vulnerable. Extremely cold temperatures may lead to hypothermia and death.
Impact on Responders	Dangerous road conditions create a transportation challenge for first responders. First responders will need to control their own exposure to the elements for prolonged periods of time and will need to continuously seek heat and shelter to stay warm. Equipment may also be damaged or destroyed due to cold temperatures, heavy wind, ice, and heavy snow fall, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary. Severe winter weather may impact an agency's ability to maintain operations due to power outages and transportation difficulties. If the activation of alternate facilities was required, travel may be difficult. Additionally, computer/network and other communication access may be impacted due to power outages.
Delivery of Services	The ability to deliver services can be impacted locally, regionally, or statewide depending on the severity of the severe winter weather event. Dangerous road conditions may lead to roadway and bridge closures, as well as transit service disruptions. Businesses and places of commerce may completely shut down, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and communications may be heavily disrupted. Roads and bridges may be heavily impacted by severe winter weather, and may be completely obstructed by downed trees, powerlines, and snow accumulation. Snow and ice can impact access to homes and critical facilities such as hospitals, schools, and supermarkets. Power loss can lead to disruption of critical infrastructure and technology.
Impact on Environment	Heavy snow and ice accumulation can weigh down and damage vegetation, tree limbs, and power lines. Flooding may also occur after the rapid melting of a heavy snowfall, causing bodies of water to flood, damaging the surrounding areas. Exposure to extreme winter weather may result in animal death. Chemicals used to treat roadways may contaminate natural environments and water reservoirs if used in large quantities.
Economic Conditions	Severe winter weather poses a fiscal impact on the governments, even if some of those costs can be recouped through federal grant reimbursements. Local, county, and state resources may be drained by a severe winter weather event.

Table 87: Winter Weather Events Consequence Analysis

Subject	Potential Impacts
Public Confidence in Governance	The public's confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

Of particular concern, socially vulnerable and at-risk populations that may have difficulty with poverty or extremes in age may have an increased susceptibility to the impacts of this hazard. These populations suffer a disproportionate impact due to:

- Inadequate access to heating
- Constrained financial resources
- Age-related sensitivity

The following table details identified socially vulnerable and at-risk populations for the planning area:

Table 88: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2022)	Population Over 65 (2022)	Estimated People in Poverty (2022)
Alamogordo	1,823	7,689	5,592
***Data Source**: U.S. Census Bureau – 2022 ACS 5-Year Estimate Subject Tables*			

Since winter storms threaten the entire planning area equally, all municipal and City school district structures are considered exposed and vulnerable. Data from the FEMA HAZUS® system indicates the total value of property within the City of Alamogordo structures is $5,208,407.

4.10.6 Repetitive Loss Structures

Not Applicable.

4.10.7 HAZUS® Models

Not Applicable.

Hazard Risk Summary

Table 89: Probability Categories/Range Per Year

Probability Categories	Unlikely	Occasional	Likely	Highly Likely
Range (Per Year)	0%	1-10%	11-50%	51-100%

The table below outlines the City of Alamogordo's general risk to this plan's profiled hazards. The rankings are based on a composite evaluation of this plan's risk assessment, namely, a hazard's probability of occurring in the future, the vulnerability of a jurisdiction to a specific hazard, the intensity of past hazard impacts, and a joint evaluation of local experts and stakeholders. For reference, the probability categories/ percentages previously indicated in Table 92 are shown above.

Table 90: Hazard Risk Summary

Jurisdiction	Drought	Flooding	Wildfire	Wind	Winter Storms
City of Alamogordo	Likely (28.43%)	Likely (48.53%)	Likely*	Highly Likely (112.38%)	Likely (16%)

***Note**: The hazard of wildfire is considered likely but without a definite calculation of probability. This is due to their being no record or evidence of wildfire in the planning period since the last update (2019). However, at the time of this plan update, while there has been evidence of wildfires in the planning area due to the declared disasters within Otero County, which includes the City of Alamogordo since 2018, it is still likely that the City of Alamogordo will experience wildfires in the future.*

Section 5 – Capability Assessment

Federal regulations require local hazard mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)). Elements of this requirement include a description of capabilities that support mitigation activities.

FEMA Regulation Checklist: Planning Process	
Documentation of Planning Process	
44 CFR §201.6(c)(3): The plan must include mitigation strategies based on the jurisdictions' existing authorities, policies, programs and resources, and its ability to expand on improve these existing tools.	
Elements:	
C1.	Does the plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR §201.6(c)(3)
C2.	Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR §201.6(c)(3) (ii)
Source: *FEMA, Local Mitigation Planning Handbook, March 2013*	

5.1 Introduction

This capability overview for the City of Alamogordo documents programs, policies, and funding mechanisms for participating jurisdictions. All listed capabilities documented in the previous LHMP were reviewed for relevance and updated to reflect the current environment, as necessary. Additionally, any programs, policies, or funding mechanisms that are no longer applicable, are outdated, or are no longer in existence have been removed. As part of this process, updated jurisdictional capability profiles were sent for review and, if necessary, further revision.

This section of the plan discusses the current capacity of regional communities to mitigate the effects of identified hazards. A capability assessment is conducted to determine the ability of a jurisdiction to execute a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs or projects.

A capability assessment helps to determine which mitigation actions are practical based on a jurisdiction's fiscal, staffing and political resources, and consists of:

- An inventory of relevant plans, ordinances, or programs already in place
- An analysis capacity to carry them out.

A thoughtful review of jurisdictional capabilities will assist in determining gaps that could limit current or proposed mitigation activities, or potentially aggravate a jurisdiction's vulnerability to an identified hazard. Additionally, a capability assessment can detail current successful mitigation actions that should continue to receive support.

5.2 Capabilities

A capability assessment was conducted within the LHMP planning team. From the assessment, goals, and mitigation actions were developed. Capabilities for the City and its participating departments are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

5.2.1 Planning and Regulatory Capabilities

These include local ordinances, policies, and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes, and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Table 91: Planning and Regulatory Capability Assessment of the City of Alamogordo		
PLANS	**Yes/No If Yes, Year?**	• **Does the plan address hazards?** • **Does the plan ID project to include in the mitigation strategy?** • **Can the plan be used to implement mitigation actions?**
Community Wildfire Protection Plan	Yes, 2020	The City of Alamogordo was included in the Otero County, NM Community Wildfire Protection Plan Update of 2020. The Otero County CWPP was created in 2014 and updated in 2020. The CWPP takes a comprehensive look at the communities, like the City of Alamogordo, in Otero County. The document is evidence of local communities beginning to work together to address wildfire risk and mitigation.
Comprehensive/Master Plan	Yes, 2018	The City of Alamogordo's Comprehensive Plan is a key policy document that establishes an overall vision for the community's future growth, development, and character with a planning horizon of 20 years. It provides an integrative approach to all aspects of the City's physical growth and development and related economic and social issues. This plan provides policies on both natural and manmade hazards and can be used to implement mitigation actions.
Continuity of Operations Plan	No	**Unknown.** The previous LHMP indicates that the City has a Continuity of Operation (COOP) that is a part of the City's emergency planning operations and policies and operations. However, at the time of this plan update, the City doesn't have a current COOP in place but understands that this plan is a part of the plan update cycle. The City will work to create a new COOP. Once created, the City will work to review and update the plan annually.
Capital Improvement Plan	Yes	**2019.** Yes, the City of Alamogordo's Infrastructure Capital Improvement Project Plan (ICIP) is a five-year plan for financing infrastructure improvements, government facility construction improvements, and equipment acquisition. At the time of this plan update, the City of Alamogordo is currently in the Open Comment/Public Meeting phase for the upcoming 2026-2030 ICIP and can be used to implement mitigation actions.
Economic Development Plan	Yes, 2018	The Downtown Alamogordo Metropolitan Redevelopment Area (MRA) Plan provides the necessary framework and vision for the redevelopment of Downtown Alamogordo. This plan was developed to be consistent with and further the City of Alamogordo's **2018** Comprehensive Plan and was adopted in March 2019 and can be used to implement mitigation actions.
Emergency Operations Plan	Yes, 2006	**2006.** The previous LHMP indicates that the City has an Emergency Operations Plan (EOP) as part of its emergency planning operations, policies, and operations. Currently, the EOP was updated in 2006 as a part of the plan update cycle; the City will work to review and update this plan annually.
Stormwater Management Plan	No	At the time of this update, the City of Alamogordo Long-Term Infrastructure Planning website indicates that the Street Assessment project will be enhanced by a Sewer

Table 91: Planning and Regulatory Capability Assessment of the City of Alamogordo		
PLANS	**Yes/No If Yes, Year?**	• **Does the plan address hazards?** • **Does the plan ID project to include in the mitigation strategy?** • **Can the plan be used to implement mitigation actions?**
		Assessment, Water Master Plan, and Drainage Master Plan so that future projects will be programmed with the appropriate information evaluated. Updated Technical Standards, updates to many of the City's ordinances, and collaboration between the Public Works and Utilities departments will result in a comprehensive effort and an exciting step towards progress for the City.
Water Development Plan	Yes, 2005	The City of Alamogordo 40-Year Water Development Plan 2005-2045 is active and aims to provide the City with a water resource planning and development strategy. This plan was first developed in March 2003 and can be used to implement mitigation actions.
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the LHMP, including new hazards in the 202X update.
BUILDING CODES, PERMITTING, INSPECTIONS	**Yes/No**	• **What type of codes?** • **Are codes adequately enforced?**
Building Codes and Standards	Yes	Yes, the 2021 International Building Codes (IBC) and International Residential Code (IRC) are adequately enforced. The City of Alamogordo follows the New Mexico Regulation & Licensing Divisions—Constructions Industry Division Rules, Laws, and Building Codes. For more information on the General Building Codes, Plumbing Codes, and Electrical Codes that are followed in the planning area, click here. More information about the City of Alamogordo Building Regulation Ordinances can be found here.
Site Plan Review Requirements	Yes	Yes, International Building Code (IBC), International Fire Code (IFC), International Residential Code (IRC), along with electrical, plumbing, and HVAC.
How can these capabilities be expanded and improved to reduce risk?		Code and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses
LAND USE PLANNING & ORDINANCES	**Yes/No**	• **Is the ordinance effective for reducing hazard impacts?** • **Is the ordinance adequately administered and enforced?**
Fire Codes	Yes	The Alamogordo, NM Code of Ordinances, Municipal Code Chapter 12 – Fire Prevention and Protection are current as of July 24, 2024, and can be found online here.
Floodplain ordinance	Yes	The Alamogordo, NM Code of Ordinances, Municipal Code Chapter 13 – Flood Damage was initially adopted in 1987 and updated and adopted on December 7, 2010. These codes are current as of July 24, 2024, and can be found online here.
Subdivision ordinance	Yes	The Alamogordo, NM Code of Ordinances, Municipal Code Chapter 22—Subdivision regulations was adopted

Table 91: Planning and Regulatory Capability Assessment of the City of Alamogordo		
PLANS	**Yes/No If Yes, Year?**	• **Does the plan address hazards?** • **Does the plan ID project to include in the mitigation strategy?** • **Can the plan be used to implement mitigation actions?**
		on March 23, 2004. These codes are current as of July 24, 2024, and can be found online here.
Zoning ordinance	Yes	Yes, Alamogordo, NM Code of Ordinances, Municipal Code Chapter 29 – Zoning are current as of July 24, 2024 can be found online here.
How can capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses

5.2.2 Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools, which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities, such as counties or special districts, for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Table 92: Administrative and Technical Capability Assessment of the City of Alamogordo		
ADMINISTRATION	**Yes/No**	• **Describe capability.** • **Is coordination effective?**
Mutual Aid Agreements	Yes	Yes. The City of Alamogordo has a Mutual Aid Agreement with Holloman Air Force Base.
Planning Commission	Yes	The City of Alamogordo Planning Division administers the ordinances covering annexation, subdivision, zoning, and associated land-use activities for the City and its extraterritorial jurisdiction related to current and long-range planning. The Division is also effective in communicating with the city council.
TECHNICAL STAFF	**Yes/No FT/PT**	• **Are staff trained on hazards and mitigation?** • **Is coordination between agencies and staff effective?** • **Have skills/expertise been used to assess/mitigate risk in the past?**
Building Official	No	No to all. At the time of this plan update, the City does not have a building division. Building-related planning for the City falls under Planning and Zoning (Stella Rael) at the time of this plan update. Most construction plans are reviewed during TRC meetings and AFD reviews for life safety and building construction.
Community Planner	Yes – FT	City Planner, Yes, to all
Emergency Manager	Yes – FT	Yes, to all
Engineer	Yes – FT	Engineering Manager, Yes, to all
Fire Chief	Yes -FT	Yes, to all

Table 92: Administrative and Technical Capability Assessment of the City of Alamogordo		
ADMINISTRATION	**Yes/No**	• **Describe capability.** • **Is coordination effective?**
GIS/HAZUS Coordinator	Yes-FT	GIS/Land Management Coordinator. Yes, to all
Police Chief	Yes-FT/PT	Yes, to all
Procurement/Grants Management Staff	Yes – FT	Finance Director and Grant Coordinator. Yes, to all
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

5.2.3 Financial Capabilities

Table 95 contains a list of financial capabilities available to the City of Alamogordo. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Table 93: Financial Capability Assessment of the City of Alamogordo		
FINANCIAL	**Yes/No**	• **Has the funding resource been used in the past and for what type of activities?** • **Could the resource be used to fund future mitigation actions?**
Building Resilient Infrastructure and Communities Grant (BRIC)	No	No, the City has not received funding via the Building Resilient Infrastructure and Communities Grant. The Alamogordo Fire Department with the City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Hazard Mitigation Grant Program (HMPG)	No	No, the City has not received funding via the Hazard Mitigation Grant Program. The Alamogordo Fire Department with the City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Hazard Mitigation Grant Program – Post Fire (HMPG - PF)	No	No, the City has not received funding via the Hazard Mitigation Grant Program-Post Fire. The Alamogordo Fire Department with the City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Pre-Disaster Mitigation grant program (PDM)	No	No, the City has not received funding via the Pre-Disaster Mitigation grant program. The Alamogordo Fire Department with the City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Flood Mitigation Assistance grant program (FMA)	No	No, the City has not received funding via the Flood Mitigation Assistance grant program. The Alamogordo Fire Department with the City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Capital improvements project funding	Yes	Yes, the City has received funding for capital improvement projects through the state legislature. These have mostly been quality of life projects. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Community Development Block Grant	Yes	Yes, the City has received funding from the Community Development Block Grant. The most recent project was to increase ADA compliance

Table 93: Financial Capability Assessment of the City of Alamogordo		
FINANCIAL	**Yes/No**	• **Has the funding resource been used in the past and for what type of activities?** • **Could the resource be used to fund future mitigation actions?**
		amongst City sidewalks. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Authority to levy taxes for specific purposes	Yes	Yes, the City has the ability to levy taxes for specific purposes. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Impact fees for new development	No	No, the City does not have impact fees on new developments. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Incur debt through special tax bond	Yes	Yes, the City has the ability to incur debt through special tax bonds. The most recent tax bond projects have been for water/sewer and street improvements. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
Incur debt through general obligation bonds	Yes	Yes, the City has the ability to incur debt through general obligation bonds. The most recent general obligation bonds have been for building the Family Fun Center and the realignment of Florida Avenue. The City of Alamogordo Finance Department will continue to monitor funding opportunities to assist future mitigation actions.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

5.2.4 Education and Outreach Capabilities

Table 96 lists education and outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information, or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Table 94: Education and Outreach Capabilities of the City of Alamogordo			
PROGRAM / ORGANIZATION	**Changes since 2018 Plan Update (Yes/No)**	**Access / Eligibility (Yes/No)**	• **Describe program/organization and how it relates to disaster resilience and mitigation.** • **Could the program/organization help implement future mitigation activities?**
City Website and Social Media	No	Yes	The city maintains a website and accounts with Facebook, Instagram, LinkedIn, TikTok, and YouTube. City Departments like, law enforcement, and fire/rescue agencies also maintain social media accounts. The City of Alamogordo has provided a list of those accounts here: https://ci.alamogordo.nm.us/722/Get-

Table 94: Education and Outreach Capabilities of the City of Alamogordo			
PROGRAM / ORGANIZATION	**Changes since 2018 Plan Update (Yes/No)**	**Access / Eligibility (Yes/No)**	• **Describe program/organization and how it relates to disaster resilience and mitigation.** • **Could the program/organization help implement future mitigation activities?**
			Connected-Through-Social-Media. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Mass Emergency Alert and Warning System	No	Yes	The City of Alamogordo utilizes an Alert Center on its website, which notifies those registered to receive notifications of emergencies in the planning area. Also, TBRDA sends emergency alerts via text, phone calls, and social media. Residents can register to be instantly notified of alerts and emergencies and subscribe to Notify Me® or RSS.
Citizen group focused on emergency preparedness, environmental protection, etc.	Yes	Yes	The community has entered the LEPC involving most of the City of Alamogordo and Otero County's businesses and directors.
Public education/information programs (fires safety, household preparedness, responsible water use, etc.)	No	Yes	The City of Alamogordo frequently addresses public information needs through various mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government, including city and county departments, as well as federal and state offices. This is especially effective during times of disaster. Emergency Management utilizes public presentations and media outlets (e.g., radio, print) to provide public outreach on emergency preparedness. The City website is a primary tool for the dissemination of public information
Private – public partnership initiatives addressing disaster- related issues	Yes	Yes	Yes, at the time of this plan update, the Otero County LEPC has ceased holding meetings; therefore, the City has entered the LEPC involving most of the City of Alamogordo and Otero County's businesses and directors to address all hazard events in the City. Also, the City has entered into a Memorandum of Understanding (MOU), which allows the Red Cross to store one of its readiness response trailers at Fire Station #5, 1492 S. Florida Avenue.
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

5.3 National Flood Insurance Program Participation

All NFIP participating jurisdictions are required to meet the minimum standards set forth in the program. The jurisdictions' NFIP coordinator ensures all new construction projects are properly surveyed and receives an elevation certificate.

Participation in the NFIP is based on an agreement between the municipality and the federal government. If a municipality agrees to adopt and enforce a floodplain ordinance designed to reduce future flood risks, all citizens in the participating municipality can purchase flood insurance. As part of NFIP participation, communities must:

- Use current NFIP flood maps in adopting floodplain management regulations.
- Require permits for all development in SFHAs
- Ensure that development does not increase the flood hazard on other properties.
- Meet current elevation standards. Ensuring the lowest occupied floor is elevated to or above the base flood elevation indicated on the NFIP flood map.

While most floodplain requirements have been incorporated into the building codes, some additional provisions and regulations may be required by a community. Communities participating in the NFIP are required to adopt, enforce, and maintain a local floodplain ordinance as a stipulation of compliance with the program. The purpose of this ordinance is to ensure public safety, minimize the impact on persons and property from flooding, protect watercourses from encroachment, and maintain the capability of floodplains to retain and carry off floodwaters. The local floodplain administrator is typically the municipal official responsible for overseeing the enforcement and updating of the document.

The following figure represents both pre-and post-disaster community NFIP requirements:

Figure 12: Pre- and Post-Disaster Community NFIP requirements



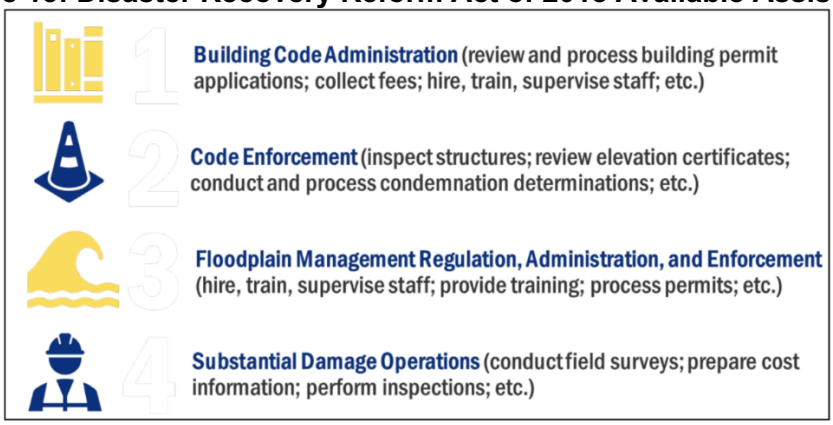
Source: FEMA

When structures located in the Special Flood Hazard Area are substantially modified (more than 50% damaged or improved) they are required to be brought into compliance with current NFIP standards and local building codes. In cases of repairs being conducted as a result of damage, jurisdictional NFIP Coordinators are responsible for substantial damage and improvement determinations. These determinations are required for compliance with the NFIP and must be completed before residents begin repairs or permits are issued.

A May 2020 Report to Congressional Committees on the National Flood Insurance Program by the United States Government Accountability indicates, "FEMA generally does not collect or analyze the results of these assessments, limiting its ability to ensure the process operates as intended. Furthermore, FEMA has not clarified how communities can access NFIP claims data. Such data would help communities target substantial damage assessments after a flood." This has been found to be true in Calhoun County, with submitted information and data underutilized and some FEMA available data unshared and/or unadvertised.

Section 1206 of the Disaster Recovery Reform Act of 2018 authorizes the FEMA to provide communities with the resources to administer and enforce building codes and floodplain management ordinances following a major disaster declaration through FEMA's Public Assistance Program. To be eligible for reimbursement under the Public Assistance Program, including for the Disaster Recovery Reform Act of 2018 Section 1206, communities must be designated for Public Assistance permanent work under a major disaster declaration and be legally responsible to administer and enforce building codes or floodplain management regulations. Communities must also be in good standing with the NFIP. Available assistance includes:

Figure 13: Disaster Recovery Reform Act of 2018 Available Assistance



Source: *FEMA*

It is worth noting that this assistance is available for a variety of hazard occurrence types, not just flooding.

Participation in the NFIP by a community is voluntary; however, a community is required to participate in the program to receive funding from FEMA, which further underscores the value of participation.
Suppose a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains. In that case, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

A robust community assistance, education, and awareness program is key to achieving a broad reduction in flood damage. As such, NFIP participating jurisdictions will continue to develop both electronic (including social media) and in-person outreach activities. The City of Alamogordo currently participates in the NFIP. Table 97 summarizes its NFIP status and statistics.

Table 95: NFIP Status for the City of Alamogordo, NM

Jurisdiction	Comm ID	NFIP Entry Date	Current Effective Map Date (DFIRM)	CRS Entry Date	# of Policies	Total Coverage	Floodplain Management Role
City of Alamogordo	350045#	07/19/1974	12/17/2010	10/01/1991	934	$202,520,000	Provides floodplain management for City of Alamogordo. Floodplain Management Contact: Stella

Table 95: NFIP Status for the City of Alamogordo, NM							
Jurisdiction	**Comm ID**	**NFIP Entry Date**	**Current Effective Map Date (DFIRM)**	**CRS Entry Date**	**# of Policies**	**Total Coverage**	**Floodplain Management Role**
							Rael at srael@ci.alamogordo.nm.us. Participant in the City of Alamogordo Utilities District.
Participation – FEMA's Community Status Book Report, New Mexico, 05/09/20243 (https://www.fema.gov/cis/NM.pdf). FEMA CRS Participating Communities, effective October 1, 2023 for the State of New Mexico (https://www.fema.gov/sites/default/files/documents/fema_crs_eligible-communities_oct-2023.xlsx). NFIP Policy statistics (current as of 05/09/2024) for the State of New Mexico (https://nfipservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20240331.xlsx).							

Building codes and inspections provide local government with the means to maintain City structures that are resilient to natural hazards like flooding. City of Alamogordo have adopted the following building constructions codes within the jurisdiction. These codes were adopted and amended by the State of Mexico Department of Homeland Security and Emergency Management – State Fire Marshall (https://www.nmdhsem.org/state-firemarshal/code-enforcement/).

Continued compliance with NFIP requirements within the planning area is listed for the City of Alamogordo below:

City Ordinance Chapter 13 – Flood Damage Prevention – Article 13-01: Flood Damage Prevention in General; Article 13-02: Flood Damage Prevention Administration which discusses the duties and responsibilities of the floodplain manager; permit, variance, and conditions for procedures; and Article 13-03 – Flood Hazard Reduction Provision which covers the following: standards of construction, including within the SFHA; elevation and floodproofing; flood opening; detached garages and accessory structures; standards for storage or materials and equipment; standards for utilities; manufactured homes; standards for recreational vehicles; floodways; and standards for subdivision proposals. For more information related to floodplain management, contact Stella Rael at srael@ci.alamogordo.nm.us.

The City of Alamogordo's Planning and Zoning Department is responsible for FEMA coordination within the City. The City of Alamogordo's Flood Elevation Request website mentions that the FEMA Coordinator will review the request and determine elevation within three (3) business days by the Planning and Zoning Department. Also, the City's Planning and Zoning Department reviews all plans requiring a land disturbance permit (LDP) for compliance with NFIP and local floodplain regulations. This includes construction adjacent to and within the floodplain. This process meets the minimum federal regulations set forth by the NFIP. More information about the City's Planning and Zoning Department can be found here: https://ci.alamogordo.nm.us/156/Flood-Elevation-Request-Procedures.

Implementation and Enforcement of Local Floodplain Management Regulations to Regulate and Permit Development in SFHAs

The City of Alamogordo Planning and Zoning Department provided the following guidance related to implementing and enforcing local floodplain management regulations to regulate and permit development in SFHAs in the planning area. Also, the Otero County Subdivision Regulations, Ordinance, adopted May 9, 2013 mentions the following "the subdivision of any area designated as an "area of special flood hazard" (that are shown as Zone A) on the Otero County, New Mexico, Flood Hazard Boundary Map (FHBM), dated August 22, 1978, and revisions thereto, shall conform to the applicable requirements of the Flood Damage Prevention Ordinance, Otero County Ordinance No. 78-1, as amended." For more information about the land

development review process and substantial improvements and substantial damage provisions, can contact the City of Alamogordo Planning and Zoning Department at pnz@ci.alamogordo.nm.us.

5.4 Planning Integration

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

The City of Alamogordo intends to incorporate this Local Hazard Mitigation Plan (update) into other planning documents the City utilizes. Where applicable, portions of the previous LHMP (2019) were considered for incorporation into other City plans (i.e., City of Alamogordo, NM Comprehensive Plan, Stormwater Management Plan) and programs. Also, portions of the previous LHMP (2019) in some forms were incorporated into the City of Alamogordo Emergency Operations Plan (EOP) (2006) and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency. Table 98 below indicates other plans where the information within this LHMP update will be integrated into and the areas in which it will support.

The following table identifies the existing planning mechanisms for the planning area.

Table 96: Existing Planning Mechanisms – Alamogordo, NM

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies
New Mexico Climate Strategy Report	Yes	Identifies the current and future impacts of climate change in the State of New Mexico.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates. At the time of this update the Otero County Hazard Mitigation Plan was outdated (2011). However, the document was referenced during this plan update (202x).
Local Emergency Operations Plan	No	Identifies major capabilities. The City of Alamogordo EOP is revised annually, this a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	No	Identifies major capabilities. The City of Alamogordo COOP is revised annually, this a key opportunity for integration.
Comprehensive/ Master Plan	Yes	Identifies policies on both manmade and natural hazards. At the time of this plan update the City Alamogordo has a Comprehensive/Master Plan and it does address mitigation

Table 96: Existing Planning Mechanisms – Alamogordo, NM		
Existing Planning Mechanism	**Reviewed? (Yes/No)**	**Methods of Use in Hazard Mitigation Planning**
		strategy or actions. This is a key opportunity for integration in the future.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions; mitigation strategies
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy, this is a key opportunity for integration. Alamogordo has adopted and adheres to the 2021 Building Code Suite.
Stormwater Management Plan	No	Capability assessment, mitigation strategies. The City of Alamogordo is addressing the need for a Stormwater Management Plan. The development of this plan is a mitigation project/action for this plan update cycle and will be a key opportunity for integration in the future.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the Otero County, including the City of Alamogordo.
Community Wildfire Protection Plan	Yes	Identifies the Otero County's priorities for wildfire fuel reduction projects. The update of the County's CWPP is a key opportunity for integration in the future.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in Otero County, which includes the City of Alamogordo.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within populations in Otero County, which includes the City of Alamogordo.
U.S Census Bureau	Yes	Analyze community demographic data and trends
NOAA Archives	Yes	Analyze weather data and trends

These and other documents were reviewed and considered, as appropriate, during the collection of hazard identification, vulnerability assessment, and capability assessment. Data from these plans and ordinances were incorporated into the risk assessment and hazard vulnerability sections of the plan as appropriate. The data was also used to determine the community's capability to implement certain mitigation strategies.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation, discussion, and voting to solidify their decision-making. The majority of the City of Alamogordo and its stakeholders use this type of decision-making.

This plan should be integrated into the agenda proposal's designs and cross-referenced during deliberation and discussion of the proposed activities. By considering the city's resiliency, this plan's risk assessment, development, and capital improvement projects can be appropriately implemented.

The City of Alamogordo LHMP update (202x) will be incorporated into existing planning mechanisms in varying processes, tailored to the unique characteristics of the planning mechanism and the city's governing structure.

Mitigation Plan Funding

Upon adopting an HMP plan or other emergency management-related plan, the Alamogordo Fire Department will notify all participating stakeholders when the next mitigation planning team (MPT) meeting topic will review the mitigation project and action selections. Upon approval of a list of mitigation actions and projects they want to pursue according to the mechanism listed in the table on the following page. During the MPT meeting, the Alamogordo Fire Department, in collaboration with the City of Alamogordo Finance Director, will assist each department in determining which grant program and path will be appropriate for the project.

Budget Reviews

The local governments conduct an annual budget review for a period of two months (although the dates are not rigid from year to year). Typically, they begin in the summer months. During this period, each adopting jurisdiction will review this and future hazard mitigation plans and conduct a feasibility and resiliency review of the suggested mitigation actions and projects. The City of Alamogordo City Manager and Fire Chief will assist in the process as needed.

Emergency Management Planning

The City of Alamogordo has deferred its emergency management authority to declare an emergency to the City of Alamogordo Fire Chief and Emergency Manager.

Infrastructure, Development, and Construction Projects Related to Hazard Mitigation

All local government departments in Alamogordo approach infrastructure, development, and construction projects related to hazard mitigation in the same way. The demographics of Alamogordo allow for planning to exist through collaboration with MPT.

Alamogordo Local Emergency Planning Committee (LEPC) & Local Hazard Mitigation Planning Team

The newly developed Alamogordo LEPC and Hazard Mitigation Planning Team is a conduit for all mitigation actions and projects. It is headed by the Alamogordo Fire Department and will meet bi-annually meetings. The LEPC Mitigation Planning Team meetings will be open to the public.

Mitigation Projects and Actions Implementation

Mitigation actions will be monitored and updated through the use of the Mitigation Project Progress Report. During each annual review, each department currently administering a mitigation project will submit a progress report to the Alamogordo Fire Department in collaboration with the City of Alamogordo Finance Director to review and evaluate. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. The progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them. After considering the findings of the submitted progress reports, the Alamogordo Fire Department, in collaboration with the City of Alamogordo Finance Director, may request that the implementing department meet to discuss project conditions.

Capital Improvement & Economic Development Planning Related to Hazard Mitigation

The city of Alamogordo currently has a capital improvement or economic development plan (https://ci.alamogordo.nm.us/DocumentCenter/View/86/Final-Draft-City-of-Alamogordo-Comprehensive-Plan-2018-PDF).

Upon the adoption of this plan, the Alamogordo Fire Department will notify each department. The notification will also contain a special notice to incorporate the following procedure into any future capital improvement or economic development plan related to hazard mitigation.

Upon project conception, the City Manager, mayor, and City Council members may contact the Alamogordo Fire Department in collaboration with the City of Alamogordo Finance Director for funding guidance and grant assistance. In Alamogordo e improvement and development projects rely on grant funding. The Alamogordo Finance Department may advise the project-proposing department on the appropriate grant program.

All economic development plans initiated or supported by a department will undergo a hazard application process in which all hazard risk assessments from the LHMP will be weighed into the benefit-cost analysis. This can be done with the newly developed Alamogordo LEPC & MPT.

5.5 Challenges and Opportunities for Capability Improvement

As always, challenges exist for all participating jurisdictions due to the working environment's day-to-day demands, including staffing issues, budget restrictions, and staffing turnover. These issues can and do impact the utilization and incorporation of the HMP and the completion of identified hazard mitigation projects.

As part of this planning process, the MPT worked to identify gaps and deficiencies identified in the completion of this HMP. Resulting from this assessment is a series of problem statements and concise descriptions of issues or challenges that need to be addressed. These problem statements were determined to be applicable to all participating jurisdictions:

- Continued climate change is driving an increased incidence of major hazard occurrences, stressing the response, recovery, and mitigation capabilities of even the most prepared jurisdiction.
- Available funding for the completion of hazard mitigation projects is at a premium, with all participating City departments and stakeholders seeing minimal room in the budget for any required project match.
- The difficulties in applying for and managing hazard mitigation grants are beyond the capability of smaller jurisdictions.
- Staffing at all levels is stretched thin, with many personnel wearing multiple hats, compromising mitigation capabilities.

Improving capabilities can lead to enhanced performance, increased efficiency, and better hazard mitigation planning and implementation outcomes. The following identifies recommended improvements for all jurisdictions, with some recommendations applicable to all jurisdictions and others specific to identified jurisdictions.

- The City of Alamogordo should build a relationship with local meteorologists and the NWS to give priority access to rapidly developing weather conditions.
- The City of Alamogordo could receive instruction from the New Mexico Division of Homeland Security and Emergency Management (NMDHSEM) and FEMA Region VI on grant application processes and grant management strategies. These classes could help all participating jurisdictions receive available grant funding.
- The City of Alamogordo should explore engaging in public-private emergency planning partnerships to further increase hazard resiliency by infusing additional funding and expertise to help complete mitigation projects.

To help overcome many of these identified challenges, participating jurisdictions will work collaboratively using the following strategies, as appropriate:

- **Innovation and Adaptation:** Foster a culture of innovation and adaptability. Encourage employees to think creatively, embrace change, and explore new ways of doing things to overcome challenges.
- **Training and Development**: Invest in training and development to enhance skills and knowledge.
- **Communication Improvement**: Enhance communications and provide clear and transparent communication when sharing information, aligning teams, and addressing concerns.
- **Collaboration and Teamwork**: Encourage collaboration and teamwork, which allows for the pooling of diverse skills and perspectives, leading to more effective problem-solving (the MPT is a good example of how this strategy can be effectively used).
- **Technology Adoption**: Embrace technology to streamline operations and enhance productivity.
- **Agile Project Management**: Implement agile project management methodologies to enhance flexibility and responsiveness to changing conditions. Agile approaches allow teams to adapt quickly to challenges.

These strategies will be tailored to specific circumstances as appropriate. Combining these strategies is often more effective than relying on a single approach.

Section 6 – Mitigation Strategy

6.1 Introduction

As part of this planning effort, the City of Alamogordo worked to minimize the risk of future impacts from identified hazards to all citizens of the county. In an attempt to shape future regulations, ordinances, and policy decisions, the MPT reviewed and developed a hazard mitigation strategy. This comprehensive strategy includes:

- The consistent review and revision, as necessary, of obtainable goals and objectives
- The consistent review, revision, and development of a comprehensive list of potential hazard mitigation actions

The development of a robust mitigation strategy allows for:

- The ability to effectively direct limited resources for maximum benefit
- The ability to prioritize identified hazard mitigation projects to maximize positive outcomes
- The increase in public and private level participation in hazard mitigation through transparency and awareness
- The potential direction of future policy decisions through awareness and education
- The achievement of the ultimate goal of a safer City of Alamogordo for all our citizens

As per the previous hazard mitigation plan and considering all of the factors listed above, the MPT continues to implement the following mitigation strategy:

- **Implement** the action plan recommendations of this plan.
- **Use** existing regulations, policies, programs, procedures, and plans already in place.
- **Monitor** multi-objective management opportunities, share and package funding opportunities, and garner broader constituent support.
- **Communicate** the hazard information collected and analyzed through this planning process so that local governments and residents better understand where disasters occur and what they can do to mitigate their impacts. In doing so, it also publicizes the success stories that have been achieved through the City's ongoing mitigation efforts.

6.2 Identification of Goals

The following goals for hazard mitigation were established from the MPT's discovery and deliberation process, which consisted of:

- A review of identified hazards, vulnerabilities and impacts
- A review of hazard events subsequent to the last hazard mitigation plan revision
- A review of demographic, infrastructure and built environment data
- A review of the goals and objectives identified in previous hazard mitigation plans
- A review of local mitigation strategies and goals
- A review completed and remaining hazard mitigation actions

These goals represent a vision for hazard mitigation and disaster resistance for the City of Alamogordo. The MPT reviewed the goals and objectives from the previous LHMP (2019) and determined which best met the jurisdiction's mitigation capabilities and requirements. The result was a new streamlined set of unified hazard

mitigation goals listed below. The goals support addressing the hazards in the General Plans and reflect input provided by stakeholders and the public. The City of Alamogordo worked with their Planning Departments to align these goals and their mitigation strategies with their General Plan Safety Elements.

- **Goal 1**: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.
- **Goal 2**: Reduce the risk to the people and property from the identified hazards in this plan.
- **Goal 3**: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.
- **Goal 4**: Improve public outreach initiatives to include education, awareness, and partnerships with all entities in order to enhance the understanding of identified hazards and hazard mitigation opportunities.
- **Goal 5**: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities.
- **Goal 6**: Minimize the risk to property from drought.
- **Goal 7**: Minimize the risk to property from flooding.
- **Goal 8**: Minimize the risk of property from wildfire.
- **Goal 9:** Minimize the risk of property from wind.
- **Goal 10**: Minimize the risk of property from winter storms.

The MPT will continuously evaluate these identified goals against current capabilities and conditions. As part of this process, the MPT will utilize a monitoring and evaluation system to systematically track, assess, and measure the progress of activities and outcomes related to the goals outlined in this LHMP. Key components to the monitoring and evaluation system include:

- Upon the approval of this plan, baseline data will be established to quantify the starting point. This will provide a reference against which progress can be measured.
- Enactment of a monitoring plan that outlines the specific activities, tasks, and responsibilities for regularly collecting, analyzing, and reporting data on the performance indicators.
- Identification and specification of the methods for collecting data, whether through surveys, interviews, focus groups, or observations.
- Definition of the criteria and methods for analyzing collected data. This includes determining how quantitative and qualitative data will be processed and interpreted to assess progress.
- Involvement of stakeholders to ensure that all perspectives are considered and that feedback on the progress of achieving the delineated goals is taken into account.

In addition, the MPT will work with all City Departments, county, regional, and state agencies and policymakers to help integrate the goals delineated in the LHMP with goals and plans for combating climate change.

6.3 Mitigation Actions/Projects Strategy

The following section contains the status of mitigation actions from the previous LHMP. It also provides for ongoing mitigation actions from the 2018 plan and the new mitigation actions for this LHMP.

6.3.1 Previous Mitigation Actions/Project Assessment

FEMA Regulation Checklist: Planning Process	
Progress in Local Mitigation Efforts	
44 CFR §201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect…progress in local mitigation efforts…"	
Elements:	
D1.	Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR §201.6(d)(3)
Source: *FEMA, Local Mitigation Planning Handbook, March 2013*	

Table 97: Mitigation Plan Accomplishments – Completed Projects

Project Name	Description	Hazard Addressed	Responsible Party	Overall Priority	Structural Emphasis (in 2018 LHMP)	Cost Estimate	Potential Funding Source	Status
Development of Desalination Plant	This mitigation project will be for the design and build of a desalination plant for the City of Alamogordo. This facility will provide an additional 1 (one) million gallons of potable water daily to help offset the current demands for water consumption and/or fire protection activities.	Drought, Wildfire	City of Alamogordo Planning and Engineering, Army Corps	High	New & Existing	$8,000,000	Local Budgets, State and Federal	Completed in 2019.
South Diversion Project	This mitigation project will be for the design and build and completion of the Southern diversion project. At the completion of the project, channels will be concrete lined allowing flood waters and debris to be controlled safely away from the Southern portions of the City into the desert basin.	Flooding	City of Alamogordo, Public Works, Engineering & Army Corps of Eng.	High	Existing	$10,000,000	Local Budgets; Army Corp of Engineers	Completed in 2021.
Re-Design and Construction of Coffer Dam	This mitigation project is to re-design and construct the Coffer Dam above Bonito Lake and finish the dredging efforts that are currently taking place. Once this project is completed, the Coffer dam will prevent downstream flooding, preventing debris and other material from entering the Bonito Lake intake tower thus preventing the intake from	Drought, Flood, Wildfire, Winter Storm	Public Works, Army Corps of ENG, New Mexico Dam Safety Bureau, FEMA, and the Office of the State Engineer	High	New, Existing and On-going	$9,200,000	Local Budgets, State, Federal,	Completed in October 2022.

Project Name	Description	Hazard Addressed	Responsible Party	Overall Priority	Structural Emphasis (in 2018 LHMP)	Cost Estimate	Potential Funding Source	Status
	being plugged. In addition to the above, the dredging efforts will allow the City of Alamogordo to contain more of the water shed runoff which will help during drought and high consumption periods.							
Hire Emergency Manager	This mitigation project is to create a new position (Emergency Manager) for the City of Alamogordo. This position will be directly responsible for the direct management of all disasters, manmade or natural, plan creations, up-dates, review and grant writing. for all jurisdictional owned facilities	Drought, Flood, Wildfire	City of Alamogordo Fire Department	High	New	$76,046.26	Local Budgets	Completed November 2023

Table 98: Deferred Mitigation Projects from City of Alamogordo 2018 LHMP

Project Name	Description	Hazard Addressed	Responsible Party	Overall Priority	Structural Emphasis (in 2018 LHMP)	Cost Estimate	Potential Funding Source	Status
Hire Floodplain Manager	This mitigation project is to create a new position (Flood Plain Manager) for the City of Alamogordo. This position will be directly responsible for the management of floodplain resources and flood mitigation	Flood	City of Alamogordo Engineering	High	New & Existing	$78,046.26	City Funds	Deferred. This project was deferred due lack of staff and resources and will not be carried over to the 2024 plan update.

6.4 Mitigation Projects

The City of Alamogordo 2018 Local Hazard Mitigation Plan (update) contained a risk assessment of identified hazards for the City, and a mitigation strategy to address these hazards' risk and vulnerability. contained a risk assessment of identified hazards for the City, and a mitigation strategy to address these hazards' risk and vulnerability. Accordingly, during the planning phase, an open discussion took place with the Mitigation Planning Team (MPT) to determine the current mitigation action/priorities to include in this plan update. Among them, and considered a key part of the planning process, the City of Alamogordo Fire Department (AFD) solicited participation from various City departments and stakeholders to help identify mitigation activities/goals/projects for plan inclusion. Typically, mitigation activities/goals/projects focus on strengthening infrastructure and facilities. The City's departmental participation in the activities related to the mitigation strategy allowed for AFD to learn more about each department's needs, facilities, and infrastructure. A mitigation planning team meeting in June 2024 focused on the Mitigation Strategy Update. The City of Alamogordo Fire Department and BOLDPlanning facilitated the planning team members with information on how to offer valuable insight related to the hazards within the City of Alamogordo. The mitigation planning team members learned how BOLDPlanning would assist them in providing input to update the mitigation projects from the previous plan as well as how and when to offer any new/proposed projects to include in the current HMP update.

Following this meeting, representatives from BOLDPlanning worked with the City of Alamogordo AFD and City Departments to provide updates relevant to previous mitigation actions (2018), including current status (completed, deferred, carry over). Previously identified mitigation status was reported using the following definitions:

- **Completed**: The action has been fully completed.
- **Deferred:** The action has been removed from consideration due to either a lack of resources or changing mitigation priorities.
- **Carry-over/Ongoing**: The action has either been completed or is still in progress and has become an ongoing activity or capability.
    - **Revised:** Action has been revised to reflect the current planning environment or identified changes.

The MPT was also tasked with identifying any new mitigation projects for this plan update and completing a new mitigation action worksheet created specifically for Alamogordo. During the planning process, Alamogordo AFD and other City Departments were able to update these worksheets with their mitigation projects from the 2018 plan updates and the new/proposed projects for the next five-year plan cycle.

The list of mitigation projects and actions selected for this plan update is based on their potential to reduce risk to life and pr with an emphasis on new and existing infrastructure, ease of implementation, community and agency support, consistency with local plans and capabilities, available funding, vulnerability, and total risk.

This plan update includes five (5) "carryover" projects from Alamogordo's previous LHMP (2018), as they are still relevant, in progress, or ongoing. Also, the hazards, mitigation goals, objectives, and measures that were developed jointly within the MPT have been carried over to this plan update because they were deferred due to a lack of funding and/or resources to complete the mitigation projects/actions during the last five-year cycle.

Alamogordo has completed four (4) mitigation projects and deferred one (1) since the plan was approved in December 2018. For more information, see the above Table 99: Mitigation Accomplishments – Completed Projects, Alamogordo LHMP 2018, and Table 100: Deferred Mitigation Project from Alamogordo LHMP 2018.

The final mitigation action plans identify desired mitigation actions for each participating department pending future funding – they are not obligations or funding commitments. For further information on evaluation criteria for the proposed and carried mitigation projects/actions, please see Section Projects. The full list of mitigation projects, their descriptions, and prioritization can be found below, Table 105: Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), and Appendix F – Mitigation Project Prioritization.

***Note**: Any and all mitigation projects and actions will be reviewed and enhanced as a part of the LHMP plan maintenance cycle to ensure vulnerable populations are included in the LHMP update.*

***Note**: Some projects and actions to mitigate risk and vulnerability to multiple hazards. These projects address all hazards, including Drought, Flooding, Wildfire, Wind, and Winter Storms.*

Table 99: Mitigation Project/Activity Summary – Alamogordo, NM

Mitigation Project or Activity	Related Hazards	Responsible Party/Department	Status
Development of Desalination Plant	Drought, Wildfire	City of Alamogordo, Public Works, Engineering & Army Corps of Eng.	Completed, this project was completed in 2019 by the City Utilities Department.
Hire a Floodplain Manager	Flood	City of Alamogordo, Public Works, Engineering & Army Corps of Eng.	Removed, this project was deferred due lack of staff and resources and will not be carried over to the 2024 plan update.
North Diversion Project	Flood	City of Alamogordo, Public Works, Engineering & Army Corps of Eng.	Keep, moved to 202x plan update. During the last planning cycle, the City indicated that request has been sent to Army Corp of Engineers for a Letter of Support to begin this project. The City has requested support twice during the last plan update cycle. This project will be carried over to the 202X plan update because the City is hoping to collaborate with the Corp on this project during this plan update cycle.
South Diversion Project	Flood	City of Alamogordo, Public Works, Engineering & Army Corps of Eng.	Completed, this project was completed in 2021.
Alternate Water Source	Drought, Wildfire	City of Alamogordo Public works and Engineering and Legal	Keep, moved to 202x plan update.
Community Involvement Projects	Drought, Wildfire	Public Works, Forest Service	Deferred and Revised. This project will be included in the plan updated under the revised name of "City Mountain Spring Water System Update"

Table 99: Mitigation Project/Activity Summary – Alamogordo, NM			
Mitigation Project or Activity	**Related Hazards**	**Responsible Party/Department**	**Status**
Hire Emergency Manager	Drought, Flood, Wildfire, Winter Storm	City of Alamogordo Fire Department	Completed, this project was completed with the hire of the current Emergency Manager in November 2023.
Water Shed Thinning Project	Drought, Flood, Wildfire	City of Alamogordo Fire Department, Public Works, Forest Service	Deferred and Revised. This project will be included in this plan updated under the revised name of "Design and Implementation of Bonito Lake Water Shed Project".
Re-Design and Construction of Coffer Dam	Drought, Flood, Wildfire, Winter Storm	Public Works, Army Corps of ENG, New Mexico Dam Safety Bureau, FEMA, and the Office of the State Engineer	Completed, this project was completed in October 2022.
Review Existing Floodplain Regulations	Flooding	City of Alamogordo Public Works	New project for 202X plan update
Update of the City's Master Drainage Plan	Flooding	City of Alamogordo Public Works and Planning and Zoning	New project for 202X plan update
Maintenance and Update Sediment Basin	Flooding	City of Alamogordo Public Works	New project for 2024 plan update. Part of the project has been awarded, however, the City is including this project into this plan update in hopes to secure additional funding to complete.
Design and Construction Intersection Improvements	Flooding	City of Alamogordo Public Works	New project for 202X plan update
Parallel Pipeline Project	Wildfire, Flooding, Drought	City of Alamogordo Utilities	New project for 202X plan update
Create and Implement a Water and Sewer Master Plan	Flooding, Drought, Wildfire	City of Alamogordo Utilities	New project for 202X plan update
Upgrade the City of Alamogordo's EOC Technology	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Information Technology Department/Fire Department	New project for 202X plan update
Annual Review and Update of City's Local Hazard Mitigation Plan (LHMP)	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Fire Department	New project for 202X plan update
Annual Review and Update of the City of Alamogordo Continuity of Operations Plan (COOP)	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Fire Department	New project for 202X plan update
Annual Review and Update of the City of Alamogordo	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Fire Department	New project for 202X plan update

Table 99: Mitigation Project/Activity Summary – Alamogordo, NM			
Mitigation Project or Activity	**Related Hazards**	**Responsible Party/Department**	**Status**
Emergency Operations Plan (EOP)			
Upgrade City's Critical Facilities with Solar Panels for Alternate Energy Source	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo City Manager/Finance Department	New project for 202X plan update
Construction to Update Fire Station 2	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Fire Department; City of Alamogordo Finance Department	New project for 202X plan update
Promote City's Fire Prevention and Public Education Programs	Wildfire	City of Alamogordo Fire Department; City of Alamogordo PIO	New project for 202X plan update
Develop a City Sheltering Plan in coordination with the City Public Schools	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)	City of Alamogordo Fire Department; Alamogordo Public Schools; City of Alamogordo Police Department	New project for 202X plan update
Procure additional trucks and tools to respond to wildfires	Wildfire	City of Alamogordo Fire	New project for 202X plan update

6.4 Mitigation Project Evaluation and Prioritization

The MPC and subject matter experts worked together to prioritize both previously identified and newly identified hazard mitigation actions. The methodology used to determine mitigation action priorities was based upon the following:

- Review of the updated risk assessments
- Review of revised goals and objectives
- Review of local capabilities

In formulating a mitigation strategy, a wide range of activities were considered to help achieve identified goals and to lessen the vulnerability to the effects of identified hazards.

6.4.1 STAPLE+E

The City of Alamogordo primary hazard risks, and thus priorities are drought, flooding, wildfire, wind, and winter storms.

A self-analysis method was used for determining and prioritizing mitigation actions. This methodology takes all considerations into account to ensure that, based on capabilities, funding, public wishes, political climate, and legal framework and context, reasonable actions are determined. The following provides a brief description of each consideration:

- Are all people within the jurisdiction being treated equally and fairly?
- Will the action disrupt the social fabric of the jurisdiction?
- Does the proposed action work and is it technically feasible?
- Does the action offer a long-term solution to the problem?
- Does the jurisdiction have adequate staffing?
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding available?
- Are there ongoing administrative requirements that need to be met?
- Does the action have political and public support?
- Does the jurisdiction have the legal authority to implement the action?
- Will the jurisdiction be liable for the action or for any inaction?
- Could the action face any legal challenges?
- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Has funding for the action been identified?

A composite evaluation matrix was used to prioritize the City of Alamogordo mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each participating jurisdiction. All priorities were re-assessed using STAPLE+E for this plan update to ensure that the projects reflect current priorities. The composite evaluation matrix is comprised of the three factors detailed below.

The first factor is the STAPLE+E evaluation which is best for measuring feasibility and ease of implementation. The tables in this section provide the STAPLE+E evaluation criteria and the evaluation itself.

The second factor is the effectiveness of the mitigation project. How well does it mitigate the impact of a particular hazard? This is determined by its ability to protect citizens, property, and systems. For instance, wires installed to pin down trees and other objects will reduce their ability to become uprooted or take flight during hazards of high wind but are not as effective at reducing impacts from tornadoes or strong winds as are properly constructed and reinforced buildings. **This factor is rated as: Low = 0.5, Medium = 1, and High = 1.5**.

The third factor is a hazard risk-based evaluation. It draws on the hazard risk summary found in Section 4.3 of this plan. Each risk rating is assigned a value based on the assessment (None = 0, Low = 5, Medium = 10, and High = 15). A summary of these results is displayed in this section, while the full, for the planning area per hazard tables are located in Appendix F.

(HRT) = (HR1 + HR2 + HRn)

The total evaluation score is based on the hazard risk total multiplied by the effectiveness factor, added to the STAPLE+E score.

- **Hazard Risk Total (HRT)**: The sum of values (low through high) of each hazard the project is designed to mitigate.
- **Mitigation Project Effectiveness (MPE)**: A multiplier based on the project's effectiveness to mitigate against a chosen hazard.
- **STAPLE+E Evaluation**: A raw score comprised of positive and negative feasibility.

(Priority) = (STAPLE+E) + (MPE * HRT)

Upon completing the evaluations, a composite score is calculated and prioritized based on their total score **(Low = 0 – 25, Medium = 26 – 50, High = > 50).** Identified actions are then prioritized and given a ranking based on the evaluated total score:

- **High Priority (High = > 50)**: Actions that provide substantial progress towards improving resiliency and are determined as potentially urgent in nature by the MPT. This would include actions that strongly support the reduction of high hazard risks and meet mitigation goals. Additionally, actions in this ranking may have imminent funding availability or strong community support.
- **Medium Priority (Medium = 26 – 50**): Actions that provide reasonable progress towards improving resiliency and are determined as moderately urgent in nature by the MPT. This would include actions that would lessen impact hazard events, but not eliminate the impact completely.
- **Low Priority (Low = 0 – 25,)**: Actions that provide incremental progress towards improving resiliency and are determined as slightly urgent in nature by the MPT. This would include actions that fall outside the normal jurisdictional authority or actions whose cost/benefit analysis returns a low yield.

Table 100: STAPLE+E Criteria

Evaluation Category	Source of Information
Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the communities' social and cultural values.
Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.

Table 100: STAPLE+E Criteria

Evaluation Category	Source of Information
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

6.4.2 Benefit-Cost Analysis

Of major concern was the potential or identified cost of each action. In general, identified actions were proposed to reduce future damage. As such, it is critical that selected and implemented actions provide a greater saving over the life of the action than the initial cost. Prior to the implementation of any action a Benefit-Cost Analysis that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs will be conducted as required. Applicants and sub-applicants must use FEMA approved methodologies and tools, such as the Benefit-Cost Analysis Toolkit, to demonstrate the cost-effectiveness of their projects. The result is a Benefit-Cost Ratio, and a project is considered cost-effective when the Benefit-Cost Ratio is 1.0 or greater. Depending on the project, either a full Benefit-Cost Analysis will be completed by entering documented values into the FEMA Benefit-Cost Analysis Toolkit, which calculates a benefit-cost ratio or, if the project meets specified criteria, a streamlined Benefit-Cost Analysis may be completed (FEMA's cost-effectiveness requirement is never waived).

For structural and property protection actions cost effectiveness is primarily assessed on:

- Likelihood of damages occurring
- Severity of the damages
- Potential effectiveness

For all other types of actions cost effectiveness is primarily assessed on likely future benefits as these actions may not easily result in a quantifiable reduction in damage.

Table 101: STAPLE+E Rankings – City of Alamogordo, NM																							
X = Not Applicable	**+ = Favorable/Positive Impact**										**- = Not Favorable/Negative Impact**												
STAPLE+E Criteria	**Social**		**Technical**			**Administrative**			**Political**			**Legal**			**Economic**				**Environmental**					**Total Impact**
Considerations	**Community Acceptance**	**Effect on Segment of Population**	**Technical Feasibility**	**Long-term Solution**	**Secondary Impacts**	**Staffing**	**Funding Allocated**	**Maintenance/ Operations**	**Political Support**	**Local Champion**	**Public Support**	**State Authority**	**Existing Local Authority**	**Potential Legal Challenge**	**Benefit of Action**	**Cost of Action**	**Contribute to Economic Goals**	**Outside Funding Required**	**Effect on Land/Water**	**Effect on Endangered Species**	**Effect on HAZMAT/Waste Sites**	**Consistent with Community Goals**	**Consistent with Federal Law**	
North Diversion Project	+	+	+	x	-	x	+	+	+	+	+	x	+	-	+	+	+	+	+	x	x	+	+	16
Alternate Water Source	+	+	+	x	-	x	-	+	+	+	+	x	+	-	+	+	x	+	+	x	x	+	+	14
City Mountain Spring Water System Update	+	+	+	x	-	x	x	+	+	+	+	x	+	-	+	+	x	+	+	x	x	+	+	14
Design and Implementation of Bonito Lake Water Shed Project.	+	+	+	x	-	+	x	+	+	+	+	x	+	-	+	+	x	+	+	x	x	+	+	15
Review Existing Floodplain Regulations	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	x	-	x	x	x	x	x	11
Maintenance and Update Sediment Basin	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	+	+	+	x	x	+	+	16
Design and Construction Intersection Improvements	+	+	+	x	-	-	-	+	+	+	+	x	+	-	+	+	+	+	+	x	x	+	+	15

Table 103: STAPLE+E Rankings – City of Alamogordo, NM																							
X = Not Applicable	**+ = Favorable/Positive Impact**										**- = Not Favorable/Negative Impact**												
STAPLE+E Criteria	**Social**		**Technical**			**Administrative**			**Political**			**Legal**			**Economic**				**Environmental**					**Total Impact**
Considerations	**Community Acceptance**	**Effect on Segment of Population**	**Technical Feasibility**	**Long-term Solution**	**Secondary Impacts**	**Staffing**	**Funding Allocated**	**Maintenance/ Operations**	**Political Support**	**Local Champion**	**Public Support**	**State Authority**	**Existing Local Authority**	**Potential Legal Challenge**	**Benefit of Action**	**Cost of Action**	**Contribute to Economic Goals**	**Outside Funding Required**	**Effect on Land/Water**	**Effect on Endangered Species**	**Effect on HAZMAT/Waste Sites**	**Consistent with Community Goals**	**Consistent with Federal Law**	
Parallel Pipeline Project	+	-	+	x	-	+	-	+	+	+	+	x	+	-	+	+	+	+	+	x	x	+	+	15
Create and Implement a Water and Sewer Master Plan	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	x	+	+	x	x	x	x	13
Upgrade the City of Alamogordo's EOC Technology	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	x	+	x	x	x	x	x	12
Annual Review and Update of City's Local Hazard Mitigation Plan (LHMP)	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	-	-	x	x	x	x	x	11
Annual Review and Update of the City of Alamogordo Continuity of Operations Plan (COOP)	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	-	-	x	x	x	x	x	11
Procure additional trucks and tools to respond to wildfires	+	-	+	x	x	+	-	+	+	+	x	x	+	-	+	+	x	+	x	x	x	x	x	10

Table 103: STAPLE+E Rankings – City of Alamogordo, NM																						
X = Not Applicable	**+ = Favorable/Positive Impact**										**- = Not Favorable/Negative Impact**											
STAPLE+E Criteria	**Social**		**Technical**			**Administrative**			**Political**			**Legal**			**Economic**				**Environmental**					**Total Impact**
Considerations	**Community Acceptance**	**Effect on Segment of Population**	**Technical Feasibility**	**Long-term Solution**	**Secondary Impacts**	**Staffing**	**Funding Allocated**	**Maintenance/ Operations**	**Political Support**	**Local Champion**	**Public Support**	**State Authority**	**Existing Local Authority**	**Potential Legal Challenge**	**Benefit of Action**	**Cost of Action**	**Contribute to Economic Goals**	**Outside Funding Required**	**Effect on Land/Water**	**Effect on Endangered Species**	**Effect on HAZMAT/Waste Sites**	**Consistent with Community Goals**	**Consistent with Federal Law**	
Annual Review and Update of the City of Alamogordo Emergency Operations Plan (EOP)	+	-	+	x	-	+	+	+	+	+	+	x	+	-	+	+	-	-	x	x	x	x	x	11
Upgrade City's Critical Facilities with Solar Panels for Alternate Energy Source	+	-	+	x	-	+	x	+	+	+	x	x	+	+	+	+	-	+	x	x	x	x	x	11
Construction to Update Fire Station 2	+	-	+	x	-	+	x	+	+	x	x	x	+	-	+	+	-	+	x	x	x	x	x	9
Promote City's Fire Prevention and Public Education Programs	+	-	+	x	-	+	+	+	+	+	x	x	+	-	+	+	x	-	x	x	x	x	x	10
Develop a City Sheltering Plan in coordination with the City Public Schools	+	-	+	x	-	+	+	+	+	+	x	x	+	-	+	+	x	+	x	x	x	x	x	11

6.4.3 Mitigation Project Prioritization Tables (Proposed and Carry-Over Projects) for the City of Alamogordo, NM

As stated earlier in this plan update, the MPT existing actions and develop new actions for consideration based on:

- Updated state risk assessment and information from local risk assessments
- Goals and objectives
- Existing state actions
- State and local capabilities
- Previously identified actions

Prior to the implementation of any action, further feasibility analysis will be performed. Additionally, a Benefit-Cost Analysis that determines a project's future risk reduction benefits and compares those benefits to its costs will be conducted as required. Applicants and sub-applicants will use FEMA-approved methodologies and tools, such as the Benefit-Cost Analysis Toolkit, to demonstrate the cost-effectiveness of their projects. The result of the analysis is a Benefit-Cost Ratio, and a project is considered cost-effective when the Benefit-Cost Ratio is 1.0 or greater. Depending on the project, either a full Benefit-Cost Analysis will be completed by entering documented values into the FEMA Benefit-Cost Analysis Toolkit, which calculates a benefit-cost ratio, or, if the project meets specified criteria, a streamlined Benefit-Cost Analysis may be completed (FEMA's cost-effectiveness requirement is never waived).

The following table provides a mitigation action cross-check for the City of Alamogordo, NM.

Table 102: City of Alamogordo Mitigation Action Cross Check

Jurisdictions	Drought	Flooding	Wildfire	Wind	Winter Storm
City of Alamogordo	3,4,5,6,7,8,9, 11, 13, 14, 15, 16, 17	1,2,3,4,5,8,9 10, 11,13, 14,15, 16, 17	3,4,5,6,7,8,9,11,12, 13, 14, 15, 16, 17, 18	8,9,11,14, 15, 16, 17	8,9,11,14, 15, 16, 17

The following tables identify mitigation action items for each participating jurisdiction, along with the following information:

- Hazard addressed
- Goal/Objective Being Met
- Vulnerability & Impact Statement
- Project description
- Responsible party
- Impact on community lifelines (FEMA)
- Overall priority
- Estimated cost
- Potential funding source
- Proposed completion timeframe
- Current status

Table 103: Mitigation Action Project Prioritization - City of Alamogordo, NM (Proposed and Carry-over Projects)

Action Identification	Alamogordo 1
Project Name	North Diversion Project
Goal/Objective Being Met	Goal 2: Reduce the risk to the people and property from the identified hazards in this plan; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 7: Minimize the risk to property from flooding.
Hazard(s) to be Mitigated	Flooding
Impacted Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	The City of Alamogordo has been impacted by flooding in the past. The Army Corp of Engineers Flood Risk Management Fact Sheet (May 4, 2012) states the City of Alamogordo has been flooded 13 times since 1935. At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area. Also, the increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms. Related to flooding, models suggest that Otero County, where the City of Alamogordo resides, will experience more extreme and intense precipitation events. For this reason, the City is looking to improve the drainage and flood control structures to function properly and help mitigate flood events in the planning area.
Project Description	This mitigation project will be for the design and build of a detention basin along with drainage improvements to safely contain and control the release of flood waters in respect to a 100-hundred-year flood event on the Northern portion of the City of Alamogordo.
Responsible Party	City of Alamogordo, Public Works, Engineering & Army Corps of Eng
Estimated Cost	$55,000,000
Proposed Completion Timeline	20 years, but 1-5 years for Corp buy in and feasibility studies to be complete
Potential Funding Source(s)	Local Budgets, Army Corps of Engineers; Federal Grants (FMA)
Overall Priority (STAPLE+E)	26 (Medium)
Status	Carry-over project from 2018 plan. Update. The City has requested support twice during the last plan update cycle. This project will be carried over to the 202X plan update because the City is hoping to collaborate with the Corp on this project during this plan.
Action Identification	Alamogordo 2
Project Name	Maintenance and Update Sediment Basin

Goal/Objective Being Met	Goal 2: Reduce the risk to the people and property from the identified hazards in this plan; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards; Goal 7: Minimize the risk to property from flooding.
Hazard(s) to be Mitigated	Flooding
Impacted Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	The City of Alamogordo has been impacted by flooding in the past. The Army Corp of Engineers Flood Risk Management Fact Sheet (May 4, 2012) states the City of Alamogordo has been flooded 13 times since 1935. At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area. Also, the increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms. Related to flooding, models suggest that Otero County, where the City of Alamogordo resides, will experience more extreme and intense precipitation events. For this reason, the City is looking to improve the drainage and flood control structures to function properly and help mitigate flood events in the planning area.
Project Description	Due to climate change, the City is seeing the effects of the monsoon season occurring longer than normal, meaning more potential flooding impacts in the planning area. This project will include the maintenance and update of the four (4) sediment basins - Griggs Basin, Public Works Yard Basin, Marble Canyon Basin, and Washington Basin to ensure they are free from debris due to accumulation during monsoon season. Also, In terms of flooding in the City, these basin locations are where all the runoff from flood water flows during these events.
Responsible Party	City of Alamogordo Public Works
Estimated Cost	$1.2 Million
Proposed Completion Timeline	1-5 years and this will cover the remaining 4 phases of this project
Potential Funding Source(s)	Local Budget; Federal and State Grants
Overall Priority (STAPLE+E)	26 (Medium)
Status	New project for 2024 plan update. Part of the project has been awarded, however, the City is including this project into this plan update in hopes to secure additional funding to complete.
Action Identification	Alamogordo 3
Project Name	Design and Implementation of Bonito Lake Water Shed Project
Goal/Objective Being Met	Goal 2: Reduce the risk to the people and property from the identified hazards in this plan Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the

	risk to property from flooding; Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Drought, Flood, Wildfire
Impacted Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	The City of Alamogordo has been impacted by flooding in the past. The Army Corp of Engineers Flood Risk Management Fact Sheet (May 4, 2012) states the City of Alamogordo has been flooded 13 times since 1935. At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area. Also, the increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms. Related to flooding, models suggest that Otero County, where the City of Alamogordo resides, will experience more extreme and intense precipitation events. For this reason, the City is looking to improve the drainage and flood control structures to function properly and help mitigate flood events in the planning area.
Project Description	This mitigation project is to design and implement a thinning program in respect to the Bonito Lake water shed for the City of Alamogordo. Once this project has been implemented, it will better protect the City of Alamogordo water shed regarding structures and infrastructure related to defensible space. In addition, with the thinning efforts it will allow existing ground litter (pine needles, dead grass, etc.) to be removed allowing new growth thus preventing erosion.
Responsible Party	City of Alamogordo Utilities and NM Forestry Department
Estimated Cost	No less than $1Million
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025
Potential Funding Source(s)	Local Budgets, State, Federal (HMGP, BRIC, HMGP-Post Fire
Overall Priority (STAPLE+E)	25 (Low)
Status	Carry-over project from 2018 plan. This project is deferred from the previous LHMP with the project name of " Water Shed Thinning Project and will be carried over with the revised name in this plan update as the "Design and Implementation of Bonito Lake Water Shed Project."
Action Identification	Alamogordo 4
Project Name	Design and Construction Intersection Improvements
Goal/Objective Being Met	Goal 2: Reduce the risk to the people and property from the identified hazards in this plan; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 7: Minimize the risk to property from flooding.
Hazard(s) to be Mitigated	Flooding

Impacted Community Lifeline	Food, Water, Shelter; Transportation
Vulnerability and Impact Statement	At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area.
Project Description	This project will improve the culverts, channels and bridges (1-2) that need to be updated to box channeled in the North in the North Florida and Scenic Drive.
Responsible Party	City of Alamogordo Public Works
Estimated Cost	$2.5Million - $4Million
Estimated Timeline	1-5 years
Potential Funding Source(s)	Local Budget; (HMGP, BRIC, FMA) and State Grants
Overall Priority (STAPLE+E)	25 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 5
Project Name	Parallel Pipeline Project
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.; Goal 2: Reduce the risk to the people and property from the identified hazards in this plan.; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding; Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Wildfire, Flooding, Drought
Impacted Community Lifeline	Food, Water, Shelter; Transportation
Vulnerability and Impact Statement	The Snake Tank Well Field is located 24 miles north of Alamogordo and east of U.S. Highway 54. It is sitting in an area within the Tularosa Basin with an estimated potential yield of 3.5 million gallons per day, an aquifer yield promising for municipal and industrial well development. Still, the City's most pressing issue in making the desalination facility a reliable, independent water source is completing the design of the parallel pipeline and the construction phases of this project. In addition, future projects will include developing and equipping additional wells in the Snake Tank Well Field.
Project Description	The development and equipping of additional wells will provide contingency if one well fails or fire is experienced in the area surrounding the current surface source waters, helping to ensure a continuous supply of water to customers of the City, but also to the region and the continued viability of Holloman Air Force Base. This includes constructing a pipeline to bring brackish water from the additional wells in the Snake Tank Well field.

Responsible Party	City of Alamogordo Utilities
Estimated Cost	$30 Million
Estimated Timeline	1-5 years and this will cover the remaining 4 phases of this project
Potential Funding Source(s)	State Funding; Local Budgets; Federal Funding (HMGP, BRIC)
Overall Priority (STAPLE+E)	25 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 6
Project Name	Alternate Water Source
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.; Goal 2: Reduce the risk to the people and property from the identified hazards in this plan.; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 6: Minimize the risk to property from drought. ; Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Drought, Wildfire
Impacted Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	The Drought Monitor also indicated that Otero County experienced the 32nd driest period to data over the past 130 years (January - May 2024) and was in some form of drought for 214 consecutive weeks from May 19, 2020, to June 18, 2024. This data proves that Alamogordo is vulnerable to drought conditions now and in the future. Because of this factor, the City of Alamogordo 40-Year Water Development Plan 2005-2045 mentions that a significant reduction of surface water supply due to drought conditions has placed critical limitations on the long-term reliance on surface water. Because of this, the City of Alamogordo's need for additional water supply is urgent. If drought increases levels of vulnerability for the City of Alamogordo, the City will have mechanisms to reduce impacts on the community. The City's Utilities Department has been proactive and aggressive in its approach to water conversation, which includes conservation education, computer analysis of hydrant flow capabilities throughout the City, and building a pump test facility to help with water-saving measures.
Project Description	This mitigation project will be for the purchase, design and development of surface water sources in the Snow Smith Spring area. Once completed, it will allow the City of Alamogordo to introduce an additional water source to help offset the current demands for consumption and/or fire protection activities.
Responsible Party	City of Alamogordo Utilities
Estimated Cost	$1,500,000 - $3,000,000
Estimated Timeline	1-5 years

Potential Funding Source(s)	Local Budgets, State, Federal (HMGP, BRIC, HMGP-Post Fire)
Overall Priority (STAPLE+E)	24 (Low)
Status	Carry-over project from 2018 plan. This project is ongoing and will be carried over and included in in the 202x plan update.
Action Identification	Alamogordo 7
Project Name	City Mountain Spring Water System Update
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.; Goal 2: Reduce the risk to the people and property from the identified hazards in this plan.; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.; Goal 6: Minimize the risk to property from drought. ; Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Drought, Wildfire
Impacted Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	The Drought Monitor also indicated that Otero County experienced the 32nd driest period to data over the past 130 years (January - May 2024) and was in some form of drought for 214 consecutive weeks from May 19, 2020, to June 18, 2024. This data proves that Alamogordo is vulnerable to drought conditions now and in the future. Because of this factor, the City of Alamogordo 40-Year Water Development Plan 2005-2045 mentions that a significant reduction of surface water supply due to drought conditions has placed critical limitations on the long-term reliance on surface water. Because of this, the City of Alamogordo's need for additional water supply is urgent. If drought increases levels of vulnerability for the City of Alamogordo, the City will have mechanisms to reduce impacts on the community. The City's Utilities Department has been proactive and aggressive in its approach to water conversation, which includes conservation education, computer analysis of hydrant flow capabilities throughout the City, and building a pump test facility to help with water-saving measures.
Project Description	This mitigation project will be for the design and restoration in respect to thinning the South Sacramento area. Once this NEPA project is completed, it will allow lost water resources to be utilized once again to supplement the current demands for consumption and/or fire protection activities.
Responsible Party	City of Alamogordo Public Works, U.S. Forest Service
Estimated Cost	$3,000,000 - $4,000,000
Estimated Timeline	1-5 years
Potential Funding Source(s)	Local Budgets, Federal
Overall Priority (STAPLE+E)	24 (Low)

Status	Carry-over project from 2018 plan. This project is deferred from the previous LHMP with the project name of "Community Involvement Projects" and will be carried over with the revised name in this plan update as the "City Mountain Spring Water System Update."
Action Identification	Alamogordo 8
Project Name	Upgrade the City of Alamogordo's EOC Technology
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.; Goal 2: Reduce the risk to the people and property from the identified hazards in this plan.; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards ; Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities.; Goal 6: Minimize the risk to property from drought.; Goal 7: Minimize the risk to property from flooding.; Goal 8: Minimize the risk of property from wildfire. ; Goal 9: Minimize the risk of property from wind. ; Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Communications
Vulnerability and Impact Statement	The upgrade to the City's EOC will improve the cyber and information technology infrastructure essential to the City's Continuity of Operations, ability to respond, and ability to maintain proper situational awareness during all disasters. All City departments have become reliant on cyber infrastructure and the loss would cripple the planning, response, and recovery efforts around all hazards. Implementing enhancements to ensure operability and decrease the overall impact and vulnerabilities to all hazards.
Project Description	Information security policy and procedures and IT disaster recovery plan, incident response plan. Critical infrastructure within the City needs to be updated due to old wiring and capability, this project will harden resources for response to natural hazards and man-made incidents.
Responsible Party	City of Alamogordo Information Technology Department/Fire Department
Estimated Cost	$50,000 - $100,000
Estimated Timeline	1-4 years
Potential Funding Source(s)	Local Budget, Federal (HMGP; BRIC)
Overall Priority (STAPLE+E)	23 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 9
Project Name	Upgrade City's Critical Facilities with Solar Panels for Alternate Energy Source

Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.; Goal 2: Reduce the risk to the people and property from the identified hazards in this plan.; Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards ; Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities.; Goal 6: Minimize the risk to property from drought.; Goal 7: Minimize the risk to property from flooding.; Goal 8: Minimize the risk of property from wildfire. ; Goal 9: Minimize the risk of property from wind. ; Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Energy (Power & Fuel)
Vulnerability and Impact Statement	Energy is one area where costs have risen dramatically compared to previous years. Also, the potential impacts of a hazard like wind, drought, winter storms, and flooding increase in the planning area; these elements can affect various infrastructures in the community. Therefore, having the ability to have access to power, especially for the City's critical facilities and infrastructure, during the impact of hazards on the planning area can limit disruption of operations, recovery challenges, and overall well-being of all City residents and first responder personnel.
Project Description	Provide additional emergency power like solar panels and additional generators for the City's critical facilities and infrastructure to operate continuously but cannot do for prolonged power outages.
Responsible Party	City of Alamogordo City Manager/Finance Department
Estimated Cost	
Estimated Timeline	
Potential Funding Source(s)	Local Budget, Federal (HMGP; BRIC); State Grant
Overall Priority (STAPLE+E)	22 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 10
Project Name	Review Existing Floodplain Regulations
Goal/Objective Being Met	Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 4: Improve public outreach initiatives to include education, awareness, and partnerships with all entities in order to enhance the understanding of identified hazards and hazard mitigation opportunities. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 7: Minimize the risk to property from flooding.
Hazard(s) to be Mitigated	Flooding

Impacted Community Lifeline	Food, Water, Shelter; Safety and Security
Vulnerability and Impact Statement	The City of Alamogordo has been impacted by flooding in the past. The Army Corp of Engineers Flood Risk Management Fact Sheet (May 4, 2012)states the City of Alamogordo has been flooded 13 times since 1935. At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area. Also, the increased effects of climate change may result in more flooding events in the planning area due to increased climate temperatures, which can increase the intensity and frequency of storms. Related to flooding, models suggest that Otero County, where the City of Alamogordo resides, will experience more extreme and intense precipitation events. For this reason, the City of Alamogordo will implement good floodplain management techniques that exceed minimum requirements to help minimize flood losses in the planning area.
Project Description	The City of Alamogordo will review existing floodplain regulations to ensure adequacy in reducing future development in identified flood hazard areas. *The is action is in compliance with NFIP
Responsible Party	City of Alamogordo Public Works and City of Alamogordo Planning and Zoning
Estimated Cost	Staff Time and Resources
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025.
Potential Funding Source(s)	Local Budget; Federal Grants (HMGP, FMA) and State Grants
Overall Priority (STAPLE+E)	21 (Low)
Status	New project for 2024 plan update
Action Identification	Alamogordo 11
Project Name	Construction to Update Fire Station 2
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk of property from wildfire. Goal 9: Minimize the risk of property from wind. Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Hazardous Materials; Health and Medical
Vulnerability and Impact Statement	The City of Alamogordo is looking to construct and update Fire Station 2. The update and construction of this new facility will create a more resilient facility that will allow the City to increase its capacity to serve within the

	planning area. The City Fire Department's emergency response capabilities cover the communities near the regional airport and Holloman AFB. Also, this fire station supports and assists residents who reside in mobile homes, which is considered a vulnerable part of the community.
Project Description	The update and construction of Fire Station 2 to support enhanced response to incidents and emergencies within the southwest of the planning area.
Responsible Party	City of Alamogordo Fire Department; City of Alamogordo Finance Department
Estimated Cost	$500,000 - $750,000
Estimated Timeline	1-2 years
Potential Funding Source(s)	NM Department of Finance Administration - Infrastructure Capital Improvement Plan (ICIP); HMGP; BRIC; Local Budget
Overall Priority (STAPLE+E)	20 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 12
Project Name	Procure additional trucks and tools to respond to wildfires
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards. Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Wildfire
Impacted Community Lifeline	Safety and Security; Hazardous Materials
Vulnerability and Impact Statement	In June 2024, the Alamogordo Fire Department sent staff and resources to assist the local fire department protect the Village of Ruidoso during the South Fork and Salt Fires. We do not have any apparatus equipped to respond to an incident of this caliber. The South Fork Fire, in particular, threatened the Bonito Lake Reservoir, a primary drinking water source for the City of Alamogordo. In addition to these incidents and the fact that the City itself is in an active wildfire region, we assist the County of Otero whenever they have wildfires.
Project Description	To procure additional trucks and tools to respond to wildfires to support the City of Alamogordo, assist neighboring jurisdictions in the County like the Village of Ruidoso, and ensure the protection of the Bonito Lake Reservoir.
Responsible Party	City of Alamogordo Fire Department
Estimated Cost	$582,382.00
Estimated Timeline	1-3 years
Potential Funding Source(s)	Local Budget, State Grants, Federal Grants (HMGP, HMGP-Post Fire; BRIC)

Overall Priority (STAPLE+E)	20 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 13
Project Name	Create and Implement a Water and Sewer Master Plan
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk to property from wildfire.
Hazard(s) to be Mitigated	Flooding, Drought, Wildfire
Impacted Community Lifeline	Food, Water, Shelter; Safety and Security
Vulnerability and Impact Statement	At the time of this plan update, it was reported by the Alamogordo Daily News in August 2022 that City of Alamogordo City Officials were tackling the issues of drainage and identifying areas of improvement as a result of the monsoon conditions that caused flooding in the planning area.
Project Description	The City indicated that as a result of the incident, a consultant would be hired to create a Water and Sewer Master Plan, which will identify and prioritize recommended improvements related to the water and sewer systems and its impact on potential flooding in the City.
Responsible Party	
Estimated Cost	$100,00 - $200,000
Estimated Timeline	1-5 years
Potential Funding Source(s)	Local Budget; Federal Grants (HMGP, FMA) and State Grants
Overall Priority (STAPLE+E)	18 (Low)
Status	New Project for 2024 plan update.
Action Identification	Alamogordo 14
Project Name	Annual Review and Update of City's Local Hazard Mitigation Plan (LHMP)
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk of property from wildfire. Goal 9:

	Minimize the risk of property from wind. Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Communications
Vulnerability and Impact Statement	Incorporation of information regarding hazards and enforcement of hazardous materials into the municipal code, general plan, strategic initiatives, and forward planning of the City encourages the safety, security, and resiliency within Alamogordo. As a mixed used community, with residential, commercial, and industry factors there is an inherent risk that must be considered. Considering the natural disasters and hazards prone to the community of Alamogordo, the City must also properly plan to incorporate and enforce mitigation efforts across all departments within the City as well as external partners, including but not limited to the PNM. Failure to incorporate mitigation efforts into City plans, municipal code, general plan and strategic initiatives creates substantial risk by commercial and industry to the greater community of Alamogordo.
Project Description	The City of Alamogordo will review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 202x plan update.
Responsible Party	City of Alamogordo Fire Department
Estimated Cost	Staff Time and Resources
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025.
Potential Funding Source(s)	Federal and State Grants; City General Fund
Overall Priority (STAPLE+E)	16.5 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 15
Project Name	Annual Review and Update of the City of Alamogordo Continuity of Operations Plan (COOP)
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk of property from wildfire. Goal 9: Minimize the risk of property from wind. Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Communications

Vulnerability and Impact Statement	Incorporation of information regarding hazards and enforcement of hazardous materials into the municipal code, general plan, strategic initiatives, and forward planning of the City encourages the safety, security, and resiliency within Alamogordo. As a mixed used community, with residential, commercial, and industry factors there is an inherent risk that must be considered. Considering the natural disasters and hazards prone to the community of Alamogordo, the City must also properly plan to incorporate and enforce mitigation efforts across all departments within the City as well as external partners, including but not limited to the PNM. Failure to incorporate mitigation efforts into City plans, municipal code, general plan and strategic initiatives creates substantial risk by commercial and industry to the greater community of Alamogordo
Project Description	Annually review and update the City of Alamogordo's COOP to ensure compliance.
Responsible Party	City of Alamogordo Fire Department
Estimated Cost	Staff Time and Resources
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025.
Potential Funding Source(s)	Federal and State Grants; City General Fund
Overall Priority (STAPLE+E)	16.5 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 16
Project Name	Annual Review and Update of the City of Alamogordo Emergency Operations Plan (EOP)
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk of property from wildfire. Goal 9: Minimize the risk of property from wind. Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Communications
Vulnerability and Impact Statement	Incorporation of information regarding hazards and enforcement of hazardous materials into the municipal code, general plan, strategic initiatives, and forward planning of the City encourages the safety, security, and resiliency within Alamogordo. As a mixed used community, with residential, commercial, and industry factors there is an inherent risk that must be considered. Considering the natural disasters and hazards prone to the community of Alamogordo, the City must also properly plan to incorporate and enforce mitigation efforts across all departments within the City as well as external partners, including but not limited to the PNM. Failure to incorporate mitigation efforts into City plans, municipal code,

	general plan and strategic initiatives creates substantial risk by commercial and industry to the greater community of Alamogordo
Project Description	Annual review and update of the City of Alamogordo's Emergency Operations Plan to ensure compliance with NMDHSEM requirements.
Responsible Party	City of Alamogordo Fire Department
Estimated Cost	Staff Time and Resources
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025.
Potential Funding Source(s)	Federal and State Grants; City General Fund
Overall Priority (STAPLE+E)	16.5 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 17
Project Name	Develop a City Sheltering Plan in coordination with the City Public Schools
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 2: Reduce the risk to the people and property from the identified hazards in this plan. Goal 3: Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards. Goal 5: Integrate the findings of the local hazard mitigation plan into the planning and decision-making process of all current and future emergency management and preparedness-related activities. Goal 6: Minimize the risk to property from drought. Goal 7: Minimize the risk to property from flooding. Goal 8: Minimize the risk of property from wildfire. Goal 9: Minimize the risk of property from wind. Goal 10: Minimize the risk of property from winter storms.
Hazard(s) to be Mitigated	All Hazards (Drought, Flooding, Wildfire, Wind, Winter Storms)
Impacted Community Lifeline	Safety and Security; Communications
Vulnerability and Impact Statement	Emergency preparedness requires a whole community approach. The City of Alamogordo Fire Department must regularly collaborate with City internal departments and external emergency preparedness partners, including school districts, medical facilities, utility companies, and telecommunication companies, to efficiently respond to disasters and harden infrastructure to meet the community's needs during steady-state operations. Lack of collaboration with external emergency preparedness partners may increase loss of life or injury during emergencies.
Project Description	A City-based plan based upon the newly developed Shelter Inventory Catalog to provide refuge areas for the City School children by pulling all existing city plans together into one overarching document to deconflict resource needs and identify gaps, as well as introduce a common operating procedures and how City resources will assist in supporting this portion of the vulnerable population - school-age children, teachers, and support staff in the event of an emergency in the planning area.
Responsible Party	City of Alamogordo Fire Department; Alamogordo Public Schools; City of Alamogordo Police Department

Estimated Cost	Staff Time and Resources
Estimated Timeline	1-3 years
Potential Funding Source(s)	Local Budgets and Federal and State Grants
Overall Priority (STAPLE+E)	16.5 (Low)
Status	New project for 2024 plan update.
Action Identification	Alamogordo 18
Project Name	Promote City's Fire Prevention and Public Education Programs
Goal/Objective Being Met	Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach. Goal 4: Improve public outreach initiatives to include education, awareness, and partnerships with all entities in order to enhance the understanding of identified hazards and hazard mitigation opportunities. Goal 8: Minimize the risk of property from wildfire.
Hazard(s) to be Mitigated	Wildfire
Impacted Community Lifeline	Safety and Security; Communications
Vulnerability and Impact Statement	Emergency preparedness requires a whole-community approach. The community must not only be aware of the hazards local to the area but also create a plan for the members of their household to respond to emergencies and disaster events, like wildfires. Also, with the increase of wildfire events in the planning area, these efforts will encourage the community to stay updated on their family preparedness planning.
Project Description	The City of Alamogordo will work in the community to provide education and awareness about fire prevention through its public outreach programs to spread awareness and information through the City's Fire Department.
Responsible Party	City of Alamogordo Fire Department; City of Alamogordo PIO
Estimated Cost	Staff Time and Resources
Estimated Timeline	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning in 2025.
Potential Funding Source(s)	Local Budgets, Federal (HMGP, HMGP-Post Fire)
Overall Priority (STAPLE+E)	15 (Low)
Status	New project for 2024 plan update.

6.5 Mitigation Action Implementation and Monitoring

The City of Alamogordo is responsible for implementing their mitigation actions. To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to a specific City department as a champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion should provide input on whether the action as implemented is successful in reducing vulnerability, if applicable.
- If the action is unsuccessful in reducing vulnerability, the identified champion will be tasked with identifying deficiencies and additional required actions.

Additionally, each action has been assigned a proposed completion timeframe to determine if the action is being implemented according to plan.

In general, AFD along with assistance from the City of Alamogordo Finance Director will be responsible for monitoring the progress of mitigation activities and projects in the planning area. To facilitate the tracking of any awarded hazard mitigation grants, AFD along with assistance from the City of Alamogordo Finance Director will compile a list of projects funded throughout the calendar year, if any, and add it to an electronic database. Additionally, the MPT will be solicited annually to provide information on any other mitigation projects that were not funded through hazard mitigation grants for addition to the electronic database. To track mitigation projects from initiation to closeout, the City of Alamogordo will use a project tracking spreadsheet that includes, at a minimum, the following information:

- Applicant/Subrecipient
- Grant Identifier
- Contractor
- Total Cost Estimate
- Federal/Local share
- Award Date
- Period of Performance
- Quarterly Reports
- Subrecipient Risk
- Reimbursements

Upon completion of a project, AFD along with assistance from the City of Alamogordo Finance Director will conduct a closeout site visit with City Departments and Stakeholders to:

- Review all files and documents
- Review all procurement files and contracts to third parties
- Take photos of the completed project

Project closeout packages will generally be submitted 90 days after a project has been completed, and will include the following:

- Summary of documentation
- Pictures of completed project
- Materials, labor and equipment forms, if required

- Close-out certification

Section 7 – Plan Approval and Adoption

7.1 Plan Adoption

Adoption by a local governing body demonstrates the City's commitment to fulfilling the hazard mitigation commitment to the hazard mitigation goals and actions outlined in the plan. Adoption legitimizes the plan and authorizes the responsible departments to perform their responsibilities. Updated plans are adopted anew to demonstrate the City's recognition of the current planning process, acknowledge changes from the previous five years, and validate the priorities for hazard mitigation actions. Without adoption, the City has not completed the mitigation planning process and will not be eligible for certain FEMA assistance, such as HMGP or BRIC grant program funding or mitigation actions.

FEMA Regulation Checklist: Plan Adoption	
Documentation of Plan Adoption	
44 CFR §201.6(c) (5): "This plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted."	
Elements:	
F1.	For single-jurisdiction plans, does the governing body of the jurisdiction formally adopt the plan to be eligible for certain FEMA assistance? 44 CFR §201.6(c)(5)
Source: *FEMA, Local Mitigation Planning Handbook, March 2013*	

7.2 Plan Adoption Resolutions

Resolution, City of Alamogordo
PLACE HOLDER CITY RESOLUTION

State of New Mexico Approval Letter
PLACE HOLDER FOR STATE APPROVAL LETTERS

FEMA Approval Letter
PLACE HOLDER FOR FEMA APPROVAL

Appendix A – FEMA Local Plan Review Tool

PLACE HOLDER FOR FEMA REGION VI LOCAL HAZARD MITIGATION PLAN REVIEW TOOL

Appendix B – Mitigation Planning Team Documentation

Appendix B contains reference documents and data sources used to draft the City of Alamogordo LHMP (20XX) update. This appendix also includes documentation of the planning process for the LHMP Planning Team, including meetings, presentations, etc. Alamogordo conducted additional, informal planning efforts to support the LHMP Planning Team. It is documented herein.

Reference Documents:

- Local Mitigation Planning Policy Guide (FP 206-21-0002), FEMA, released April 19, 2022, Effective April 19, 2023
- Hazard Mitigation Assistance Program Assistance Program and Policy Guide (FP-206-0001), FEMA, March 2023
- Local Mitigation Plan Review Guide, FEMA, 2011
- Local Mitigation Planning Handbook, FEMA, 2013
- Tribal Mitigation Planning Handbook, FEMA, May 2019
- Mitigation Ideas A Resource for Reducing Risk to Natural Hazards, FEMA, 2013
- Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, FEMA, 2008
- National Mitigation Framework, Second Edition, Department of Homeland Security, 2016
- Guidelines and Specifications for Flood Hazard Mapping Partners, FEMA, 2002
- HAZUS Inventory Technical Manual for HAZUS 6.0, FEMA, November 2022
- Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2), FEMA, 2001

Data Sources:

Quantitative Data Sources

- 100% Otero County Initiative
- Army Cop of Engineers Flood Risk Management Fact Sheet - May 4, 2012
- Alamogordo Daily News
- Alamogordo Public Works Department
- Bestplace.net
- Bluehill.org - Knots to MPH Wind Speed Conversion
- Center for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry Social Vulnerability Index
- City of Alamogordo, NM website
- City of Alamogordo House Authority
- City of Alamogordo, NM Planning and Zoning Department
- City of Alamogordo Utilities Department - Water Production
- City of Alamogordo, NM LHMP 2019

- Data USA
- FEMA
- FEMA Disaster Declaration Information
- Gerald Champion Regional Medical Center
- KVIA.com
- National Institute of Building Science Multi-Hazard Council
- National Weather Service
- NBC News
- New Mexico Department of Justice
- New Mexico Fire Information website
- New Mexico Gas Company
- New Mexico Mortgage Finance Authority
- NOOAA NCEI New Mexico 2022 State Climate Summary
- Omnicalulator
- Otero County Flood Insurance Study, (November 4, 2015)
- Otero County, NM Hazard Mitigation Plan, 2011
- The Point in Time Report
- Southern New Mexico – El Paso Join Land Use Study
- Sperry–Piltz Ice Accumulation Index
- State of New Mexico Hazard Mitigation Plan 2023
- State of Mexico Department of Homeland Security and Emergency Management – State Fire Marshall
- USA Today
- U.S. Census Bureau
- U.S. Census Bureau – Quick Facts
- U.S Climate Data
- United Stated Department of Agriculture
- USADA U.S Forestry Service's Wildfire Risk to Communities
- U.S Drought Monitor
- United States Environmental Protection Agency - What’s Climate Change Means for New Mexico
- United States Forest Service Wildland Fire Assessment (USFA-WFAS)
- U.S News, K-12 Schools Enrollment Data
- Village of Ruidoso, NM Government website

Geographic Data Sources

- Alamogordo Public Schools
- BOLDplanning, Inc.
- Center for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry Social Vulnerability Index
- City of Alamogordo, NM Utilities Department
- City of Alamogordo, NM Downtown Metropolitan Redevelopment Plan (2018)
- Drought.gov
- FEMA Climate and Economic Justice Screening Tool
- FEMA Flood Map Services
- FEMA HAZUS® database
- New Mexico Climate Risk Map
- New Mexico Department of Transportation
- Pew Trust
- The National Weather Service – Albuquerque, NM Office
- USADA U.S Forestry Service's Wildfire Risk to Communities
- U.S Drought Monitor
- United States Forest Service Wildland Fire Assessment - USFA-WFAS
- U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Mitigation Planning Team Meetings:

Meeting Date	Meeting Title	Meeting Handouts, Presentation Included in LJHMP Update
02/23/24	City of Alamogordo LHMP Update Client Kickoff Meeting	• Presentation (cover only)
05/09/24	City of Alamogordo LHMP Update Kickoff Meeting – City Officials	• Presentation (cover only) • Attendance sheet
05/16/24	City of Alamogordo LHMP Update Public Kickoff Meeting	• Presentation (cover only) • Attendance sheet
06/24/24	City of Alamogordo LHMP Mitigation Strategy Update Meeting	• Presentation (cover only) • Attendance sheet
09/02/24-09/20/24	City of Alamogordo LHMP Update Open Comment Period Meeting	• Link to Open Comment Page:

City of Alamogordo LHMP Update Client Kickoff Meeting

LOCAL HAZARD MITIGATION PLAN (LHMP) PREPARATION GUIDE



Prepared for :
City of Alamogordo, NM

BOLD planning

City of Alamogordo LHMP Update Kickoff Meeting – City Officials

Presentation



Attendance Sheet

BOLD planning

SIGN IN SHEET

EVENT: _ City of Alamogordo, NM LHMP City Officials Kickoff Meeting__ DATE / TIME: _May 9, 2024 /_10:00AM -11:30:PM MST

Zoom Meeting ID: 82636894677	**City of Alamogordo, NM Local Hazard Mitigation Plan Update – City Officials Kick-off Meeting**	**05/09/2024 9:55 AM**	**10/06/2021 12:08 PM**

Number	Participant Name	Organization	Title	User Email	Total Duration on Kickoff Call (Minutes)
1	Rachel Hughs	COA	City Clerk	rhughs@ci.alamogordo.nm.us	60
2	Rick Holden	COA	City Manager	rholden@ci.alamogordo.nm.us	90
3	David Kunihiro	COA	Police Chief	dkunihiro@ci.alamogordo.nm.us	90
4	Ashley Smith	COA	City Attorney	ashsmith@ci.alamogordo.nm.us	90
5	Kim Torres	COA	HR Director	ktorres@ci.alamogordo.nm.us	90
6	Stephanie Hernandez	COA	Assistant City Manager	shernandez@ci.alamogordo.nm.us	90
7	Erik Marion	COA	Parks Supervisor	emarion@ci.alamogordo.nm.us	90
8	David Nunnelley	COA	Acting Public Works Director	dnunnelley@ci.alamogordo.nm.us	90
9	Liam Lashley	COA	Deputy Fire Chief	llashley@ci.alamogordo.nm.us	90
10	Stella Rael	COA	City Planner	srael@ci.alamogordo.nm.us	90

1

BOLD planning

SIGN IN SHEET

11	Evelyn Huff	COA	Finance Director	ehuff@ci.alamogordo.nm.us	90
12	Amanda Renner	COA	Executive Admin. Assistant to the Fire Department	arenner@ci.alamogordo.nm.us	90
13	Hector Vazquez	COA	Community Affairs Manager	hvazquez@ci.alamogordo.nm.us	90
14	Jerry Ramirez	COA	Fire Chief	jramirez@ci.alamogordo.nm.us	90

BOLD planning

SIGN IN SHEET

EVENT: _ City of Alamogordo, NM LHMP City Officials Kickoff Meeting__ DATE / TIME: _May 9, 2024 /_10:00AM -11:30:PM MST

Zoom Meeting ID: 82636894677	**City of Alamogordo, NM Local Hazard Mitigation Plan Update – City Officials Kick-off Meeting**	**05/09/2024 9:55 AM**	**10/06/2021 12:08 PM**

Number	Participant Name	Organization	Title	User Email	Total Duration on Kickoff Call (Minutes)
1	Emily Long (BOLDplanning Meeting Room 6)	BOLDplanning, Inc.	Project Manager/Mitigation Project Lead	emily@southerncharmcn.com	133
2	Tim Black	City of Alamogordo, NM	IT Support	tblack@ci.alamogordo.nm.us	90
3	Jennifer Schaffer	Otero County, NM	Emergency Services Assistant	jshaffer@co.otero.nm.us	59
4	Kim Underwood	City of Alamogordo, NM	Library Manager	kunderwood@ci.alamogordo.nm.us	07
5					

City of Alamogordo LHMP Update Public Kickoff Meeting

Presentation



City of Alamogordo LHMP Update – Mitigation Strategy Update Meeting

Flyer



Presentation



Attendance Report

SIGN IN SHEET

EVENT: City of Alamogordo, NM LHMP Mitigation Strategy Update Meeting DATE / TIME: June 24, 2024 /_1:00-2:15PM MST

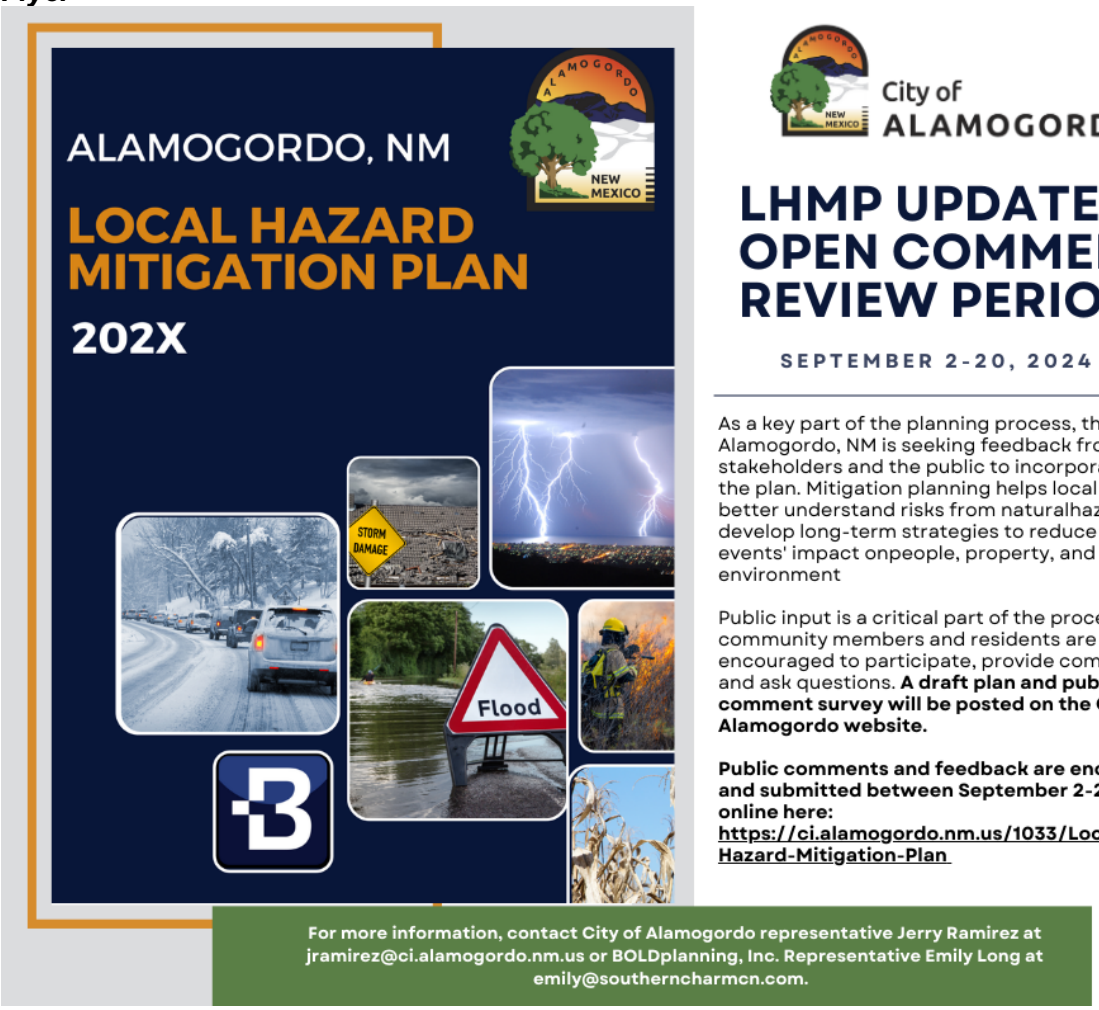
Zoom Meeting ID: 87246733793	**City of Alamogordo, NM Local Hazard Mitigation Plan Update –Mitigation Strategy Update Meeting**	**06/24/2024 12:30 PM**	**6/24/2024 3:37:35 PM**

Number	Participant Name	Organization	Title	User Email	Total Duration on Kickoff Call (Minutes)
1	Emily Long (BOLDplanning Meeting Room 6)	BOLDplanning, Inc.	Project Manager/Mitigation Project Lead	emily@southerncharmcn.com	127
2	Amanda Renner	City of Alamogordo, NM Fire Department	AFD Executive Director	arenner@ci.alamogordo.nm.us	106
3	David Kunihiro	City of Alamogordo, NM Police Department	Chief	dkunihiro@ci.alamogordo.nm.us	90
4	Evelyn Huff	City of Alamogordo, NM	Finance Director	ehuff@ci.alamogordo.nm.us	78
5	Jimmy Vargas	Alamogordo Public Works	Public Works Director	jvargas@ci.alamogordo.nm.us	50

1

LHMP Open Comment Period

Flyer



Appendix C – Public Survey Data

Appendix C contains documentation of stakeholder engagement and outreach. It includes survey format and results.

LHMP Planning Process Survey Links

Community Surveys: May-June 2024:

- City Official Survey: https://form.jotform.com/241216344689158
- Community Survey: https://form.jotform.com/241212116578047

Open Comment Survey: September 2-20, 2024

- Open Comment Period Survey: https://form.jotform.com/242378585459170

City of ALAMOGORDO

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name *

First Name Last Name

Agency/Organization *

Job Title *

Phone Number *

Please enter a valid phone number.

Email *

example@example.com

1

Part 2: Hazard Assessment and Overview

Which hazards is your area MOST are risk for? *

- ◯ Drought
- ◯ Flooding
- ◯ Wildfire
- ◯ Wind
- ◯ Winter Storms

Which hazards is your area LEAST are risk for? *

- ◯ Drought
- ◯ Flooding
- ◯ Wildfire
- ◯ Wind
- ◯ Winter Storms

Tell us about your concerns about the following hazards:

	No Concern	Some Concern	Moderate Concern	Significant Concern
Drought	◯	◯	◯	◯
Flooding	◯	◯	◯	◯
Wildfire	◯	◯	◯	◯
Wind	◯	◯	◯	◯
Winter Storms	◯	◯	◯	◯

Where do you live? Please provide subdivision name or area of the city near your address *

List historical instances when a weather-related event causes a disruption to you area. List the date, event, and a short description of the event in the space below.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. *

2

- ☐ Purchase flood insurance
- ☐ Practices a home evacuation drill at least once a year
- ☐ Created a family reunification plan
- ☐ Stored water (one gall a day/person for five (5) days
- ☐ Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- ☐ Received First Aid/CPR Training
- ☐ Have working portable fire extinguishers in appropriate areas of the home
- ☐ Stored a battery powered radio, flashlights, and extra batteries
- ☐ Stored non-perishable foods, enough for five (5) days
- ☐ Installed smoke and carbon monoxide detectors on each floor of your home
- ☐ None of the above

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply. *

- ☐ Phone book
- ☐ Church disaster preparedness event
- ☐ Civic organizations involved in disaster preparedness (example: American Red Cross)
- ☐ Government outreach for emergency preparedness such as federal, state, or local websites and social media
- ☐ Community meetings that address disaster preparedness information
- ☐ Local and regional media sources (other than social media)
- ☐ Personal experience with previous hazard or disaster
- ☐ None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

	1	2	3	4	5	6	7	8	9	10	
Least Important	○	○	○	○	○	○	○	○	○	○	Very Important

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

	1	2	3	4	5	6	7	8	9	10	
Least Important	○	○	○	○	○	○	○	○	○	○	Very Important

Structural projects intended to lessen hazard impact by modifying the natural progression of the

3

hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts

1 2 3 4 5 6 7 8 9 10

Least Important ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Very Important

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

List ares in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Are there any hazards that were not listed, that you think should be included in this plan update?

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five year.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: *

Commercial Growth: *

Residential Growth: *

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)? *

In what ways do you see opportunity to expand or enhance mitigation programs in your community? *

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction? *

SUBMIT SURVEY HERE!

5

City of ALAMOGORDO

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? *

- ○ Drought
- ○ Flooding
- ○ Wildfire
- ○ Wind
- ○ Winter Storms

Which hazard is your area LEAST are risk for? *

- ○ Drought
- ○ Flooding
- ○ Wildfire
- ○ Wind
- ○ Winter Storms

Tell us about your concerns about the following hazards:

	No Concern	Some Concern	Moderate Concern	Significant Concern
Drought	○	○	○	○
Flooding	○	○	○	○
Wildfire	○	○	○	○
Wind	○	○	○	○
Winter Storms	○	○	○	○

What is your occupation? *

1

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes) *

1 2 3 4 5 6 7 8 9 10

Least Important ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Very Important

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits *

1 2 3 4 5 6 7 8 9 10

Least Important ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Very Important

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts *

1 2 3 4 5 6 7 8 9 10

Least Important ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Very Important

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

3

Where do you live? Please provide subdivision name or area of the city near your address *

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. *

- ☐ Purchase flood insurance
- ☐ Practices a home evacuation drill at least once a year
- ☐ Created a family reunification plan
- ☐ Stored water (one gallon a day/person for five (5) days)
- ☐ Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- ☐ Received First Aid/CPR Training
- ☐ Have working portable fire extinguishers in appropriate areas of the home
- ☐ Stored a battery powered radio, flashlights, and extra batteries
- ☐ Stored non-perishable foods, enough for five (5) days
- ☐ Installed smoke and carbon monoxide detectors on each floor of your home
- ☐ Non of the above

Which of the following sources of information have helped you prepare for weather-related events? Check all that apply. *

- ☐ Phone book
- ☐ Church disaster preparedness event
- ☐ Civic organizations involved in disaster preparedness (example: American Red Cross)
- ☐ Government outreach for emergency preparedness such as federal, state, or local websites and social media
- ☐ Community meetings that address disaster preparedness information
- ☐ Local and regional media sources (other than social media)
- ☐ Personal experience with previous hazard or disaster
- ☐ None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name

First Name Last Name

Email

example@example.com

SUBMIT SURVEY HERE!

City of ALAMOGORDO

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Open Comment Period Survey

Overview: The City of Alamogordo, in partnership with BOLDplanning, Inc., is in the process of updating the City's Local Hazard Mitigation Plan Update (LHMP). Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment (2019). As a part of the activity, the City of Alamogordo is seeking feedback from residents and businesses to incorporate into the plan. Please review the plan's draft located on the City's website and use this survey to provide feedback and input on this Hazard Mitigation Plan Update before submission to the New Mexico Department of Homeland Security and Emergency Management (NMDHSEM). If you have any questions about the survey or issues using the survey, don't hesitate to contact Emily Long at emily@southerncharmcn.com or Jerry Ramirez at jramirez@ci.alamogordo.nm.us. Thank you so much for your participation!BOLDplanning, Inc. and the City of Alamogordo Fire Department

What is your Name (First and Last Name)? *

Email *

example@example.com

What is your Zip Code *

What do you do for Work? *

Your Occupation

What is your Job Title? *

Your Occupation

Use the space below to provide your feedback and comments related to this section of the City of Alamogordo, NM Local Hazard Mitigation Plan Update.

Section 1: Hazard Mitigation Program and Requirements

Section 2: Introduction, Planning Process, and Plan Maintenance Procedures

Section 3: Planning Area Description

Section 4: Hazard Analysis and Risk Assessment

Section 5: Capabilities Assessment

Section 6: Mitigation Strategy

Provide any additional feedback or comments related to the City of Alamogordo, NM, Local Hazard Mitigation Plan Update.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name

First Name

Last Name

Email

example@example.com

SUBMIT SURVEY HERE!

Survey Results – City Officials, Community Survey, and Public Comment

City Official Survey

Thursday, May 9, 2024

City of ALAMOGORDO

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	David Kunihiro
Agency/Organization	Alamogordo Police Department
Job Title	Chief of Police
Phone Number	(575) 439-4300
Email	dkunihiro@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Wildfire

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Moderate Concern
Wildfire	Some Concern
Wind	Moderate Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

Mesa Village-Alamogordo, NM

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

2006 flood in Alamogordo

2011-2012 Winter freeze-temperatures below zero; gas shut down to parts of town and other small towns like La Luz and Tularosa

Extremely high winds; dust; visibility issues

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

10 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

10 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	10 / 10

Are there any hazards that were not listed, that you think should be included in this plan update?

Hazards that can occur as a result of living 6 miles from Holloman Air Force Base. Also live in close proximity to White Sands Missile Range and Fort Bliss.

Plane crashes, enemy attacks, etc.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth:	N/A
Commercial Growth:	Same buildings, new business
Residential Growth:	Mesa Village

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

2018

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Updating our Hazard Mitigation Plan. Including the community and stakeholders.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Lack of local cooperation, probably funding as well.

Monday, May 20, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Teresa Gutierrez
Agency/Organization	City of Alamogordo
Job Title	Executive Assistant to City Manager
Phone Number	(575) 439-4203
Email	tgutierrez@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Moderate Concern
Wildfire	Some Concern
Wind	Moderate Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

Main Street, La Luz, NM

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Flooding July 2006
Winter storm February 2011

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Purchase flood insurance
- Stored water (one gallon a day/person for five (5) days)
- Have working portable fire extinguishers in appropriate areas of the home
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Government outreach for emergency preparedness such as federal, state, or local websites and social media
- Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

8 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

8 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts 9 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Drainage channel to protect the north side of town

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

North side of town suffers flash flooding

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: Unknown

Commercial Growth: Northwest side of town

Residential Growth: Northwest side of town

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

Rewrite of Code Ordinances to bring up to date

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Apply for Federal and State funding to help offset cost of drainage channel improvements

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Lack of funding; lack of progressive planning due to staff that does not have the proper education and/or experience

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Eric Martinez
Agency/Organization	Alamogordo Fire department
Job Title	Firefighter
Phone Number	(575) 439-4298
Email	emartinez@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Moderate Concern
Wildfire	No Concern
Wind	Significant Concern

1

Winter Storms	No Concern

Where do you live? Please provide subdivision name or area of the city near your address

Las Cruces

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Monsoon season brought flooding and high winds

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

None of the above

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

8 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

8 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts

8 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

No

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Anywhere near Florida and 24th

Are there any hazards that were not listed, that you think should be included in this plan update?

No

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: None

Commercial Growth: None

Residential Growth: None

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

None

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

None

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

None

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Veronica Ortega
Agency/Organization	City of Alamogordo
Job Title	Director of Community Services
Phone Number	(575) 439-4324
Email	vortega@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Some Concern
Flooding	Moderate Concern
Wildfire	Moderate Concern
Wind	Moderate Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

1376 E 9th Street

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

During the monsoon season the rain water arose quickly and was able to get in and over a curb into our senior center.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored water (one gallon a day/person for five (5) days)
- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training
- Have working portable fire extinguishers in appropriate areas of the home
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Civic organizations involved in disaster preparedness (example: American Red Cross)
- Government outreach for emergency preparedness such as federal, state, or local websites and social media
- Local and regional media sources (other than social media)

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

9 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	8 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	10 / 10

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

During the monsoon season, there is always flooding on White Sands Blvd., and various areas of town.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth:	Airport
Commercial Growth:	Mesa Village
Residential Growth:	County/Foothills

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

CDBG

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Availability of state and federal funding.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Funding

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Deborah Osborne
Agency/Organization	City of Alamogordo
Job Title	Grant Coordinator
Phone Number	(575) 439-4257
Email	dosborne@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Moderate Concern
Wildfire	Significant Concern
Wind	Significant Concern

1

Winter Storms	No Concern

Where do you live? Please provide subdivision name or area of the city near your address

Quail Hollow

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

There was a flood many years ago before I moved to the area. There are currently wildfires in the mountains around the city.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training
- Have working portable fire extinguishers in appropriate areas of the home
- Stored a battery powered radio, flashlights, and extra batteries
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Local and regional media sources (other than social media)
- Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

10 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

9 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts 10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Additional shelters

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Flooding in areas such as 10th Street, Scenic Drive, Florida Ave. Wind damage to cinder block walls in Scenic Drive area and roofs damage to schools and various building throughout the city.

Are there any hazards that were not listed, that you think should be included in this plan update?

I can't think of any additional hazards.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: 0

Commercial Growth: 0

Residential Growth: 0

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

I'm not sure

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

I think we could revisit our plans for droughts, wildfires, wind damage and flooding.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Financial difficulties.

Wednesday, May 29, 2024

City of ALAMOGORDO

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	David Nunnelley
Agency/Organization	City of Alamogordo - Utilities Department
Job Title	Utilities Director
Phone Number	(575) 489-2274
Email	dnunnelley@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Significant Concern
Wildfire	Significant Concern
Wind	Moderate Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

42 Valley View Drive

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

The Little Bear Fire in May 2012 caused significant debris flows, making the Bonito Reservoir unusable for more than a decade. Current Fre in Bonito area will likely result in more of the same.

Tropical depression Dolly in July 2008 resulted in major damage to the reservoir covers in La Luz.

Artic Freeze in February 2011 resulted in over 200 water line freezes, mains failures, and natural gas outages.

Every year, we contend with flash flooding that results in high turbidity at the surface water plants.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

None of the above

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

10 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

10 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts 10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

North flood control channel. Fire mitigation and erosion control near all source water collection infrastructure.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Flooding at the intersection of Scenic and Florida Ave

Are there any hazards that were not listed, that you think should be included in this plan update?

-

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: -

Commercial Growth: -

Residential Growth: -

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

Installation of temporary coffer dam at Bonito reservoir

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

-

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

lack of qualified personnel

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Dave McColley
Agency/Organization	Alamogordo Police Department
Job Title	Lieutenant
Phone Number	(575) 430-0528
Email	dmccolley@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Flooding

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Some Concern
Flooding	Some Concern
Wildfire	No Concern
Wind	Some Concern

Winter Storms	No Concern

Where do you live? Please provide subdivision name or area of the city near your address

Hopi Tr

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Not really my area but certain areas of town flood when the monsoons hit.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored water (one gallon a day/person for five (5) days)
- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training
- Have working portable fire extinguishers in appropriate areas of the home
- Stored a battery powered radio, flashlights, and extra batteries
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

6 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

6 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts 6 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

The water comes in massive amounts down the mountain and usually hit Scenic and N. Florida. Something to redirect that water would be good. Tenth and White Sands wasn't too bad last year.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Not really

Are there any hazards that were not listed, that you think should be included in this plan update?

Not that I'm aware of.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: None

Commercial Growth: None

Residential Growth: None

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

I have no idea.

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

There's mitigation and then there is regulation. There are already preventive laws in place. Proper enforcement of laws will mitigate most of it.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

My neighborhood is developed. I don't know of anywhere in the neighborhood that would built upon.

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Austin Edwards
Agency/Organization	Alamogordo Police Department
Job Title	Detective
Phone Number	(575) 415-8880
Email	aedwards@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Moderate Concern
Wildfire	Significant Concern
Wind	Significant Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

1408 Discovery Avenue

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Flooding is very common in the area of Airport Road between US Highway 70 West and Business Center Boulevard. Also the amount of dry brush in the surrounding desert areas is a concern in the case of brush fires/wildfires. This was seen last year during a holiday when fireworks started a fire near the Chevron Gas Station on US Highway 70 West.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Have working portable fire extinguishers in appropriate areas of the home
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Government outreach for emergency preparedness such as federal, state, or local websites and social media
- Local and regional media sources (other than social media)
- Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

10 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

10 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Better water drainage throughout areas in the city where street flooding is common. Debris and brush removal in areas close to residences or businesses.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Flooding: Tenth Street and North White Sands. First Street and White Sands. Florida Avenue and Indian Wells Road. Airport Road between US Highway 70 West and Business Center Boulevard.

Drought/Wild Fire or Brush Fire: Desert areas between White Sands Boulevard and the Relief Route. Desert areas off of US Highway 70 West near residences and businesses.

Are there any hazards that were not listed, that you think should be included in this plan update?

No.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth:	None
Commercial Growth:	White Sands Boulevard and Mesa Verde Ranch Road
Residential Growth:	Panorama/Ocotillo

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

Drainage off of Oregon Avenue near First Street

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Not sure.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

I am not personally affected in implementing or expanding mitigation.

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Patricia Kiscadon
Agency/Organization	Parks and Recreation - Rec Center
Job Title	Cashier/Clerk
Phone Number	(575) 439-4142
Email	pkiscadon@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Significant Concern

Winter Storms	No Concern

Where do you live? Please provide subdivision name or area of the city near your address	Walker area
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile Received First Aid/CPR Training Have working portable fire extinguishers in appropriate areas of the home Stored a battery powered radio, flashlights, and extra batteries Stored non-perishable foods, enough for five (5) days Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)	8 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	8 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts 9 / 10

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: .

Commercial Growth: .

Residential Growth: .

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

.

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

.

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Frank Webb
Agency/Organization	Alamogordo Animal Control
Job Title	Animal Control Officer
Phone Number	(575) 430-8808
Email	fwebb@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Flooding

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Significant Concern

1

Winter Storms	Moderate Concern

Where do you live? Please provide subdivision name or area of the city near your address

2910 N Florida

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

The previous 2 spring winds have been extremely violent causing fences down. roofs blown down.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

Purchase flood insurance

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

6 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

6 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts

6 / 10

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: N/A

Commercial Growth: N/A

Residential Growth: N/A

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

N/A

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Community outreach needs to be done. Fair, seminar, training.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Finances.

Thursday, May 30, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Izaak Lujan
Agency/Organization	Alamogordo Fire Department
Job Title	Firefighter
Phone Number	(575) 323-4536
Email	ilujan@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Moderate Concern
Wildfire	Some Concern
Wind	Significant Concern

1

Winter Storms	No Concern

Where do you live? Please provide subdivision name or area of the city near your address

The City's Center

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

June 4th, 2019 - The tornado was classified as an EF1 on the enhanced Fujita scale. Winds were estimated to be 100-105 miles per hour, according to the National Weather Service. There was at least 28 types of damage to structures and trees reported that afternoon.

July 4th, 2023 - over 50% of Otero County is classified in a D3 (Extreme Drought). This causes Major crop loss and widespread water shortages. With the combination of dry weather and high winds, our fire potential it exaggerated and caused approximately 10 fire related incidents just within the city limits of Alamogordo.

Flooding happens about once a year due to a large amount of rain in a short period of time, while the city is currently attempting to invest in better drainage systems throughout, we still deal with businesses and homes having very serious flooding issues causes them to sandbag their property.

These are not the only instances but they will give you a look inside of the hazards of our severe drought and high winds.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored water (one gallon a day/person for five (5) days)
- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training
- Have working portable fire extinguishers in appropriate areas of the home
- Stored a battery powered radio, flashlights, and extra batteries
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Government outreach for emergency preparedness such as federal, state, or local websites and social media
- Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)	6 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	9 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	9 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

As mentioned before, the City is attempting to reinforce our water retention and flood prevention culvert/ditches. Continuing down that path can only help.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Fairground Road in Alamogordo floods very bad
The Area between Highway 54 and White Sands BLVD seems to have brush fires during the warmer months

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth:	Highway 54/70 Area
Commercial Growth:	Mesa Village
Residential Growth:	Subdivision near and around Panorama/Ocotillo.

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

The introduction of the Fire Marshal/Inspector position which has established a great fire prevention, inspection, planning, and zoning program to assist with the state and city with fire code related issues. Investing in concreting the dirt drainage ditches within the city to aide in flooding issues.

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Unfortunately there isn't much a government can do to minimize these acts of nature like drought and high wind hazards and the City of Alamogordo does seem to be making improvement on its drainage and streets for flooding which they can make an impact.

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Building upon and improving utility systems like gas, electric, and water for redundancy is a collaboration between the city and private utility companies and that is always going to be a challenge

Thursday, May 30, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - City Officials Survey

The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. The City Officials Survey aims to capture input from the City of Alamogordo officials, department heads, and stakeholders. This feedback is crucial to building an effective hazard mitigation plan because hazard mitigation is a community effort. Your input will be used to assess the risks and impacts of natural hazards in the city and learn about its growth and development over the last five years. Please take a few moments to fill out this survey to share your thoughts on key disaster issues. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Part 1: Contact Information

Name	Kim Torres
Agency/Organization	City of Alamogordo
Job Title	Human Resources Director
Phone Number	(575) 439-4399
Email	ktorres@ci.alamogordo.nm.us

Part 2: Hazard Assessment and Overview

Which hazard is your area MOST are risk for? Flooding

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Some Concern
Flooding	Moderate Concern
Wildfire	Moderate Concern
Wind	Moderate Concern

1

Winter Storms	Some Concern

Where do you live? Please provide subdivision name or area of the city near your address

Quail Hallow

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Flood, during a home build. Destroyed the foundation that was prepped for concrete. Couldn't get home from work I was stuck at 10th and Scenic until the raging water ceased.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Purchase flood insurance
- Stored a battery powered radio, flashlights, and extra batteries
- Stored non-perishable foods, enough for five (5) days
- Installed smoke and carbon monoxide detectors on each floor of your home

Which of the following sources of information have helped your prepare for weather-related events? Check all that apply.

- Local and regional media sources (other than social media)

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and building are built (ex: planning, zoning & building codes)

8 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

3 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts

6 / 10

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Hamilton & Martin Luther King Drive are not passable during heavy rains. North Florida in the area of 20th to 25th. South of Public Works Facility.

Part 3: Expanding & Improving Mitigation Programs

This section will provide additional information from City Officials, Departments & Staff, and Stakeholders on the growth and development within the City over the last five years.

Please list the areas of your jurisdiction (regions, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazard due to development.

Industrial Growth: Marijuana Facility

Commercial Growth: Restaurants/Retail/Dispensaries

Residential Growth: Panorama Area East of S Florida

What mitigation projects/actions has your jurisdiction accomplished in the past five (5) years, to include both local (building/zoning codes, incorporating mitigation into existing plans), and external funding (grants such as mitigation, CDBG, USDA, etc.)?

Unknown

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Community Education

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Lack of participation.

Community Survey

Wednesday, May 29, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Wildfire

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	No Concern
Wildfire	No Concern
Wind	Some Concern
Winter Storms	No Concern

What is your occupation? Retired

Where do you live? Please provide subdivision name or area of the city near your address College Avenue, north end.

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Date?? We did receive quite a bit of hail last year.
Drought is always a concern since rain is not really happening.

1

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Practices a home evacuation drill at least once a year Created a family reunification plan Stored water (one gallon a day/person for five (5) days) Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile Have working portable fire extinguishers in appropriate areas of the home Stored a battery powered radio, flashlights, and extra batteries Stored non-perishable foods, enough for five (5) days Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Civic organizations involved in disaster preparedness (example: American Red Cross) Government outreach for emergency preparedness such as federal, state, or local websites and social media

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	10 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Keep maintaining cleared arroyos throughout city.
Follow through with drive by checks after heavy storm to double check storm drains. For example, low areas that create massive puddles hiding unknown large potholes. Maybe too larger storm drains alone White Sands Blvd, Washington & Indian Well and by 1st and S. Florida...,

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Noted above ^^^

Are there any hazards that were not listed, that you think should be included in this plan update?

Regardless touch up street lines on main arteries of city. They totally disappear during inclement weather ... no bueno.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name	Brenda Holmes
Email	bkholmes10@yahoo.com

Thursday, May 30, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Wind
Which hazard is your area LEAST are risk for?	Wildfire

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Significant Concern
Wildfire	Moderate Concern
Wind	Significant Concern
Winter Storms	Moderate Concern

What is your occupation?	Disabled
Where do you live? Please provide subdivision name or area of the city near your address	Scenic/Indian wells

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

2 years ago a freeze busted gas lines
Last two years the mini tornados tore roofs and fences
Flood run off accumulates in front of my house due to poor asphalting from fixing a water main

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile Received First Aid/CPR Training Have working portable fire extinguishers in appropriate areas of the home Stored a battery powered radio, flashlights, and extra batteries Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Civic organizations involved in disaster preparedness (example: American Red Cross) Government outreach for emergency preparedness such as federal, state, or local websites and social media Local and regional media sources (other than social media) Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	6 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Check flood water flows in non flood zone areas because the run off needs to be safe

Are there any hazards that were not listed, that you think should be included in this plan update?

It seems we will be getting more mini tornados, so maybe something to help with that. Also, do you collect flood runoff...reclaim it for public use

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Friday, June 14, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Moderate Concern
Wildfire	Significant Concern
Wind	Significant Concern
Winter Storms	No Concern

What is your occupation? Mental health therapist

Where do you live? Please provide subdivision name or area of the city near your address Indian Wells rd

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Flash flooding arroyo overflow and insufficient routing of water intersection Indian Wells and Puerto Rico. Several instances of down trees and powerlines.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Purchase flood insurance Received First Aid/CPR Training Have working portable fire extinguishers in appropriate areas of the home Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Government outreach for emergency preparedness such as federal, state, or local websites and social media Local and regional media sources (other than social media)

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	10 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

What shelters do the city and county use in the event of natural disaster? Do we have accommodations for food, water, pets, sleeping cots, toiletries diapers, etc.?

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Hwy 82 . Rock slides

2

Are there any hazards that were not listed, that you think should be included in this plan update?

City water line breakages. What is the city's plan to assess, replace or repair water lines. Given we've had one water source for 10 years with closure of Bonito lake. What is the plan for water conservation efforts commercially and residentially and for new construction or reconstruction ? Like low flow toilets etc

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Friday, June 14, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Wind
Which hazard is your area LEAST are risk for?	Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Significant Concern
Wind	Significant Concern
Winter Storms	Some Concern

What is your occupation?	Teacher
Where do you live? Please provide subdivision name or area of the city near your address	Walker
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Have working portable fire extinguishers in appropriate areas of the home

1

Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	10 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Friday, June 14, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	No Concern
Wildfire	Significant Concern
Wind	Some Concern
Winter Storms	No Concern

What is your occupation? Retired

Where do you live? Please provide subdivision name or area of the city near your address Hopi trail

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

- Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
- Received First Aid/CPR Training

1

	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Local and regional media sources (other than social media)
	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	10 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name	Donald Labonte
Email	donlabonte25@gmail.com

3

Friday, June 14, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Significant Concern
Wind	Significant Concern
Winter Storms	No Concern

What is your occupation? Doesn't matter

Where do you live? Please provide subdivision name or area of the city near your address South alamo

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

You should already no this information

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. Created a family reunification plan

1

	Stored water (one gallon a day/person for five (5) days)
	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
	Received First Aid/CPR Training
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	6 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	4 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

2

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Stop xero-scaping and plant trees again. Bring back the natural habitat

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Literally the entire county

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Friday, June 14, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Some Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Significant Concern
Winter Storms	Moderate Concern

What is your occupation? retail

Where do you live? Please provide subdivision name or area of the city near your address white sands community and rv park

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

last summer, major winds came through the park and blew off skirting and roof parts. the parts blew through the streets in the park and into others yards

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.

Non of the above

Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.

Phone book

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)

6 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

6 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts

7 / 10

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

the white sands community and rv park has an arroy in the middle of it and when it rains, they close the gate. I can understand that, to protect people from driving from either side. but what if you just bridge it and now the gate will never have to be locked and allow all vehicle to pass from either the white sands entrance or the South Florida enterance.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name

Dorothy Lee

Saturday, June 15, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Wildfire

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Moderate Concern
Wildfire	No Concern
Wind	Moderate Concern
Winter Storms	No Concern

What is your occupation? Retired

Where do you live? Please provide subdivision name or area of the city near your address Woods area

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Lightning hitting transformers

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Have working portable fire extinguishers in appropriate areas of the home Stored non-perishable foods, enough for five (5) days Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	10 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

Flooding in downtown Alamogordo

Are there any hazards that were not listed, that you think should be included in this plan update?

Painting street lines to be able to see when it rains

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Saturday, June 15, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Wind
Which hazard is your area LEAST are risk for?	Drought

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Moderate Concern
Winter Storms	Significant Concern

What is your occupation?	Retired
Where do you live? Please provide subdivision name or area of the city near your address	Indian streets
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Purchase flood insurance Created a family reunification plan Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and

	automobile
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	8 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	8 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	8 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Monday, June 17, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Flooding
Which hazard is your area LEAST are risk for?	Winter Storms

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Moderate Concern
Wildfire	Moderate Concern
Wind	Some Concern
Winter Storms	No Concern

What is your occupation?	Designer
Where do you live? Please provide subdivision name or area of the city near your address	Cottonwood
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Stored water (one gallon a day/person for five (5) days) Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile

	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Civic organizations involved in disaster preparedness (example: American Red Cross)
	Government outreach for emergency preparedness such as federal, state, or local websites and social media
	Community meetings that address disaster preparedness information
	Local and regional media sources (other than social media)
	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	5 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Wednesday, June 19, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Some Concern
Wildfire	No Concern
Wind	Some Concern
Winter Storms	No Concern

What is your occupation? Administrator

Where do you live? Please provide subdivision name or area of the city near your address President Streets

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Nothing so significant that I can remember the dates. I've lived in that area for over 15 years and have not been flooded out, significant water does flow through our neighborhood and some homes closer to the East/West intersections have been impacted by water flowing to the Washington Ave ditch. Drought is just an overall concern for our community that has required the city to impose water restrictions in the

past, and wind has impacted trees in our yard/neighborhood.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Stored water (one gallon a day/person for five (5) days) Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile Received First Aid/CPR Training Stored a battery powered radio, flashlights, and extra batteries Stored non-perishable foods, enough for five (5) days Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	2 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	2 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	8 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

In our neighborhood, no. I do believe there needs to be regular cleanouts of the culverts and drainage ditches/pipes.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

I've seen the impact of flash flooding on the north end of town at the intersection of N. Scenic and N. Florida Ave as well as on Fairgrounds Road. It would be nice to see a project take place on that end of town with the Army Corps of Engineers, similar to the McKinley Channel Project.

The intersection of White Sands Blvd and 10th St. and 3 to 4 blocks north on White Sands Blvd is regularly impacted by heavy rains/flooding.

Are there any hazards that were not listed, that you think should be included in this plan update?

What about extreme heat? That seems like a huge hazard for our community and citizens. Lack of cooling areas, water availability, AC units, blackouts. . .

Also, are you looking at hazardous materials and disasters related to planes and trains? I'm thinking about issues that might arise with the Air Force base, possible plane crashes, as well as the significant train traffic that flows through our community every day, and possible train derailment. Just look at the recent incident near ABQ and the huge impact it had on their community and people trying to travel across our state.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Tuesday, June 25, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Flooding

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Moderate Concern
Flooding	Significant Concern
Wildfire	Some Concern
Wind	Some Concern
Winter Storms	Some Concern

What is your occupation? Merchandiser

Where do you live? Please provide subdivision name or area of the city near your address N Florida Ave

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

2010? The freezing caused water to freeze pipes. My gas was also shut off. So I had no heat or water. At the time I was renting. Now it's flooding in the streets. Where I live.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. Stored medical supplies (first aid kit, prescription

1

	medications, extra glasses) at home, work, and automobile
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	4 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	6 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Future planning that involves what we currently have. Reducing stress off of locations that are difficult to restructure or bring to a higher standard.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

N Florida and Indian Wells. N Florida and Scenic.

Are there any hazards that were not listed, that you think should be included in this plan update?

Power lines. Or power in general. Communication between the different services that provide power and local outlets.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name	Brigette Smith
Email	idgyroo@yahoo.com

Wednesday, June 26, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Flooding
Which hazard is your area LEAST are risk for?	Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Significant Concern
Wind	Significant Concern
Winter Storms	No Concern

What is your occupation?	Retired engineer
Where do you live? Please provide subdivision name or area of the city near your address	Airport Road
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Stored water (one gallon a day/person for five (5) days) Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile

1

	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Government outreach for emergency preparedness such as federal, state, or local websites and social media

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	5 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

2

Wednesday, June 26, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Drought

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Significant Concern
Wind	Significant Concern
Winter Storms	No Concern

What is your occupation? Mechanical technician

Where do you live? Please provide subdivision name or area of the city near your address 1113 Lackland Ave

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Hurricane Wind storm

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. Practices a home evacuation drill at least once a year

1

	Created a family reunification plan
	Stored water (one gallon a day/person for five (5) days)
	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
	Received First Aid/CPR Training
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	5 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	5 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	9 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Improving the drainage ditches on every road in Walker district, Also it would be nice if the roads are usable. There is not one sidewalk to get to the store, there is no room to walk or use a wheelchair to get to the store it's very dangerous people are dying out here just trying to walk to the store, it's pitch black hardly any lighting to walk near death experience every time you have to walk down the road in our part of town.

Are there any hazards that were not listed, that you think should be included in this plan update?

Yup fix our roads and make it safe to be able to walk the roads to go to the store. The roads are trashed and the waterlines are just as bad always broken and low pressure. Also if you call 911 for any type of help expect to be waiting an hour and to be judged as if we're the worst people and to not be treated with respect. It's Sad

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name	Jack Coppola Jr.
Email	kordelcoppola@gmail.com

Wednesday, June 26, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Wind

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Significant Concern
Wildfire	Moderate Concern
Wind	Moderate Concern
Winter Storms	No Concern

What is your occupation? Retired

Where do you live? Please provide subdivision name or area of the city near your address Centennial Village

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

Unknown

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. Purchase flood insurance

1

	Stored water (one gallon a day/person for five (5) days)
	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
	Received First Aid/CPR Training
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
	Installed smoke and carbon monoxide detectors on each floor of your home
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	7 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Cleaning culverts to allow better drainage in case of flood.

Are there any hazards that were not listed, that you think should be included in this plan update?

Power outages and extreme prolonged heat.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Name	Kevin Korn
Email	kevinlkorn@gmail.com

Wednesday, June 26, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Drought
Which hazard is your area LEAST are risk for?	Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Significant Concern
Winter Storms	Some Concern

What is your occupation?	Teacher
Where do you live? Please provide subdivision name or area of the city near your address	Golf course neighborhood
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Have working portable fire extinguishers in appropriate areas of the home Installed smoke and carbon monoxide detectors on each floor of your home

1

Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.

None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)

10 / 10

Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits

5 / 10

Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts

10 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

I don't know how to prevent wind but that would be great

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Thursday, June 27, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for? Flooding

Which hazard is your area LEAST are risk for? Winter Storms

Tell us about your concerns about the following hazards:

Drought	Some Concern
Flooding	Significant Concern
Wildfire	Some Concern
Wind	Moderate Concern
Winter Storms	Some Concern

What is your occupation? Engineer

Where do you live? Please provide subdivision name or area of the city near your address south of the city yards

List historical instances when a weather-related event caused a disruption to you area. List the date, event, and a short description of the event in the space below.

every time it rains, since the city cut the old irrigation reservoir earth dam. Before that, never.

Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply. Stored water (one gallon a day/person for five (5) days)

1

	Stored medical supplies (first aid kit, prescription medications, extra glasses) at home, work, and automobile
	Received First Aid/CPR Training
	Have working portable fire extinguishers in appropriate areas of the home
	Stored a battery powered radio, flashlights, and extra batteries
	Stored non-perishable foods, enough for five (5) days
Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	Personal experience with previous hazard or disaster

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	5 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	6 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	7 / 10

Do you have any suggestions for projects that can be done in your area to prevent weather-related disruptions (i.e. flooding, wildfire, wind, etc) do not happen? (Example: culverts, safe rooms, additional shelters in the area)

Do something to divert the water out of old irrigation reservoir instead of flooding housing.

List areas in your community you are aware of that constantly face issues with bad/inclement weather (Example: flooding, power outages, closed roads, etc.)

flooding, south of city yards, Florida / scenic intersection, fairgrounds road. 10th and white sands intersection.

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Thursday, June 27, 2024

City of Alamogordo, NM Local Hazard Mitigation Plan Update - Community Survey

Survey Overview: The City of Alamogordo is updating its Local Hazard Mitigation Plan (LHMP) and needs your help. Public input and feedback are crucial to building an effective hazard mitigation plan because hazard mitigation is a whole community effort. Everyone has a role in keeping Alamogordo safe! Please take a few moments to fill out this survey to share your thoughts on key disaster issues and tell the City how it can best help your household prepare for a disaster. All survey answers are anonymous and will be used to help the City's disaster management plans. Additional comment/answer space is available at the end of the survey if you need additional space. If you have any questions about the survey or issues using the survey, please contact Emily Long at emily@southerncharmcn.com. Thank you so much for your participation, BOLDplanning and the City of Alamogordo Fire Services greatly appreciate it!

Which hazard is your area MOST are risk for?	Drought
Which hazard is your area LEAST are risk for?	Winter Storms

Tell us about your concerns about the following hazards:

Drought	Significant Concern
Flooding	Some Concern
Wildfire	Moderate Concern
Wind	Moderate Concern
Winter Storms	No Concern

What is your occupation?	Government
Where do you live? Please provide subdivision name or area of the city near your address	Apartments next to NMSUA
Which of of the following steps has your household taken to prepare for weather-related events (i.e. flooding, drought, wind)? Check all that apply.	Received First Aid/CPR Training Have working portable fire extinguishers in appropriate areas of the home Installed smoke and carbon monoxide detectors on each

1

floor of your home

Which of the following sources of information have helped you prepare for weather-related events? Check all that apply.	None of the above

How important do you find the following community-wide actions/activities that may reduce risk of hazards in the City of Alamogordo?

Prevention activities such as administrative or regulatory actions that influence the way land is developed and buildings are built (ex: planning, zoning & building codes)	10 / 10
Property protection actions that modify existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	9 / 10
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's to absorb hazard impacts	9 / 10

For updates on specific concerns in your area and the opportunity to continue assisting with the planning process, please enter your name and email below. We will not share this information, but it will ensure that the City of Alamogordo can contact you.

Public Open Comments Survey

Appendix D – Critical Facilities and Infrastructure

Critical Facilities and Infrastructure for City of Alamogordo

Name	Facility Type	FEMA Community Lifeline
	Correctional Facility	Safety and Security
	Police	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Fire Stations	Safety and Security
	Police	Safety and Security
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Health and Medical
		Health and Medical

Critical Facilities and Infrastructure for City of Alamogordo

Name	Facility Type	FEMA Community Lifeline
	Tourism	Safety and Security Health and Medical
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Tourism	Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
	School	Food, Water, Shelter/Safety and Security
	School	Food, Water, Shelter/Safety and Security
	School	Food, Water, Shelter/Safety and Security
	School	Food, Water, Shelter/Safety and Security
	School	Food, Water, Shelter/Safety and Security
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter

Critical Facilities and Infrastructure for City of Alamogordo

Name	Facility Type	FEMA Community Lifeline
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	School	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
	Senior Center	Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
	Supply Store	Food, Water, Shelter
	Supply Store	Food, Water, Shelter/Safety and Security
	Water/Sewer	Food, Water, Shelter/Safety and Security
		Food, Water, Shelter/Safety and Security
	Water/Sewer	Food, Water, Shelter/Safety and Security
	Water/Sewer	Food, Water, Shelter/Safety and Security
	Water/Sewer	Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter

Critical Facilities and Infrastructure for City of Alamogordo

Name	Facility Type	FEMA Community Lifeline
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter

Critical Facilities and Infrastructure for City of Alamogordo

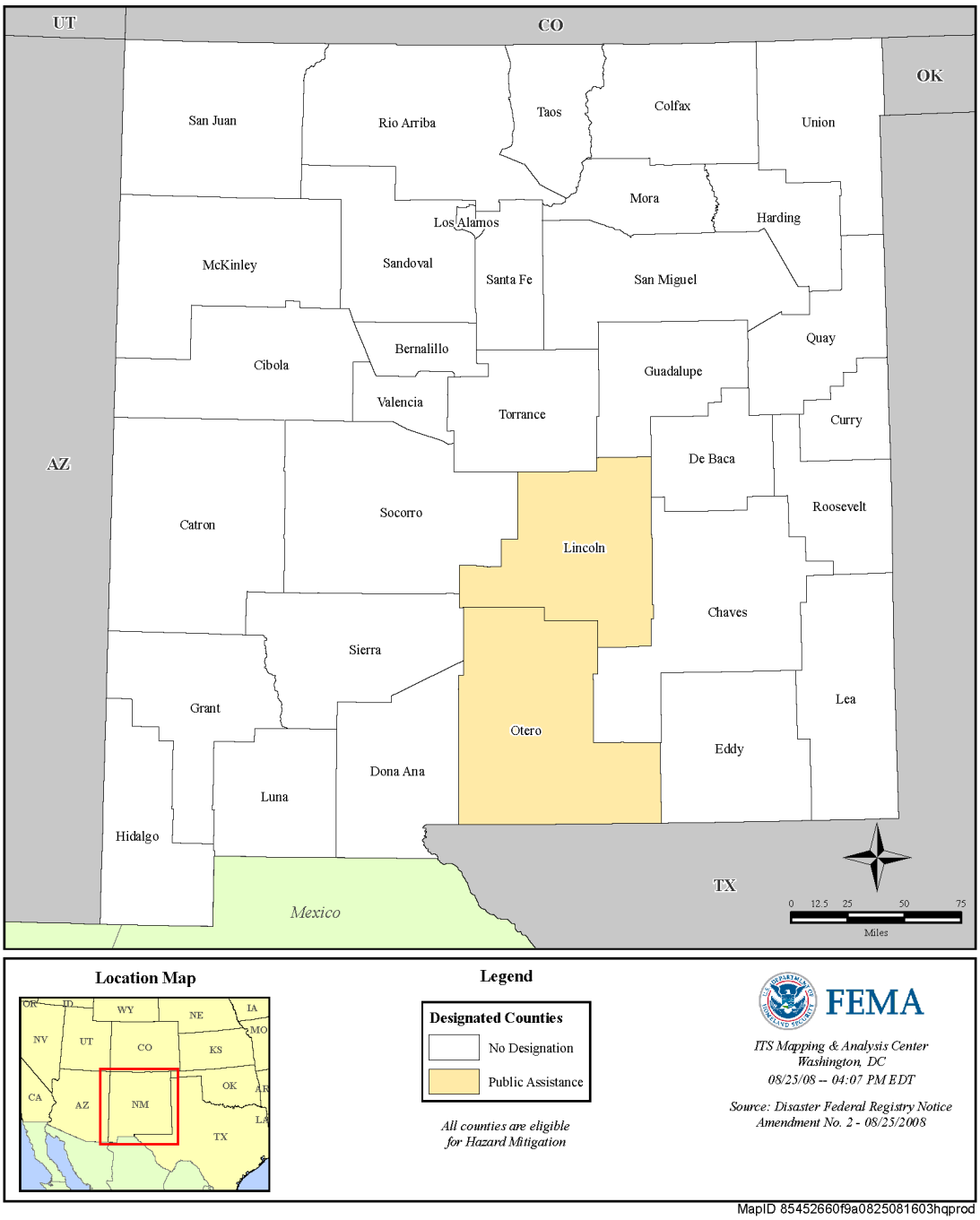
Name	Facility Type	FEMA Community Lifeline
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter
		Food, Water, Shelter

Data Source: *City of Alamogordo, NM*

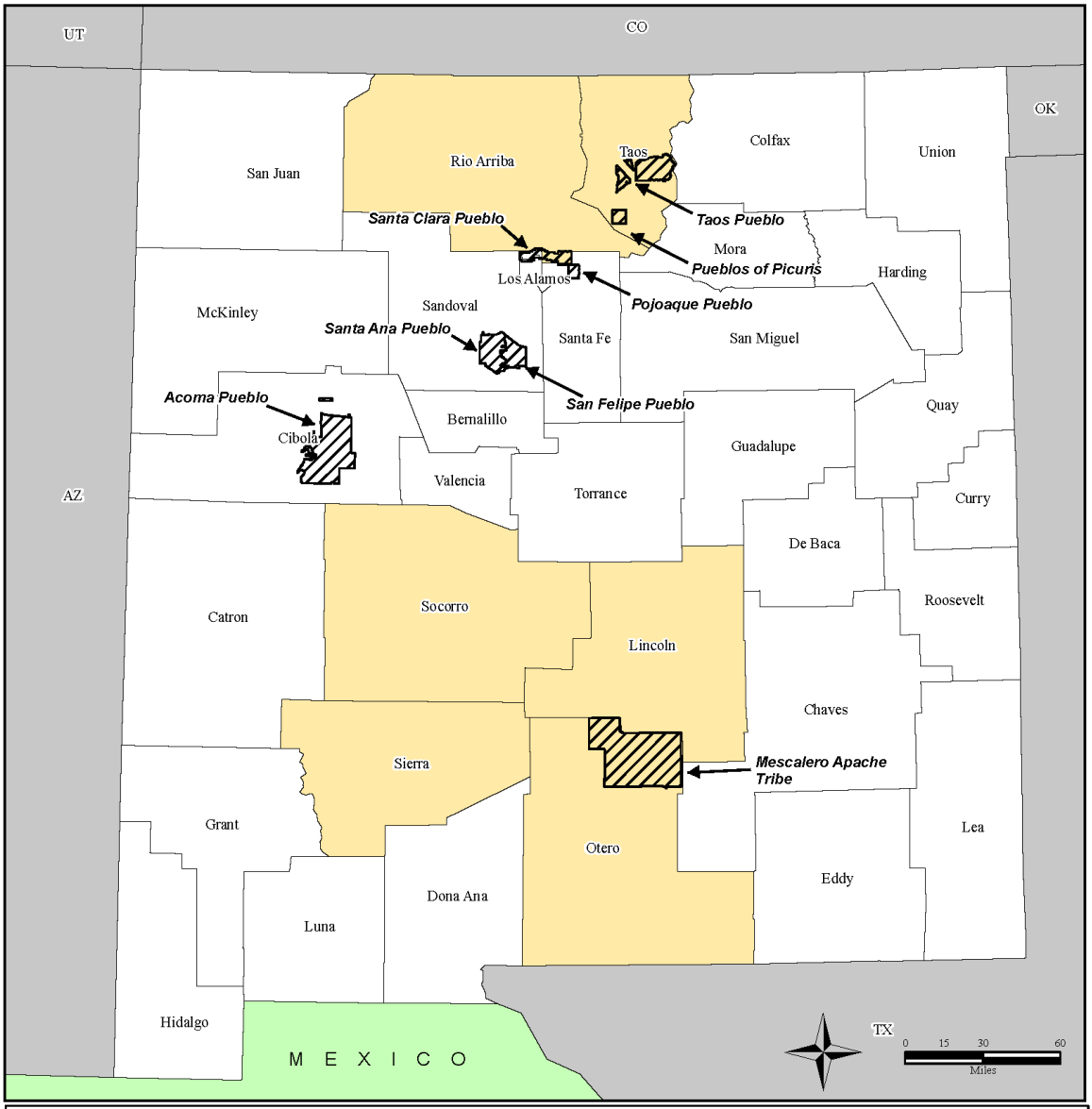
Appendix E – FEMA Maps (Declaration Maps and FEMA FIRM Maps)

Declaration Maps

FEMA-1783-DR, New Mexico
Disaster Declaration as of 08/25/2008



FEMA-1962-DR, New Mexico
Disaster Declaration as of 04/28/2011



Location Map



Legend

Designated Counties

- Public Assistance
- Public Assistance, Reservation

All counties and Indian Tribes in the State of New Mexico are eligible to apply for assistance under the Hazard Mitigation Grant Program.

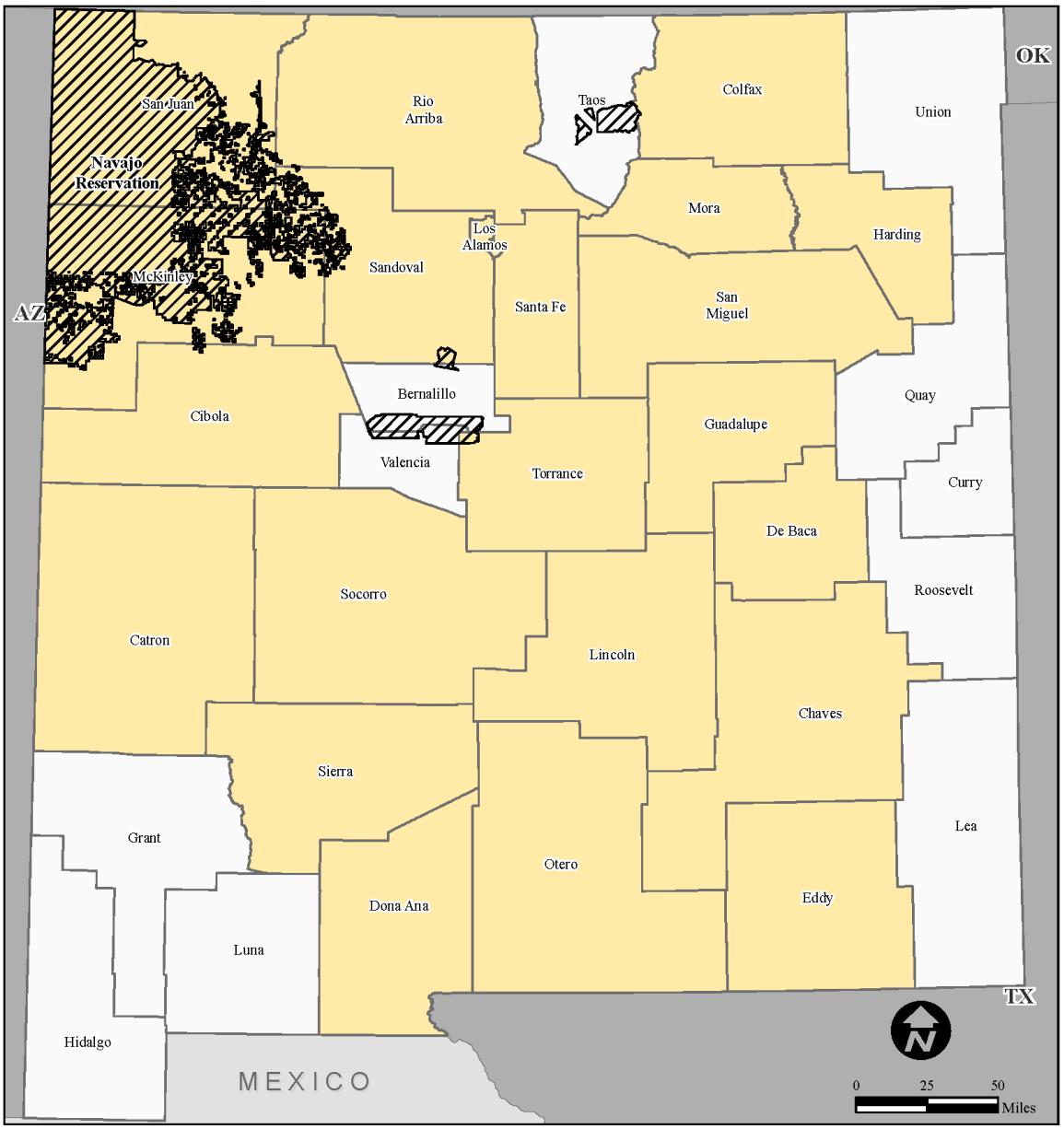
FEMA

ITS Mapping & Analysis Center
Washington, DC
04/28/11 -- 3:49 PM EDT

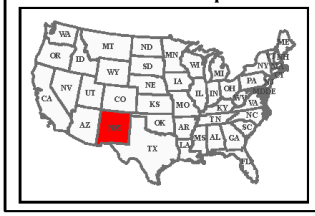
Source: Disaster Federal Registry Notice Ammendment No. 1 - 04/15/2011

MapID daf790903920415111657hqprod

FEMA-4152-DR, New Mexico Disaster Declaration as of 11/27/2013



Location Map



Designated Counties

- No Designation
- Public Assistance
- Indian Reservations

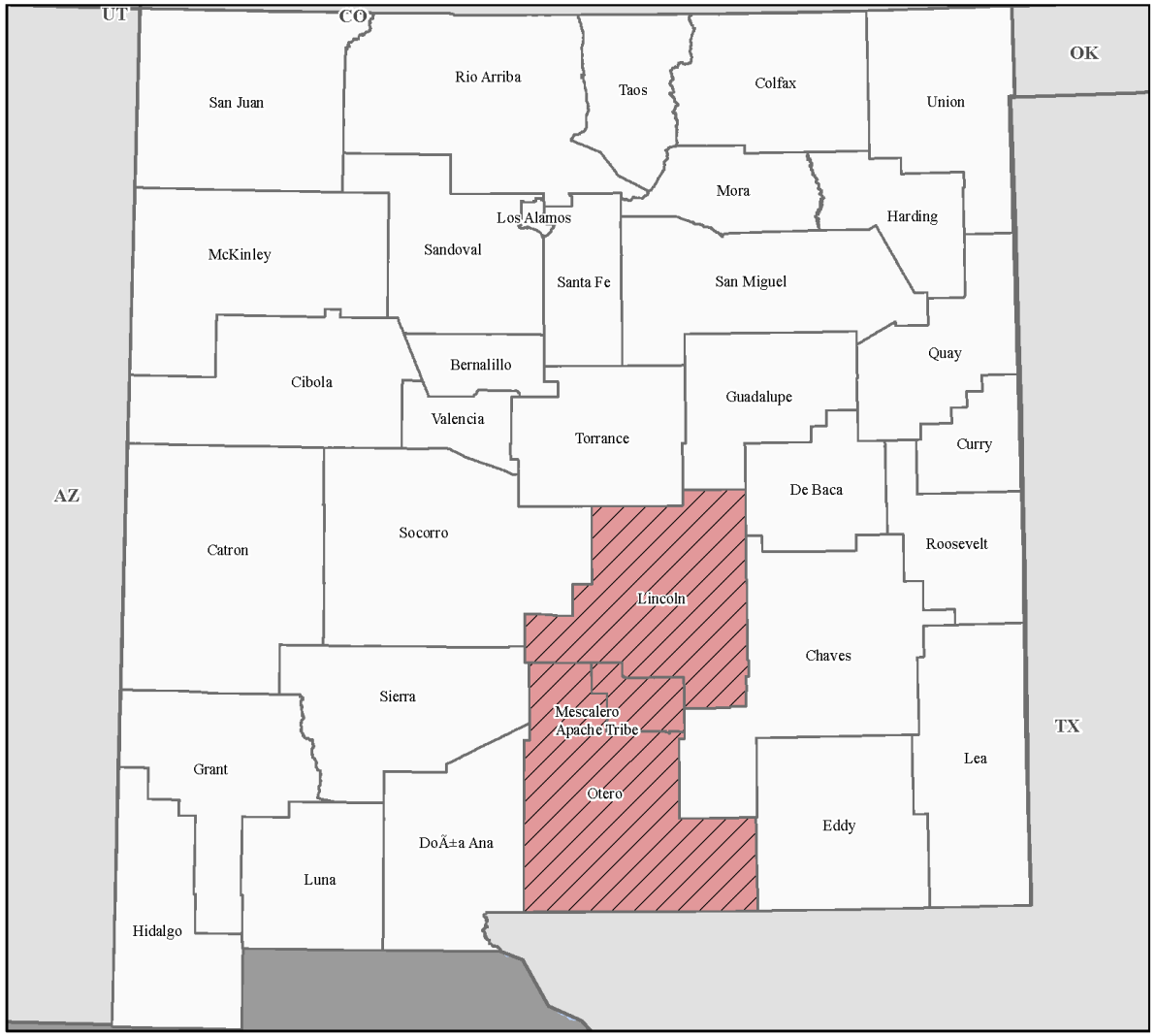
All counties in the State of New Mexico are eligible to apply for assistance under the Hazard Mitigation Grant Program.

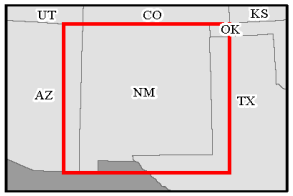
FEMA

MSB-OCIO-AEES
Enterprise Geospatial Information Services (EGIS)
10/29/13 -- 3:48 PM EST
Source: Disaster Federal Registry Notice Amendment No. 1: 11/27/2013

MapID 03964bc05f51127131719hqprod

FEMA-4795-DR, New Mexico Disaster Declaration as of 06/23/2024





Data Layer/Map Description:
The types of assistance that have been designated for selected areas in the State of New Mexico.

All areas in the State of New Mexico are eligible to apply for assistance under the Hazard Mitigation Grant Program.

Designated Counties and Tribal Areas

No Designation

Individual Assistance and Public Assistance (Categories A and B)

N
W
E
S

0 20 40 60 80 Miles

Data Sources:
FEMA, ESRI;
Initial Declaration: 06/20/2024
Disaster Federal Registry Notice:
Amendment #2: 06/23/2024
Datum: North American 1983
Projection: Transverse Mercator

MapID ed69d176a330623241640twhqprod

FEMA Repetitive Loss Information from NM DHSEM

Friday, August 23, 2024 at 09:00:34 Central Daylight Time

Subject: RE: [EXTERNAL] Request for Data: City of Alamogordo, NM LHMP Project - Repetitive Loss Data
Date: Monday, August 12, 2024 at 3:34:11 PM Central Daylight Time
From: Dobrovolny, Heath, DHSEM
To: Ulibarri, Vanessa, DHSEM, Emily Long
CC: Russo, Kristen, DHSEM, Clark, Alexandra, DHSEM, Vanderlaan, Bethaney, Rael, Stella, srenner@cialamogordo.nm.us, llashley@ci.alamogordo.nm.us, jramirez@ci.alamogordo.nm.us, Clarke, Matt
Attachments: image002.png, image003.jpg

Vanessa and Emily,

I've investigated the repetitive loss numbers for the City of Alamogordo and as of 2019 the number is ZERO.

As a general FYI, repetitive loss numbers should only be taken from FEMA PIVOT reports as these are updated daily. The numbers reflected in the 2023 State HMP showing 25, is pulled from FEMA CIS which counts each loss event cumulatively, even if it is not categorized as an NFIP repetitive loss. This is where the disconnect occurs between the two FEMA reporting cites. The "25" number is accurate in that there were 25 losses but of those 25, only 4 were NFIP repetitive losses, which happed 18-19 years ago.

Stella and Matt,

Alamogordo has 4 RL properties with claims from 2005 &'06. All others have been mitigated as of 2011.

Hope this information was helpful.

Thank you,

Heath Dobrovolny
State Floodplain Coordinator
New Mexico Department of Homeland Security and Emergency Management
505-919-8955

From: Ulibarri, Vanessa, DHSEM <vanessa.ulibarri@dhsem.nm.gov>

1 of 3

FEMA FIRM Maps



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301)713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.
ZONE AE — Base Flood Elevations determined.
ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA Boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
*Referenced to the North American Vertical Datum of 1988
A — A — Cross section line
23 — 23 — Transect line
97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
1000-meter Universal Transverse Mercator grid values, zone 13
5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 0939D

FIRM
FLOOD INSURANCE RATE MAP
OTERO COUNTY, NEW MEXICO
AND INCORPORATED AREAS
PANEL 939 OF 3325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	0939	D
OTERO COUNTY	350044	0939	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C0939D
EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

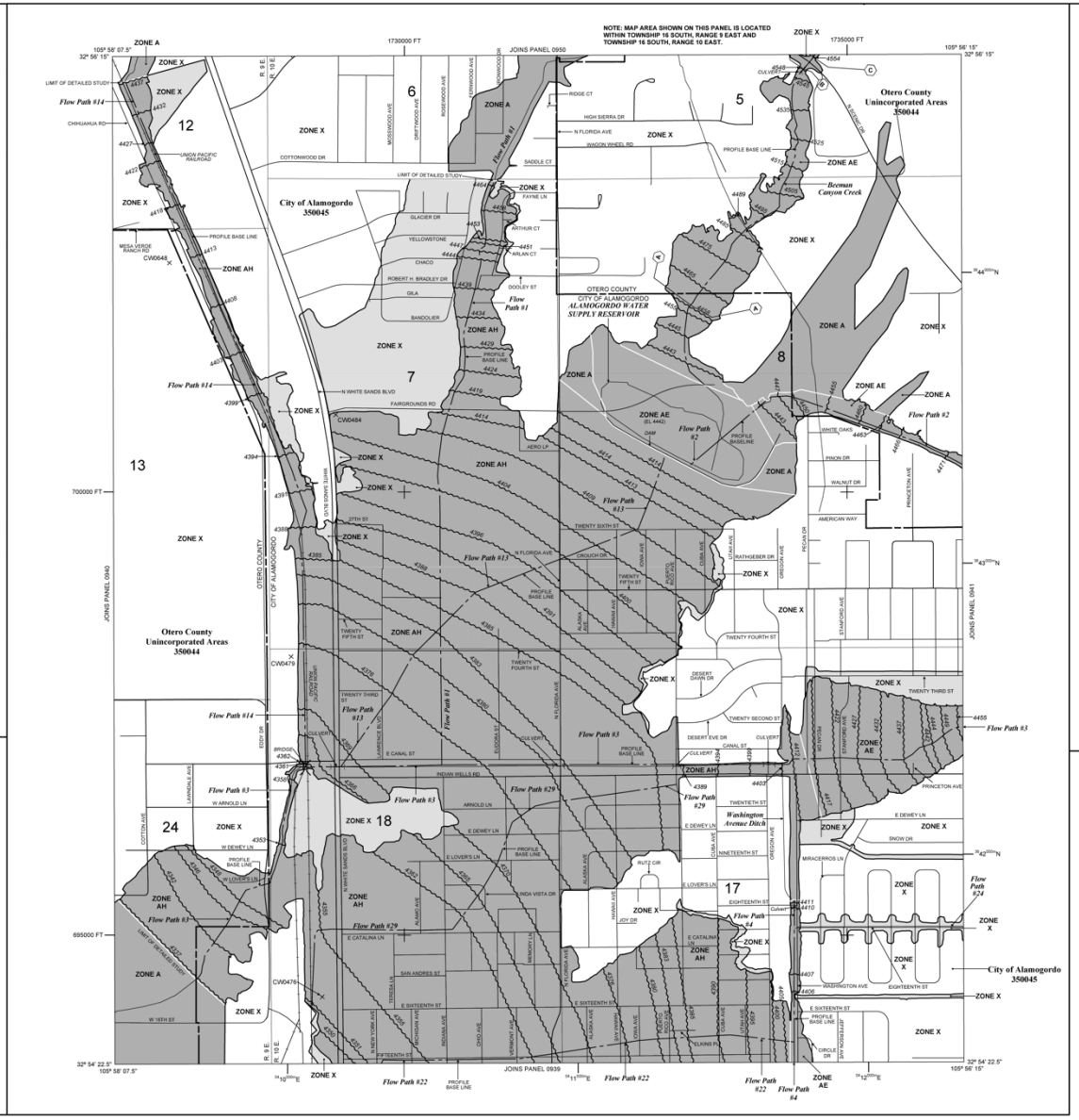
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 FT — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- RM 5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 600'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0937D

FIRM

FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 937 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

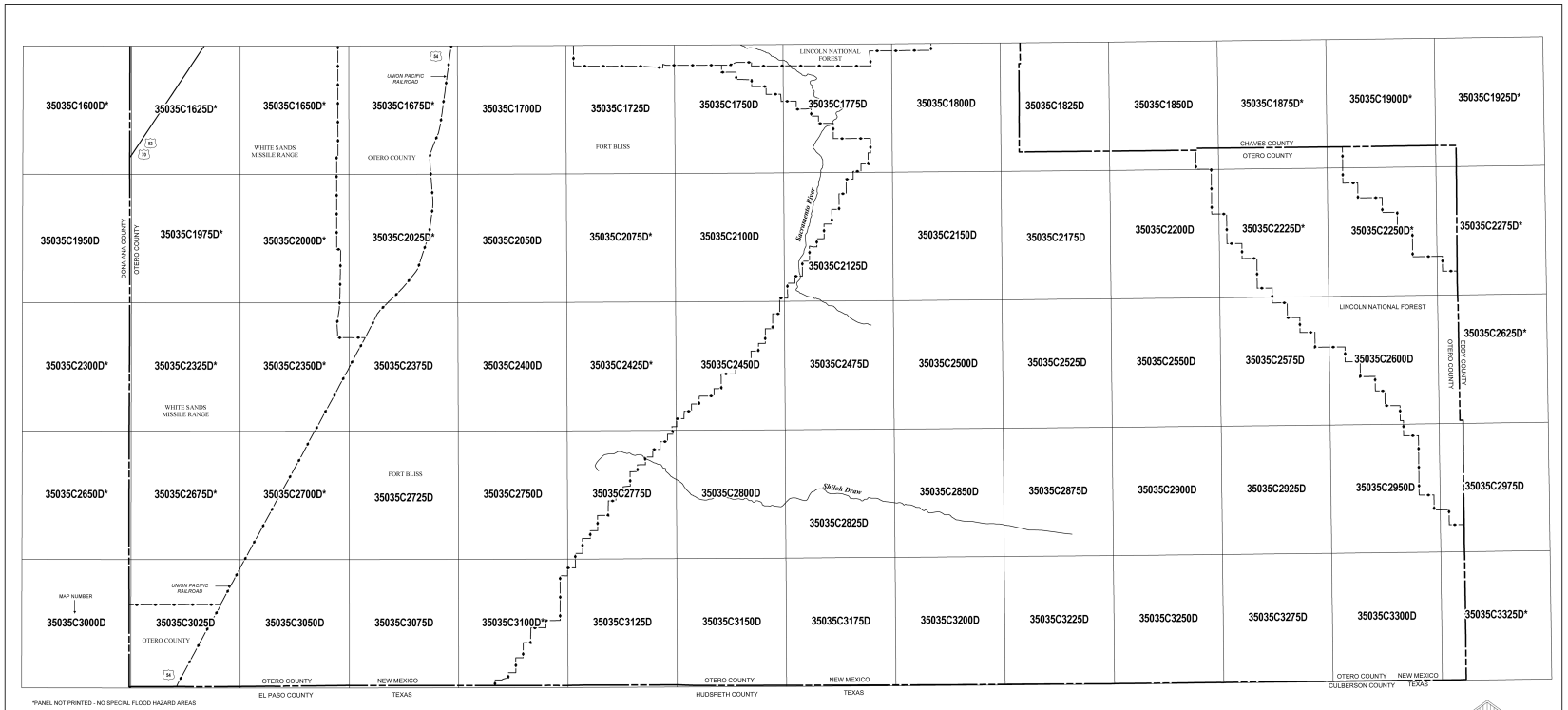
COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	0937	D
OTERO COUNTY	350044	0937	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C0937D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency



MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time that this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website at http://msc.fema.gov or by calling the Map Service Center at 1-800-358-9616.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

MAP REPOSITORIES

(Maps available for reference only, not for distribution.)

ALAMOGORDO, CITY OF:
1376 East Ninth Street
Alamogordo, New Mexico 88310

CLOUDCROFT, VILLAGE OF:
201 Burro Ave.
Cloudcroft, New Mexico 88317

MESCALERO APACHE INDIAN RESERVATION
101 Central Mescalero Avenue
Mescalero, New Mexico 88340

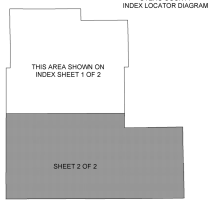
OTERO COUNTY (UNINCORPORATED AREAS):
1000 New York Ave.
Alamogordo, New Mexico 88310

TULAROSA, VILLAGE OF:
705 St. Francis Drive
Tularosa, New Mexico 88352

NOTE TO USER

Future revisions to this FIRM Index will only be issued to communities that are located on FIRM panels being revised. This FIRM Index therefore remains valid for FIRM panels dated DECEMBER 17, 2010 or earlier. Please refer to the "MOST RECENT FIRM PANEL DATE" column in the Listing of Communities table to determine the most recent FIRM index date for each community.

OTERO COUNTY
INDEX LOCATOR DIAGRAM



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM
FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO
AND INCORPORATED AREAS
(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX
SHEET 2 OF 2

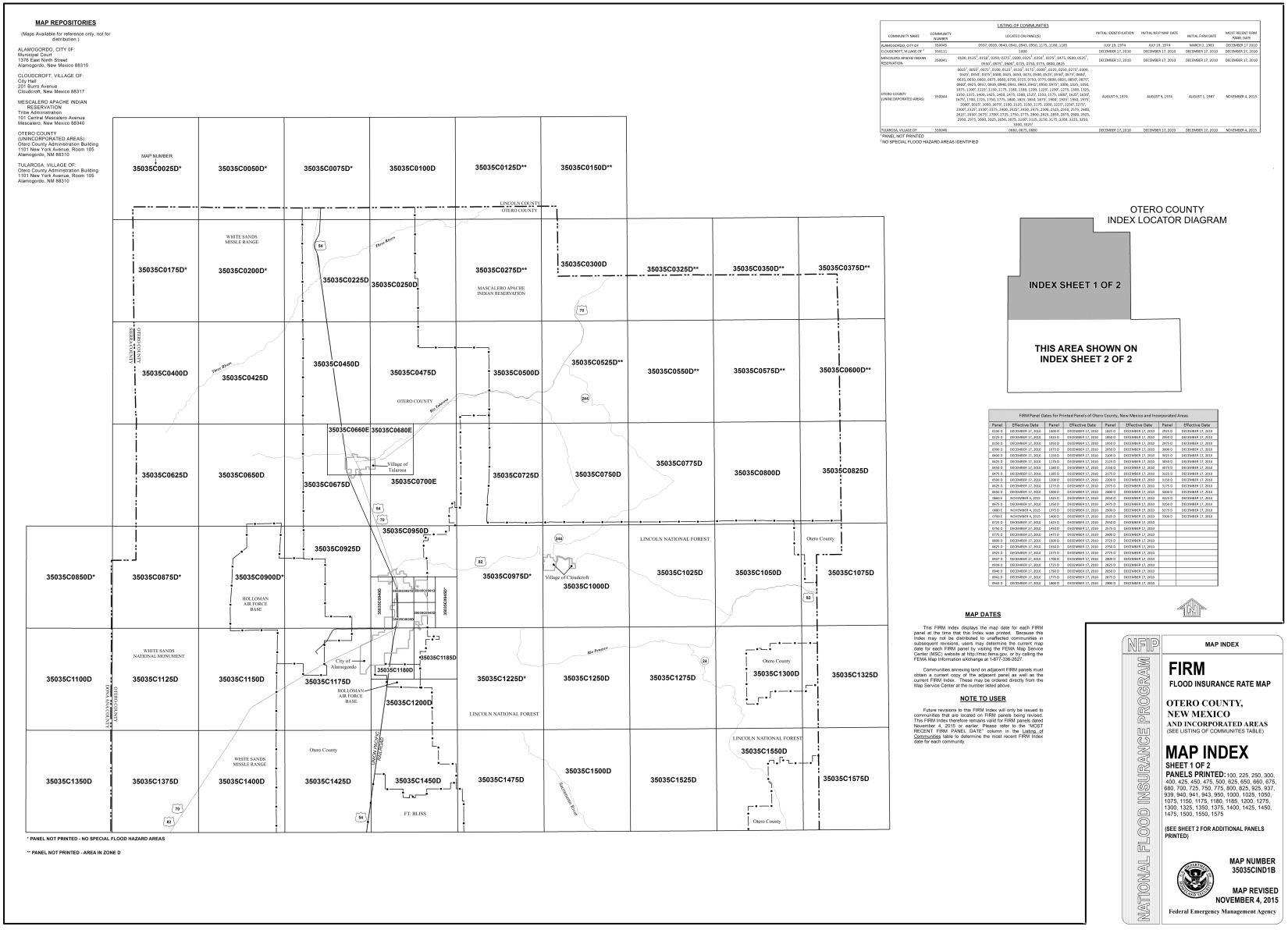
PANELS PRINTED: 1700, 1725, 1750, 1775, 1800, 1825, 1850, 1950, 2050, 2100, 2125, 2150, 2175, 2200, 2375, 2400, 2450, 2475, 2500, 2525, 2550, 2575, 2600, 2725, 2750, 2775, 2800, 2825, 2850, 2875, 2900, 2925, 2950, 2975, 3000, 3025, 3050, 3075, 3125, 3150, 3175, 3200, 3225, 3250, 3275, 3300

(SEE SHEET 1 FOR ADDITIONAL PANELS PRINTED)

MAP NUMBER
35035CIND2A

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency



* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

** PANEL NOT PRINTED - AREA IN ZONE D

LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANEL(S)	INITIAL IDENTIFICATION	INITIAL NFIP MAP DATE	INITIAL FIRM DATE	MOST RECENT FIRM PANEL DATE
ALAMOGORDO, CITY OF	350043	0937, 0939, 0940, 0941, 0945, 0950, 1175, 1186, 1185	JULY 19, 1974	JULY 18, 1974	MARCH 1, 1983	DECEMBER 17, 2010
CLOUDCROFT, VILLAGE OF*	350111	1000	DECEMBER 17, 2010	DECEMBER 17, 2010	DECEMBER 17, 2010	DECEMBER 17, 2010
MESCALERO APACHE INDIAN RESERVATION	350041	0100, 0125*, 0150, 0275*, 0300, 0325*, 0350*, 0375*, 0475, 0500, 0525*, 0550*, 0575*, 0600*, 0625*, 0650, 0660, 0675, 0680, 0700, 0725, 0750, 0775, 0800, 0825, 0850*, 0875*, 0900*, 0925, 0937, 0939, 0940, 0941, 0945, 0947, 0950, 0975*, 1000, 1025, 1050, 1075, 1100*, 1125*, 1150, 1175, 1186, 1185, 1200, 1225*, 1250*, 1275, 1300, 1325, 1350, 1375, 1400, 1425, 1450, 1475*, 1500, 1525, 1550, 1575	DECEMBER 17, 2010	DECEMBER 17, 2010	DECEMBER 17, 2010	DECEMBER 17, 2010
OTERO COUNTY (UNINCORPORATED AREAS)	350044	0025*, 0050*, 0075*, 0100, 0125*, 0150*, 0175*, 0200*, 0225, 0250, 0275*, 0300, 0325*, 0350*, 0375*, 0400, 0425, 0450, 0475, 0500, 0525*, 0550*, 0575*, 0600*, 0625, 0650, 0660, 0675, 0680, 0700, 0725, 0750, 0775, 0800, 0825, 0850*, 0875*, 0900*, 0925, 0937, 0939, 0940, 0941, 0945, 0947, 0950, 0975*, 1000, 1025, 1050, 1075, 1100*, 1125*, 1150, 1175, 1186, 1185, 1200, 1225*, 1250*, 1275, 1300, 1325, 1350, 1375, 1400, 1425, 1450, 1475*, 1500, 1525, 1550, 1575, 1800, 1825, 1850, 1875, 1900*, 1925*, 1950, 1975*, 2000*, 2025*, 2050, 2075*, 2100, 2125, 2150, 2175, 2200, 2225*, 2250*, 2275*, 2400*, 2425*, 2450*, 2475, 2500, 2525*, 2550, 2575, 2600, 2625*, 2650*, 2675*, 2700*, 2725, 2750, 2775, 2800, 2825, 2850, 2875, 2900, 2925, 2950, 2975, 3000, 3025, 3050, 3075, 3100*, 3125, 3150, 3175, 3200, 3225, 3250, 3300, 3325*	AUGUST 5, 1974	AUGUST 5, 1974	AUGUST 1, 1987	NOVEMBER 4, 2015
TULAROSA, VILLAGE OF	350048	0450, 0475, 0650	DECEMBER 17, 2010	DECEMBER 17, 2010	DECEMBER 17, 2010	NOVEMBER 4, 2015

*PANEL NOT PRINTED
*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

OTERO COUNTY
INDEX LOCATOR DIAGRAM

FIRM Panel Dates for Printed Panels of Otero County, New Mexico and Incorporated Areas

Panel	Effective Date	Panel	Effective Date	Panel	Effective Date	Panel	Effective Date
0100 D	DECEMBER 17, 2010	1800 D	DECEMBER 17, 2010	1829 D	DECEMBER 17, 2010	2929 D	DECEMBER 17, 2010
0125 D	DECEMBER 17, 2010	1810 D	DECEMBER 17, 2010	1838 D	DECEMBER 17, 2010	2958 D	DECEMBER 17, 2010
0150 D	DECEMBER 17, 2010	1850 D	DECEMBER 17, 2010	1858 D	DECEMBER 17, 2010	2975 D	DECEMBER 17, 2010
0300 D	DECEMBER 17, 2010	1875 D	DECEMBER 17, 2010	2050 D	DECEMBER 17, 2010	3000 D	DECEMBER 17, 2010
0400 D	DECEMBER 17, 2010	1950 D	DECEMBER 17, 2010	2100 D	DECEMBER 17, 2010	3025 D	DECEMBER 17, 2010
0425 D	DECEMBER 17, 2010	1175 D	DECEMBER 17, 2010	2125 D	DECEMBER 17, 2010	3050 D	DECEMBER 17, 2010
0450 D	DECEMBER 17, 2010	1180 D	DECEMBER 17, 2010	2150 D	DECEMBER 17, 2010	3075 D	DECEMBER 17, 2010
0475 D	DECEMBER 17, 2010	1185 D	DECEMBER 17, 2010	2175 D	DECEMBER 17, 2010	3125 D	DECEMBER 17, 2010
0500 D	DECEMBER 17, 2010	1200 D	DECEMBER 17, 2010	2200 D	DECEMBER 17, 2010	3150 D	DECEMBER 17, 2010
0525 D	DECEMBER 17, 2010	1275 D	DECEMBER 17, 2010	2575 D	DECEMBER 17, 2010	3175 D	DECEMBER 17, 2010
0550 D	DECEMBER 17, 2010	1300 D	DECEMBER 17, 2010	2600 D	DECEMBER 17, 2010	3200 D	DECEMBER 17, 2010
0860 E	NOVEMBER 4, 2015	1325 D	DECEMBER 17, 2010	2650 D	DECEMBER 17, 2010	3225 D	DECEMBER 17, 2010
0675 D	DECEMBER 17, 2010	1350 D	DECEMBER 17, 2010	2675 D	DECEMBER 17, 2010	3250 D	DECEMBER 17, 2010
0680 E	NOVEMBER 4, 2015	1375 D	DECEMBER 17, 2010	2700 D	DECEMBER 17, 2010	3275 D	DECEMBER 17, 2010
0700 F	NOVEMBER 4, 2015	1400 D	DECEMBER 17, 2010	2725 D	DECEMBER 17, 2010	3300 D	DECEMBER 17, 2010
0725 D	DECEMBER 17, 2010	1425 D	DECEMBER 17, 2010	2750 D	DECEMBER 17, 2010		
0750 D	DECEMBER 17, 2010	1450 D	DECEMBER 17, 2010	2575 D	DECEMBER 17, 2010		
0775 D	DECEMBER 17, 2010	1475 D	DECEMBER 17, 2010	2600 D	DECEMBER 17, 2010		
0800 D	DECEMBER 17, 2010	1500 D	DECEMBER 17, 2010	2725 D	DECEMBER 17, 2010		
0825 D	DECEMBER 17, 2010	1550 D	DECEMBER 17, 2010	2750 D	DECEMBER 17, 2010		
0925 D	DECEMBER 17, 2010	1575 D	DECEMBER 17, 2010	2775 D	DECEMBER 17, 2010		
0937 D	DECEMBER 17, 2010	1700 D	DECEMBER 17, 2010	2800 D	DECEMBER 17, 2010		
0939 D	DECEMBER 17, 2010	1725 D	DECEMBER 17, 2010	2825 D	DECEMBER 17, 2010		
0940 D	DECEMBER 17, 2010	1750 D	DECEMBER 17, 2010	2850 D	DECEMBER 17, 2010		
0941 D	DECEMBER 17, 2010	1775 D	DECEMBER 17, 2010	2875 D	DECEMBER 17, 2010		
0943 D	DECEMBER 17, 2010	1800 D	DECEMBER 17, 2010	2900 D	DECEMBER 17, 2010		

MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time that this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center (MSC) website at http://msc.fema.gov, or by calling the FEMA Map Information eXchange at 1-877-336-2627.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

NOTE TO USER

Future revisions to this FIRM Index will only be issued to communities that are located on FIRM panels being revised. This FIRM Index therefore remains valid for FIRM panels dated November 4, 2015 or earlier. Please refer to the "MOST RECENT FIRM PANEL DATE" column in the Listing of Communities table to determine the most recent FIRM Index date for each community.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM
FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO AND INCORPORATED AREAS
(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX
SHEET 1 OF 2
PANELS PRINTED: 100, 225, 250, 300, 400, 425, 450, 475, 500, 625, 650, 660, 675, 680, 700, 725, 750, 775, 800, 825, 925, 937, 939, 940, 941, 943, 950, 1000, 1025, 1050, 1075, 1150, 1175, 1180, 1185, 1200, 1275, 1300, 1325, 1350, 1375, 1400, 1425, 1450, 1475, 1500, 1550, 1575

(SEE SHEET 2 FOR ADDITIONAL PANELS PRINTED)

MAP NUMBER
35035CIND1B

MAP REVISED
NOVEMBER 4, 2015

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

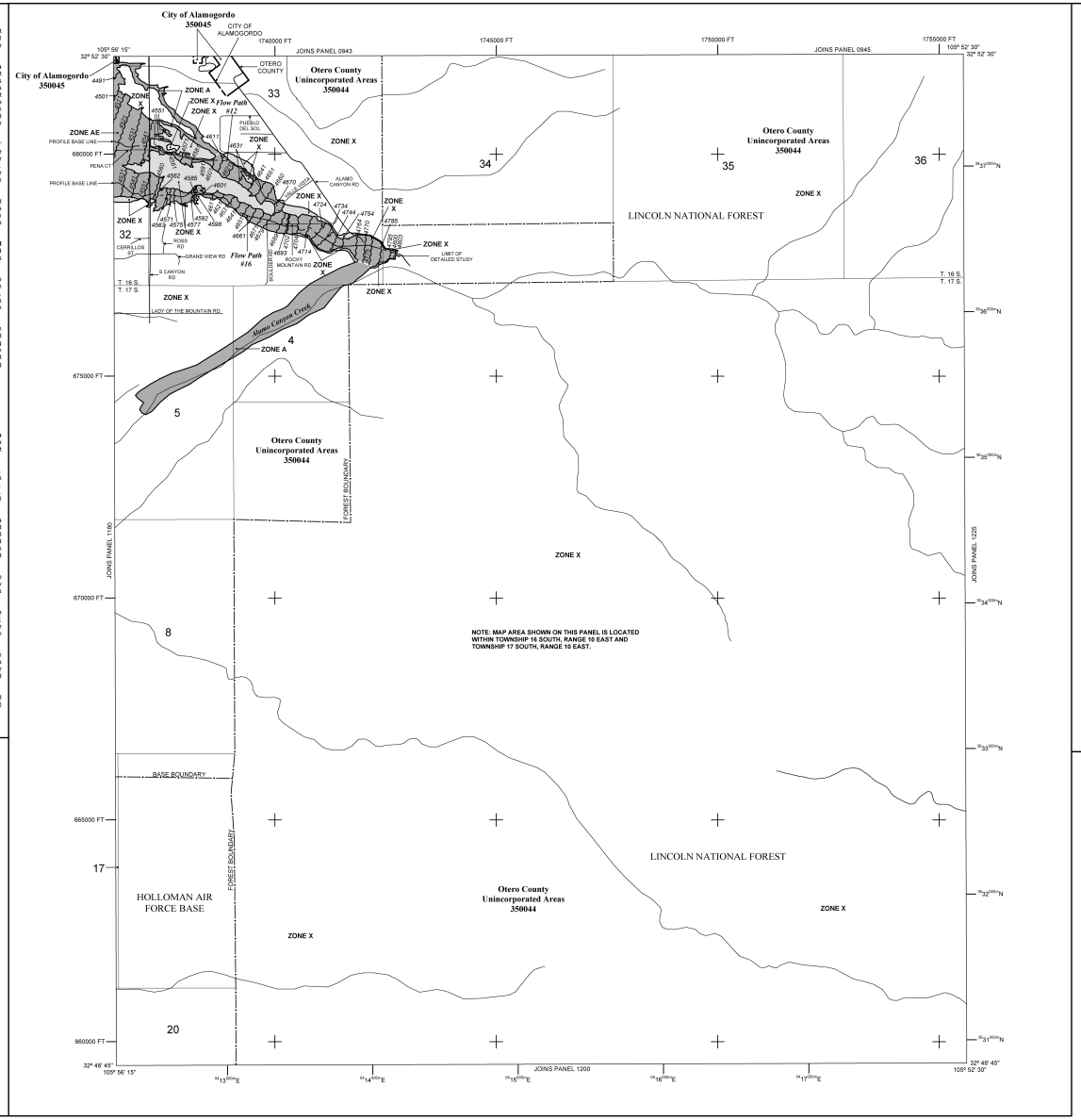
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood, also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 FT — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- RM5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1185D

FIRM

FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 1185 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	1185	D
OTERO COUNTY	350044	1185	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C1185D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

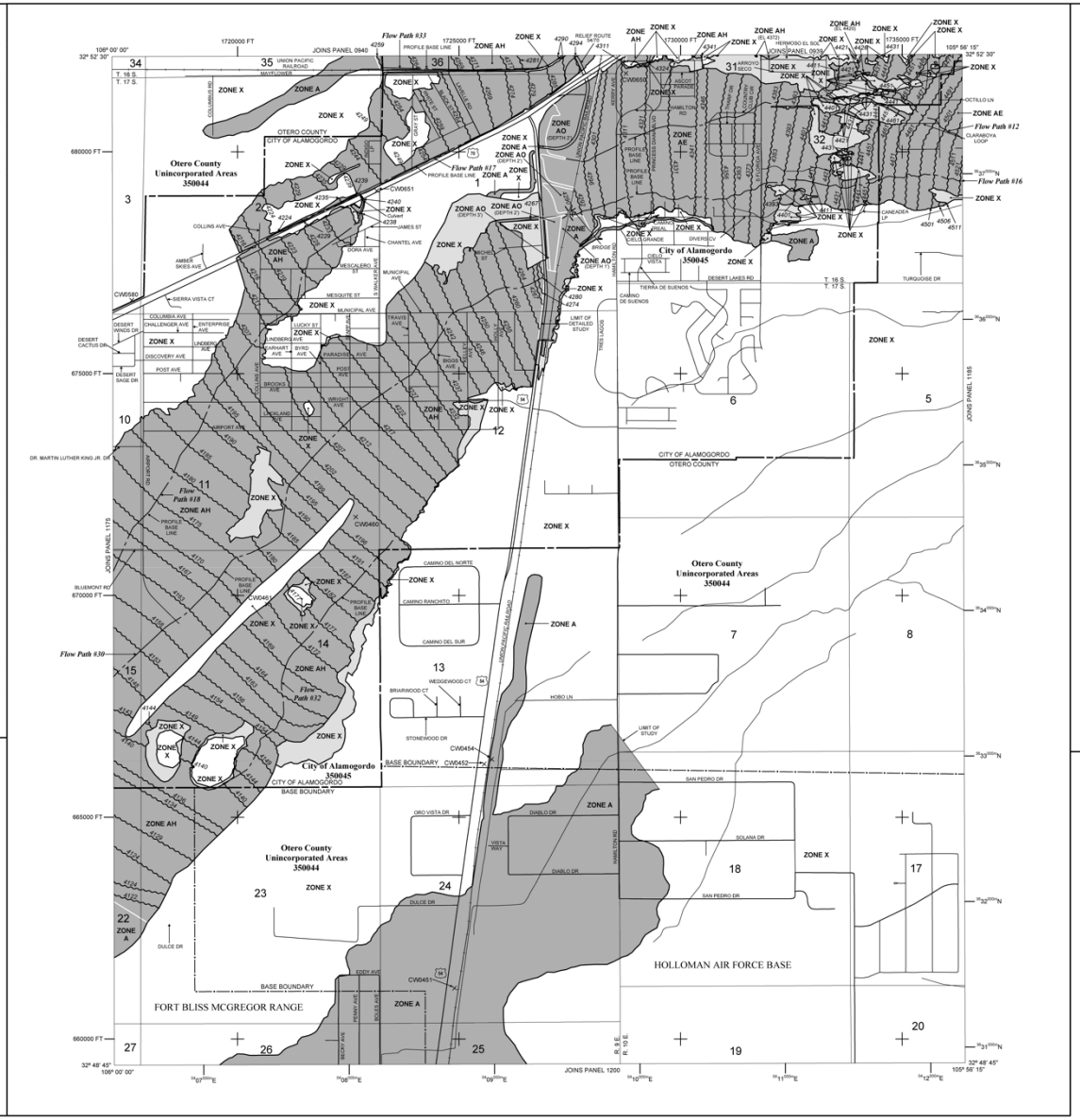
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 601) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 13
- 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1180D

FIRM
FLOOD INSURANCE RATE MAP
OTERO COUNTY, NEW MEXICO AND INCORPORATED AREAS
PANEL 1180 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	1180	D
OTERO COUNTY	350044	1180	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C1180D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

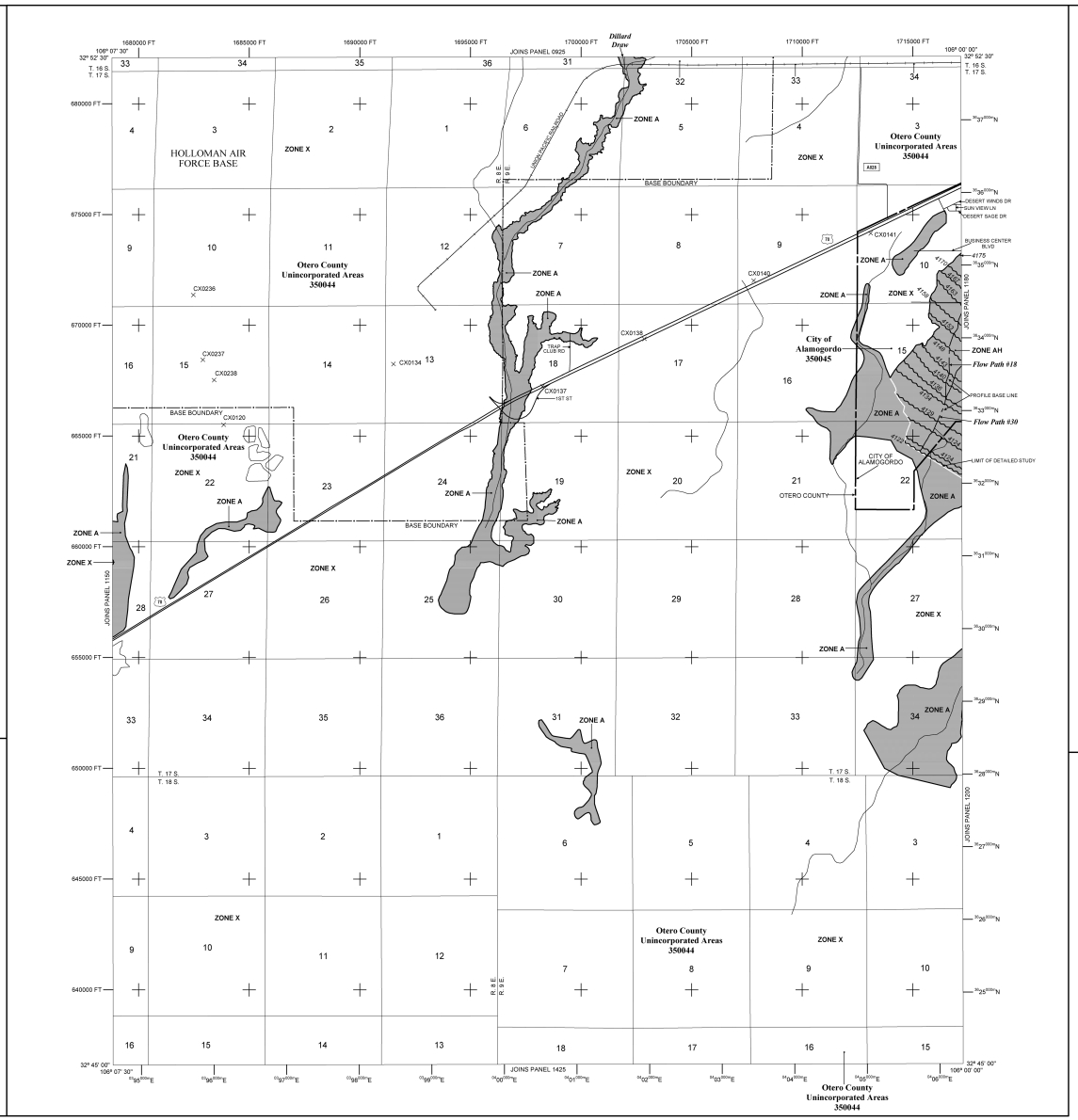
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000 FT — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- RIVER MILE — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
500 0 500 1000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1175D

FIRM
FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 1175 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350046	1175	D
OTERO COUNTY	350044	1175	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C1175D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

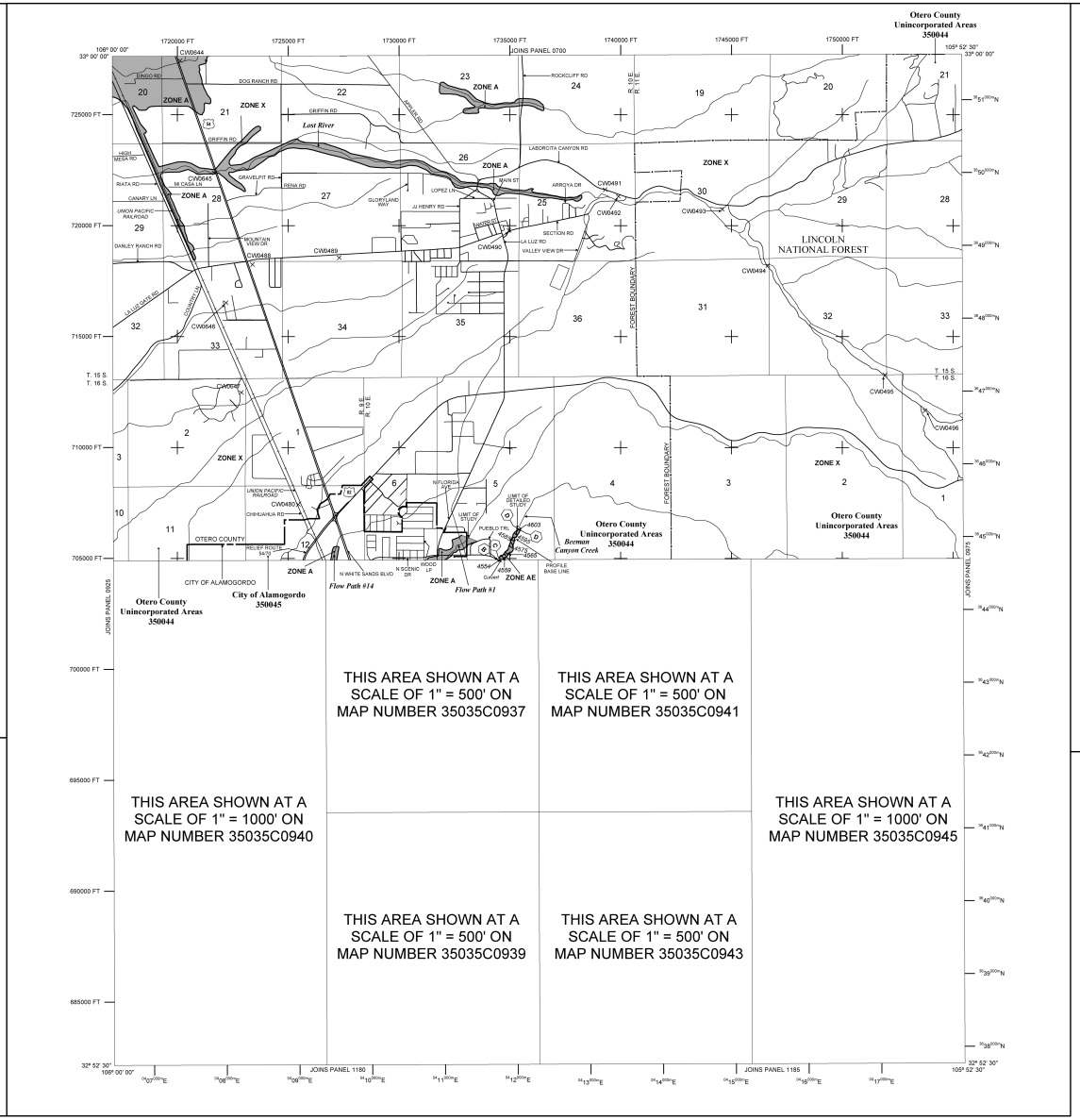
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood, also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — — — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000mE — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPS0ZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- MLS — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET
300 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0950D

FIRM

FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 950 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	0950	D
OTERO COUNTY	350044	0950	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 35035C0950D

EFFECTIVE DATE DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

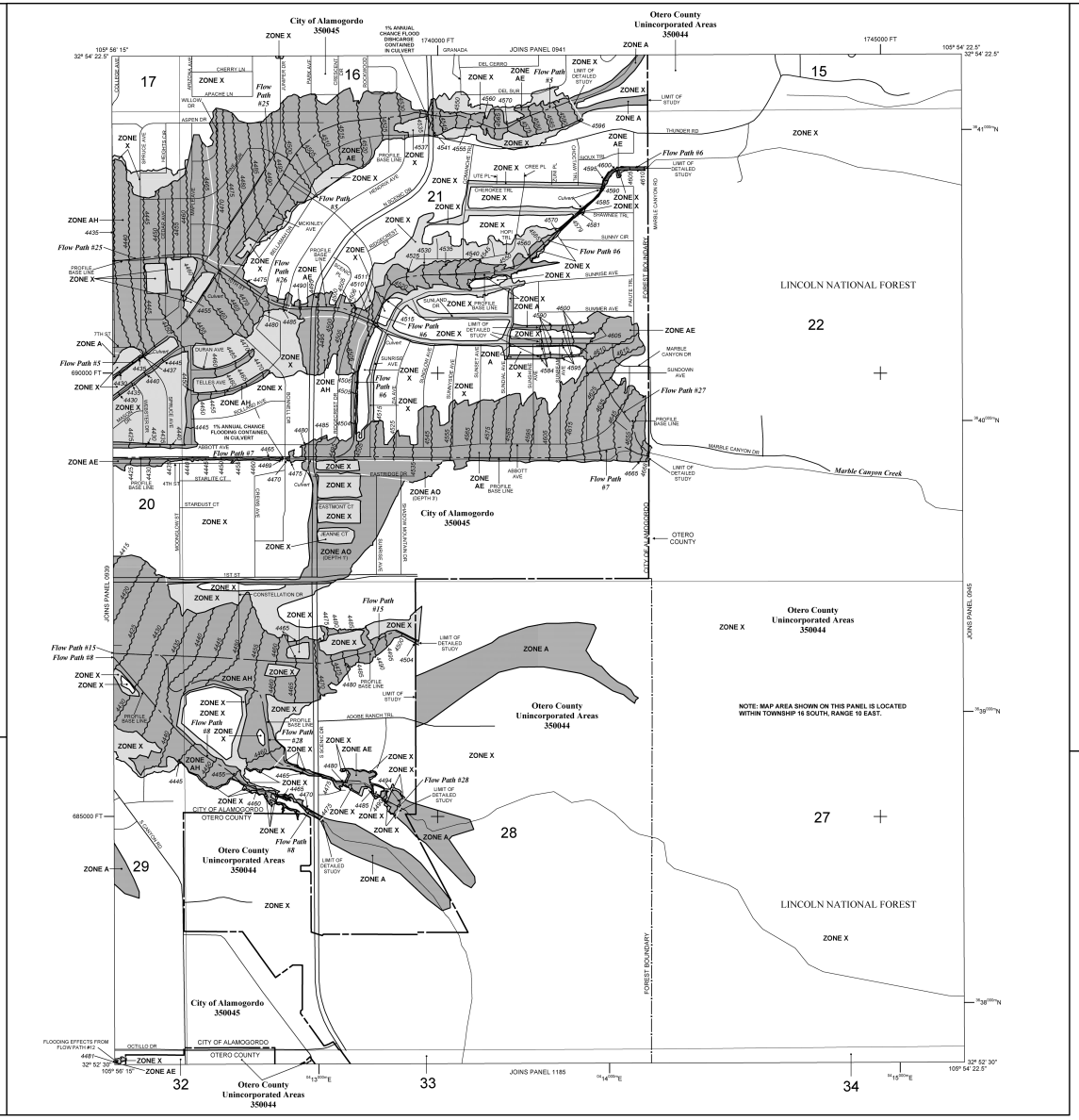
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood, also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A Cross section line
- 23 — 23 Transect line
- 97° 07' 30", 32° 22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000mN 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- RM5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 600'

250 0 500 1000 FEET
100 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0943D

FIRM

FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 943 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350048	0943	D
OTERO COUNTY	350044	0943	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C0943D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane Central Zone (FIPS 3002). The **horizontal datum** was GCS North American Datum of 1983 using the GRS_1980 spheroid. Differences in datum, spheroid, projection or FIPS zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by the Otero County Assessor's Office, the United States Geological Survey, and United States Census Bureau. This information was compiled from orthophotography and field reconnaissance. Additional information was compiled at scales of 1:6,000 and 1:12,000 from aerial photography and the 7.5 minute quadrangles dated 2006.

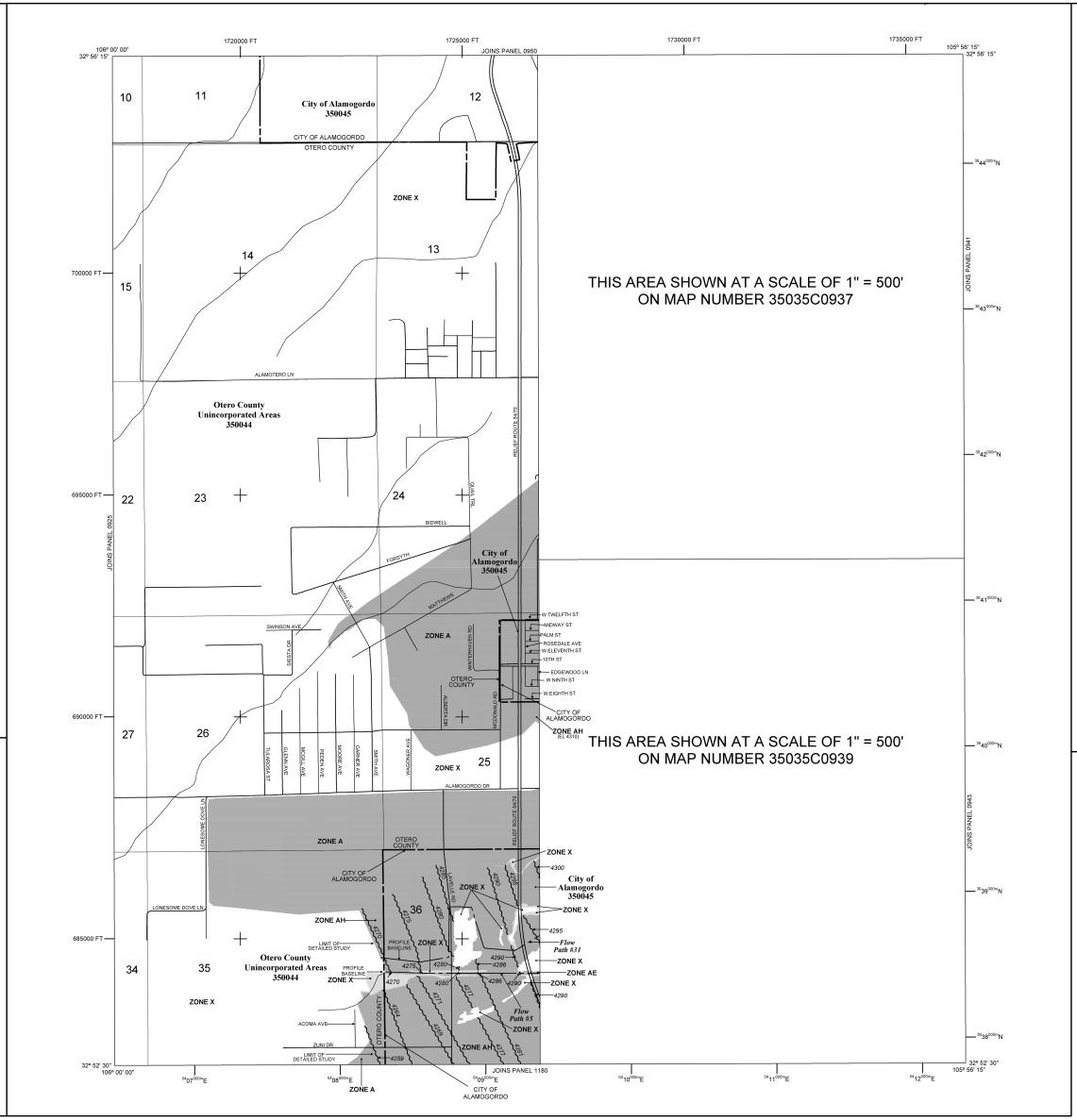
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood, also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000mE — 1000-meter Universal Transverse Mercator grid values, zone 13
- 6000000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central Zone (FIPSZONE 3002), Transverse Mercator Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- MLS — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL
DECEMBER 17, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0940D

FIRM

FLOOD INSURANCE RATE MAP

OTERO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 940 OF 3325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALAMOGORDO, CITY OF	350045	0940	D
OTERO COUNTY	350044	0940	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35035C0940D

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency

Appendix F – Mitigation Action Prioritization Table

Mitigation Project Prioritization, City of Alamogordo, NM										
Mitigation Project or Activity	**STAPLE+E**	**Effectiveness Multiplier**						**Hazard Total**	**Risk Assessment Number (HRT Value)**	**Priority**
			Droughts	**Flooding**	**Severe Winter Storms**	**Wildfire**	**Wind**			
North Diversion Project	26	1		10				10	10	Medium
Alternate Water Source	24	1	10			10		20	10	Low
City Mountain Spring Water System Update	24	1	10			10		20	10	Low
Design and Implementation of Bonito Lake Water Shed Project.	25	1	10	10		10		30	10	Low
Review Existing Floodplain Regulations	21	0.5		10				10	10	Low
Maintenance and Update Sediment Basin	26	1		10				10	10	Medium
Design and Construction Intersection Improvements	25	1		10				10	10	Low

Mitigation Project Prioritization, City of Alamogordo, NM										
Mitigation Project or Activity	**STAPLE+E**	**Effectiveness Multiplier**						**Hazard Total**	**Risk Assessment Number (HRT Value)**	**Priority**
			Droughts	**Flooding**	**Severe Winter Storms**	**Wildfire**	**Wind**			
Parallel Pipeline Project	25	1	10	10		10		30	10	Low
Create and Implement a Water and Sewer Master Plan	18	0.5	10	10		10		30	10	Low
Upgrade the City of Alamogordo's EOC Technology	23	1	10	10	10	10	15	55	11	Low
Annual Review and Update of City's Local Hazard Mitigation Plan (LHMP)	16.5	0.5	10	10	10	10	15	55	11	Low
Annual Review and Update of the City of Alamogordo Continuity of Operations Plan (COOP)	16.5	0.5	10	10	10	10	15	55	11	Low
Procure additional trucks and tools to respond to wildfires	20	1				10		10	10	Low

Mitigation Project Prioritization, City of Alamogordo, NM										
Mitigation Project or Activity	**STAPLE+E**	**Effectiveness Multiplier**						**Hazard Total**	**Risk Assessment Number (HRT Value)**	**Priority**
			Droughts	**Flooding**	**Severe Winter Storms**	**Wildfire**	**Wind**			
Annual Review and Update of the City of Alamogordo Emergency Operations Plan (EOP)	16.5	0.5	10	10	10	10	15	55	11	Low
Upgrade City's Critical Facilities with Solar Panels for Alternate Energy Source	22	1	10	10	10	10	15	55	11	Low
Construction to Update Fire Station 2	20	1	10	10	10	10	15	55	11	Low
Promote City's Fire Prevention and Public Education Programs	15	0.5				10		10	10	Low
Develop a City Sheltering Plan in coordination with the City Public Schools	16.5	0.5	10	10	10	10	15	55	11	Low

City of ALAMOGORDO

Prepared By:

BOLD planning

Address:
1225 17th Street, Suite 2000/20th Floor
Denver, CO 80202

www.boldplanning.com