McKinley County, NM

Hazard Mitigation Plan 2021

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Two Rivers Emergency Management, LLC is pleased to submit this Hazard Mitigation Plan (the "Deliverable") to the McKinley County Office of Emergency Management (the "Client"). The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of other organizations. This Deliverable was developed with input from, and in collaboration with, the Client. It is subject to the terms of the contract dated April 24, 2019 between Two Rivers Emergency Management, LLC and the Client, and constitutes the entire agreement between them. The Contract includes any and all representations, warranties, indemnifications, and remedies on which the Client may rely. Because of the specialized knowledge of the Client about how this Deliverable is to be used, it should be used only by the Client and its affiliates, in a manner that relies on the Client's discretion and expertise, and only for the purposes contemplated by the Contract. This Deliverable is not to be used in any other manner or relied upon by any other person.

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Glossary

CDBG – Community Development Block Grant Program
CRS – Community Rating System
EAP – Emergency Action Plan
EOC – Emergency Operations Center
FEMA – Federal Emergency Management Agency
FMA – Flood Mitigation Assistance Grant Program
GFD – Gallup Fire Department
GMCS – Gallup-McKinley County Schools
HMA – Hazard Mitigation Assistance
HMGP – Hazard Mitigation Grant Program
HMP – Hazard Mitigation Plan
MCFD – McKinley County Fire Department
MFRI – Mean Fire Return Interval
NADM – North American Drought Monitor
NFHL – National Flood Hazard Layer
NFIP – National Floodplain Insurance Program
NID – National Inventory of Dams
NM DHSEM – New Mexico Department of Homeland Security and Emergency Management
NOAA – National Oceanic and Atmospheric Administration
NWS – National Weather Service
OEM – Office of Emergency Management
PDM – Pre-Disaster Mitigation Grant Program
SFHA – Special Flood Hazard Area
TREM – Two Rivers Emergency Management
USACE – United States Army Corps of Engineers
USCB – United State Census Bureau
USDA – United States Department of Agriculture
USGS – United States Geological Survey
WUI – Wildland Urban Interface

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Section 1 – Plan Development

Plan Purpose

The 2020 McKinley County Hazard Mitigation Plan (HMP) revision is threefold in its purpose. Strictly speaking, the McKinley County Hazard Mitigation Plan provides guidance to substantially and permanently reduce McKinley County and its communities' vulnerability to natural hazards.

This plan revision encompasses the continuation and updating of this original mission by incorporating new GIS technologies, improving its risk assessment methodologies, and recalibrating its mitigation strategies based on an assessment of the previous plan, approved in 2014, and the previous plan's usefulness over the past five years.

Secondly, participation in and the adoption of this plan grants the adopting entity the ability to apply for multiple grant funding programs through the Federal Emergency Management Agency (FEMA).

Additionally, a tertiary purpose of the plan is to promote sound public policy and support other local, regional, and state planning efforts which have the effects of protecting citizens, critical facilities, infrastructure, private property, and the natural environment. The development of this plan revision does so by increasing public awareness and education, collaborating with other planning organizations and governments engaged in planning efforts, serving as a reference and resource for the public, various governments, and other entities.

Table 1.1 – Project Timeline

Project Initiated on 4/24/2019

Phase	Completion Date	Phase Length (Days)
1	8/30/2019	60
2	10/23/2019	120
3	12/22/2019	60
4	2/5/2020	45
5	6/4/2020	120*
	Total =	405*

**Phase 5's length and completion date are dependent on the State of New Mexico and FEMA's review process.*

Plan Organization

The McKinley County Hazard Mitigation Plan was developed and organized within the rules and regulations established under the 44 Code of Federal Regulation 201.6. This plan contains sections detailing the planning process, McKinley County's communities, other participating entities and the planning area, a hazard vulnerability and risk assessment, capabilities assessment, and a mitigation

strategy designed for the purpose of guiding McKinley County and the plan's participants to become more disaster-resilient communities.

Plan Financing

The McKinley County Hazard Mitigation Plan has been financed by McKinley County a FEMA Pre-Disaster Mitigation (PDM) Grant administered through the State of New Mexico's Department of Homeland Security and Emergency Management (NM DHSEM), and matching contributions by NM DHSEM. The federal grant provided 75% of the total plan's cost while McKinley County contributes 25%.

Plan Participation

The McKinley County Hazard Mitigation Plan was developed as the result of an ongoing collaborative effort between the full range of stakeholders in the planning area, local authorities, public school district, municipal jurisdictions, and the State of New Mexico. This effort was led by the McKinley County Office of Emergency Management in coordination with the City of Gallup Office of Emergency Management (represented by the GFD).

Concerns, capabilities, interests and historical data were gathered through interviews with stakeholders from within the communities, along with a number of electronic datasets, and ongoing planning committee work sessions. The public were granted opportunities to provide their input, influence, share knowledge, and be active participants in the plan's development. This was accomplished through a number of public outreach campaigns in the form of an on-site meeting and internet accessible surveys. Any comments, questions, and discussions resulting from these activities were given consideration in the development of this plan.

Approval & Adoption

The McKinley County Hazard Mitigation Plan was submitted for review to the NM DHSEM on April 28th, 2020. Following the state's review, the plan was submitted to the FEMA Region VI office for federal review. FEMA Region VI granted "Approval Pending Adoption" on November 20th, 2020.

This plan has officially been adopted by McKinley County, the City of Gallup, and the Gallup-McKinley County School District.

1.1 – Planning Process

McKinley County's revision process began in July of 2017, when McKinley County was awarded a PDM Grant under FEMA-PDMC-PL-06-NM-2017-06. McKinley County was awarded the grant to begin the process of updating their previously approved hazard mitigation plan. Following the funding commitment, the McKinley County OEM issued a request for proposals and selected Two Rivers Emergency management (TREM) to facilitate the plan's development under a performance contract.

Two planning events were held throughout the planning process. Plan development kicked-off on 29 May 2019. Stakeholders from every municipality, and public-school district in the county and members of the public were invited to attend and participate. Additionally, neighboring EMAs were invited. The meeting was advertised for period of two weeks in advance.

This meeting delivered an understanding of the planning processes and steps required to update, including the organizing of resources, assessment of hazards, devilment of a mitigation plan, and steps to implementing the plan and monitoring its progress. Most jurisdictions in the county actively participated in the process through solicitation, providing input, or participation in meetings. Details and documentation of stakeholder participation can be found in Section 1.2 and Appendix A – Plan Participation.

The second planning event was held electronically due to COVID-19 restrictions. From April 3rd through April 17th, 2020, McKinley County OEM held a draft review and comment period that was open to the public. Advertisements were made on social media accounts and an ad was put out in the Gallup Sun for two weeks. The plan was made available online in PDF format. No members of the public inquired about the plan. The plan draft was also distributed to the plan's primary stakeholders for review.

Throughout the process the public was given opportunities to review plan drafts, ask questions, and provide input on hazards. They were also invited to provide feedback on mitigation project prioritization, hazard identification, and hazard ranking. This was accomplished through their inclusion in the on-site meetings as well as an extensive online outreach campaign that yielded 20 responses. Details and documentation of the public's participation can be found in Section 1.3 and Appendix A – Plan Participation.

The 2020 McKinley County Hazard Mitigation Plan encompasses the following 3 jurisdictions:

McKinley County
City of Gallup
Gallup-McKinley County Schools

1.2 – Stakeholder Engagement

The McKinley County Hazard Mitigation Plan includes the governmental and education entities within McKinley County working together for the development and ongoing maintenance of this plan. The participants are grouped into four categories.

Municipalities
This group consists of representatives from municipal governments within the planning area.

Education Entities
This group consists of representatives from the public-school district serving McKinley County.

Other Stakeholders
This group consists of representatives from the local community, regulatory authorities, emergency services, commercial interests, neighboring OEMs, and other relevant organizations.

The Public
FEMA requires this planning effort to be open to constant input from interested citizens in compliance with the Sunshine Laws. In New Mexico, public meetings must comply with the New Mexico Open Meetings Law, unless established by statutory exemption. Therefore, any individual citizens who wish to be involved in this effort to mitigate future disasters were encourage to attend the on-site meetings and complete the online mitigation survey to solicit relevant comments and concerns to be incorporated into the content of this plan.

Representatives from each group took part in periodic planning meetings, public meetings and events and individual meetings with TREM and McKinley County OEM staff. Their specific involvement included activities such as collection and development of planning information, providing input into the planning process, reviewing draft editions of the plan and providing written documentation demonstrating their commitment to mitigation and intent to adopt the final approved plan. Although the five, neighboring county and tribal OEMs were invited, none participated.

Each participating entity was expected to attend at least one of the on-site meetings, submit required data as requested, participate in the development of general information for the plan as well as their own individual planning information, mitigation strategies and initiatives, participate in a public review process, and submit the plan for formal adoption through their respective governing body. Information was kept on attendance, input and providing requested documentation. In the event an entity did not provide representation to a meeting, individual outreach was conducted to garner their inclusion.

The following table details the plan participants who participated in the hazard mitigation planning process. Although efforts were made to invite neighboring communities, only those listed in the tables below provided input. The New Mexico Department of Homeland Security and Emergency Management was invited to attend the plan's kick-off meeting and was present.

The USACE does not have any high hazard dams in the planning area and as such were not contacted. The Bureau of Indian Affairs operates dams in the southern portion of the county, however, all of them are under the purview of the Pueblo of Zuni. Additionally, if any information was needed it had already been gathered by Two Rivers Emergency Management as they were at the same time developing the Pueblo of Zuni's Tribal Hazard Mitigation Plan. McKinley County OEM reached out individually to the Ramah Land and Irrigation Company to gather documentation and information for the Ramah Dam. IN the cases of the other two high-hazard dams in the planning area, McKinley County OEM already had a pre-existing relationship with the private organizations that operate the dam allowing for the necessary documentation to exist on-hand.

Table 1.2 – Plan Participant Stakeholders

Name	Organization	Position
Susan Mahooty	McKinley County Office of Emergency Management	Emergency Manager (Until 11/2019)
Adam Berry	McKinley County Office of Emergency Management	Emergency Management Coordinator/Manager (As of 11/2019)
Douglas W. Decker	McKinley County	Attorney
Jason Carlisle	McKinley County Fire & EMS	Fire Chief
Lori Parra	McKinley County Community Services Department	Director
Rick Austin	McKinley County Fire & EMS	Deputy Fire Chief
Tim Berry	McKinley County Fire & EMS	EMS Division Chief
Tony Boyd	McKinley County & City of Gallup	Warden – Adult Detention Center
Chuey Morales	City Gallup Fire Department	Deputy Fire Chief
Tim Bond	Gallup-McKinley County Schools	Superintendent
Jacqueline Strain	Gallup-McKinley County Schools	Office Process Manager

Table 1.3 – Other Stakeholders

Name	Organization	Position
Tony Gertz	Two Rivers Emergency Management	Mitigation Planning Manager
Sara Gerlitz	New Mexico Department of Homeland Security and Emergency Management	Mitigation Specialist
Michael Rose	New Mexico Department of Homeland Security and Emergency Management	Regional Emergency Preparedness Specialist
Doug Watchman	Navajo Nation	Emergency Services Liaison
Gerald Henke	Ramah Land and Irrigation Company	Ramah Dam PoC
Paige Connelly	American Red Cross	(Until July/2019)
Cecila Frea	N/A	Self-Advocate
Jim Mames	N/A	Self-Advocate
Rolinda Yazzie	N/A	Self-Advocate
Virginia Howard	N/A	Self-Advocate

1.3 – Public Engagement

The McKinley County OEM provided the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process. The public was notified of open meetings via McKinley County OEM's website, their Facebook page, and a local newspaper. Additionally, advertisements for the online public survey were put our on their website and Facebook page.

Relevant federal, state, local, and tribal governments, private, non-profit, regional organizations, and agencies with the authority to regulate development were invited to provide input and technical expertise through the public notices. They were contacted directly when their expertise was deemed necessary to the success of the plan.

At the public on-site meetings, TREM presented and outlined the mitigation plan update process to the public. During the first planning meeting, TREM presented and outlined the mitigation plan update process and discussed stakeholder and public participation and expectations. In this meeting, the public and other stakeholders were encouraged to ask questions and provide their input. The final draft of this plan was available for public review via a TREM hosted project for the website. Any and all questions asked were answered.

During the first planning meeting members of the public commented and discussed their desire to see more planning and response-oriented emergency management work as it relates to rural, vulnerable populations. However, the public did not make any comments or provide input that was relevant to this mitigation plan during the meeting, in the surveys, or during the draft review period.

Continued Public Involvement

McKinley County is dedicated to involving the public in the continual shaping of its hazard mitigation plan and development of its mitigation projects and activities.

The McKinley County OEM will continue to keep the public informed about its hazard mitigation projects and activities through its website. Additionally, it will work to update its website and eventually provide a "comments/suggestions" option for the public to submit their input.

In the event that this hazard mitigation plan undergoes any major developmental changes over its 5-year life cycle, McKinley County OEM will inform the public of these changes via a publicized and open forum meeting.

Copies of the McKinley County Hazard Mitigation Plan will be available on their website for public distribution.

1.4 – Planning Resources

This plan's content includes and was influenced by numerous documents and technical resources provided by the plan's stakeholders and other relevant entities. The following documents and technical resources were reviewed for applicable information to the development of this plan:

Documentation Resources

Escalante Generating Station Evaporation Pond 5 Dam Emergency Action Plan (EAP) (2018)
The Escalante Pond 5 EAP was reviewed for information as it pertains to potential failure scenarios of the high hazard dam. This information was used in developing the dam failure hazard profile.

Gallup-McKinley County School District Facility Master Plan (2017-2022)
The latest approved update to this plan was reviewed for demographic and community projection information and their planning process.

New Mexico State Hazard Mitigation Plan (2018)
The State of New Mexico's current hazard mitigation plan was reviewed for general guidance in the cases of their comparative statewide risk assessment, their initial selection of at-risk hazards, and local planning technical assistance and development strategy.

McKinley County and Gallup Municipal Codes
Each municipality's local ordinances have been reviewed for provisions relevant to hazard mitigation. This information has been incorporated throughout Section 4 of this plan.

McKinley County Comprehensive Plan (2003)
McKinley County's latest comprehensive plan laid part of the groundwork for this plan's mitigation strategy. It did so by providing insight into planning and development direction of the planning area and its local governments.

McKinley County Hazard Mitigation Plan (2014)
McKinley County is currently covered by a FEMA approved local hazard mitigation plan. The plan was thoroughly reviewed and components have been updated and incorporated throughout.

McGaffey Lake Dam Emergency Action Plan (EAP) (2012)
The McGaffey Lake Dam EAP was reviewed for information as it pertains to potential failure scenarios of the high hazard dam. This information was used in developing the dam failure hazard profile.

Technical Resources

FEMA National Flood Hazard Layer (NFHL)
FEMA's NFHL data was used in mapping floodplain locations and estimating potential flood impacts and loss estimates.

National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC)
Weather data and historical events and their narratives were primary provided by NOAA's NCDC.

North American Drought Monitor (NADM)
Since 1999, the USDA, NOAA, and the National Drought Mitigation Center at the University of Nebraska-Lincoln have partnered to centralize nationwide drought monitor maps, situation reports, drought status, and publish historical data on drought severity. The NADM was the primary source for historical drought data and drought severity assessment used in this plan.

USACE National Inventory of Dams (NID)
The USACE NID is a congressionally authorized database which documents dams in the U.S. and its territories. This database attempts to maintain centralized data for all private and public dams. Information from the NID was used in the development of the Dam Failures hazard profile in this plan.

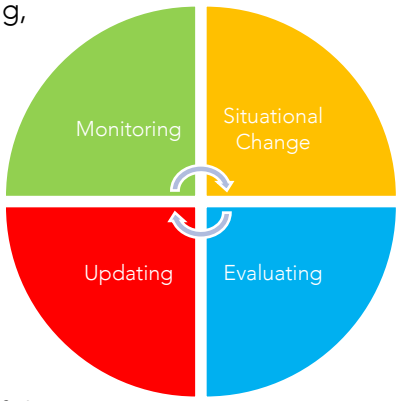
United States Census Bureau (USCB)
The USCB publicly publishes a number of GIS datasets that were used in developing the basemap layers used throughout this plan.

United States Department of Agricultural (USDA) Statistics Service
The USDA provided GIS data that was used in depicting land cover and the agricultural statistics used in developing the planning area's risk to droughts and grass and wildland fires.

United States Geological Survey (USGS) Earth Resources Observation and Science Center – Mean Fire Return Interval (MFRI)
The MFRI is 30-meter grid spatial data product that attempts to predict the average rate of a naturally occurring wildfire. The predicted rate is based on factors of historical land management practices, fire exclusion, ungulate herbivory, insect and disease outbreak, climate change, invasion of non-native plan species, and a multitude of other vegetation conditions. This data was used in wildfire hazard profile in this plan.

1.5 – Plan Maintenance

The McKinley County OEM has developed a method to ensure monitoring, evaluation, and updating of its HMP. Upon adoption of the McKinley County HMP, the McKinley County OEM will form a subcommittee on mitigation projects comprised of volunteer members from this plan's stakeholders. The chair of the subcommittee will be determined by appointment from the McKinley County OEM's Emergency Manager. Additional members may be added based on necessity. The sub-committee will submit an annual report to the director of the McKinley County OEM.



Please see the McKinley County HMP Quarterly Report form at the end of this section.

The McKinley County OEM may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the HMP due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

Plan Monitoring

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 and submitted to the McKinley County OEM's Emergency Manager annually or when triggered by a situation change. The monitoring report will answer 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 McKinley County's capabilities which impact the HMP?
- Are there any changes in McKinley County's hazard risk?
- Has the mitigation action been initiated or its initiation planned?
- If applicable, has participation in a mitigation action's collaboration been regular?
- If any, what plan updates occurred, why they occurred, and what is their impact?

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

Plan Evaluating

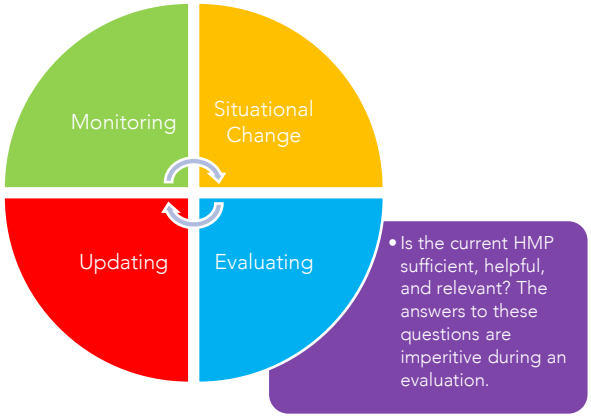
A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making.

An evaluation report will be written and submitted to McKinley Count OEM's Director when the situation dictates. The following situations are typical examples of when an evaluation will be necessary:

- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

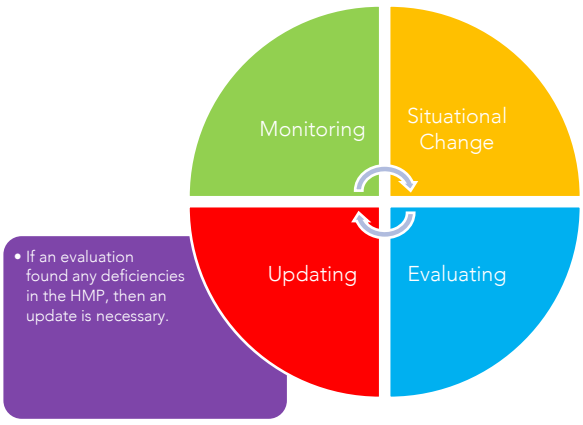
An evaluation report will ask the following questions in response to the previously listed events:

- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Are there coordination problems?



Plan Updating

Typically, a HMP update is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. Additionally, when new hazard data becomes available it will be added to the HMP. New data will be confirmed or denied along with the annual HMP report. For whatever reason, a HMP update can be written anytime it is deemed necessary by the McKinley County OEM.



McKinley County will begin their update process three years from this plan's adoption according to FEMA DMA2000 guidelines on local mitigation plan updates under the direction of the OEM Emergency Manager.

McKinley County Mitigation Planning Committee
McKinley County Hazard Mitigation Plan
Annual Report

Hazard Mitigation Plan Sub Committee Chair:
Meeting Date:
Plan Approval Date:
Plan Expiration Date:

Have there been any disasters or training events 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:

Project Name	Participating Jurisdictions	Proposed/Schedules/In Progress/Completed	Behind/Ahead/ On-Schedule	Estimated Completion Date
Example: Floodproofing	Gallup	In Progress	On-Schedule	1/1/2020

Miscellaneous Notes:

Section 2 – Community Profiles

This section provides a broad perspective, brief history, socio economic, geographical, and development information on McKinley County, Gallup, and the Gallup-McKinley County Public School District. McKinley County, New Mexico was formed in 1901 and is named after then President William McKinley. The county in full occupies a total land area of 5,455.5 square miles.

The U.S. Census Bureau estimates the July 2018 population of the county and Gallup totals 72,290 occupying 26,025 residential housing units. 51.47% of its building stock is considered mid-century construction, 32.48% is considered late century construction, and 16.05% is considered modern construction.

Table 2.1 – Construction Age

Jurisdiction	Mid-Century	Late-Century	Modern
Uni-McKinley County	45.91%	36.56%	17.53%
Gallup	64.25%	23.10%	12.65%
Composite	51.47%	32.48%	16.05%

**The values are derived from data provided by the U.S. Census Bureau.*

The countywide population has only grown by a slim percent since 2010 and the development of their last plan in 2014. Individually, some municipalities have experienced a decline in population while others have experienced an increase. Whether or not this increase in population significantly increases McKinley County or this plan's participating entities is discusses in Section 3 – Risk Assessment.

Table 2.2 – Population Change

Year	Estimated Population	Percent Change from 2010	Percent Change from 2012
2010	71,492	-	-
2012	72,374	1.01%	-
2018	72,290	1.01%	- 0.01%

**The data are from the U.S. Census Bureau*

The county at large contains an estimated $3,959,050,000 worth of municipal structural inventory broken down into six different structural type classes. This inventory includes structures on tribal owned lands; however, those numbers are broken down in following community profiles. The following table shows this breakdown.

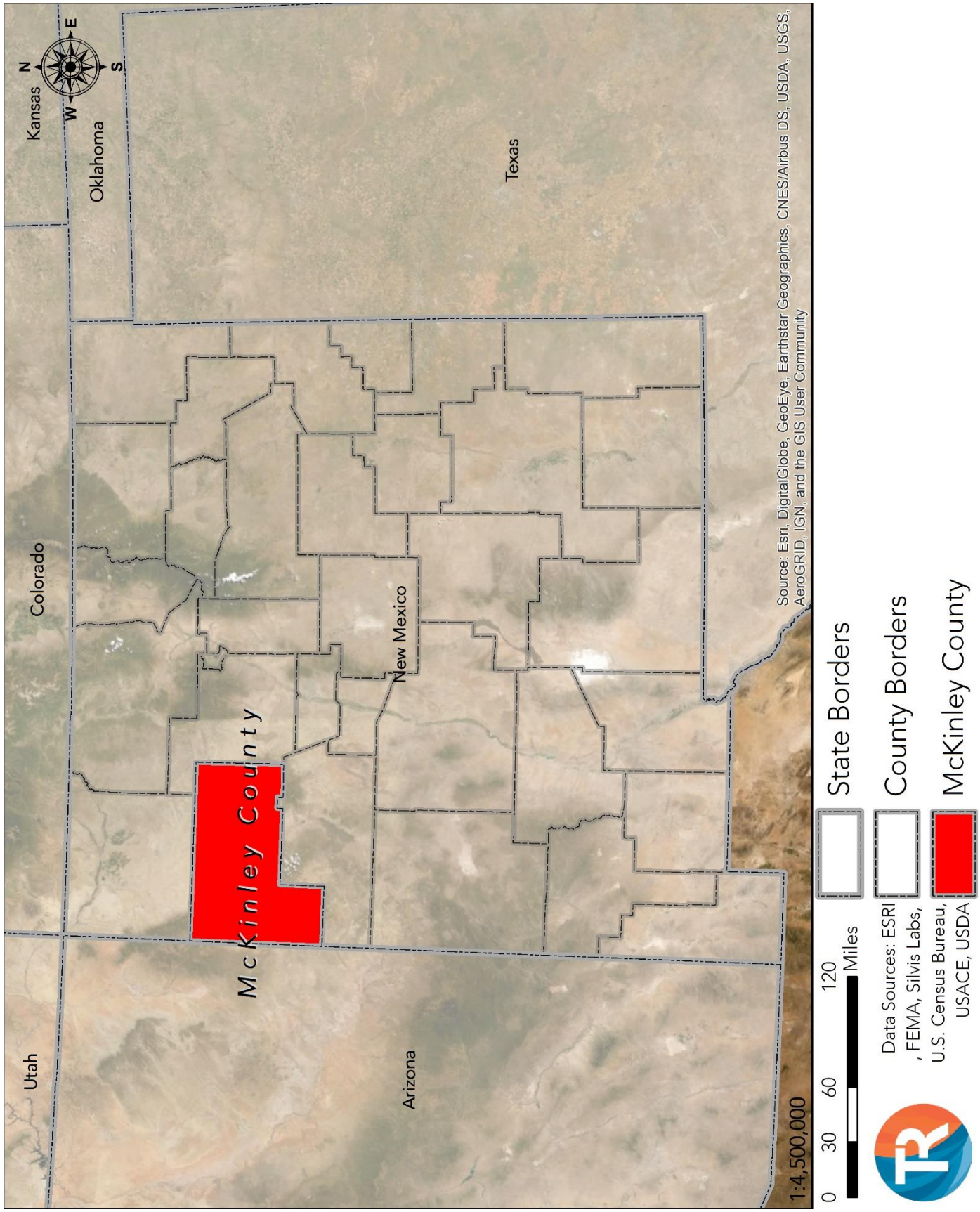
Table 2.3 – Structural Inventory, Countywide

Structure Class	Structures	Total Class Value
Agricultural	13	$3,060,000
Commercial	746	$534,151,000
Government	68	$61,306,000
Industrial	147	$53,767,000
Residential	24,297	$3,068,000,000
Multi-Unit Residential*	158	$238,766,000
Total =	25,429	$3,959,050,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*

***The data are from the Federal Emergency Management Agency*

Map 2.1 – McKinley County



The McKinley County Office of Emergency Management has identified a total of 69 critical facilities throughout the planning area. These faciliites are deemed critical either by the nature in which they maintain basic services or that they house a high density of vulnerable populations. A breakdown by facility type of the 69 critical facilities is listed in the table below and shown in the map on the following page.

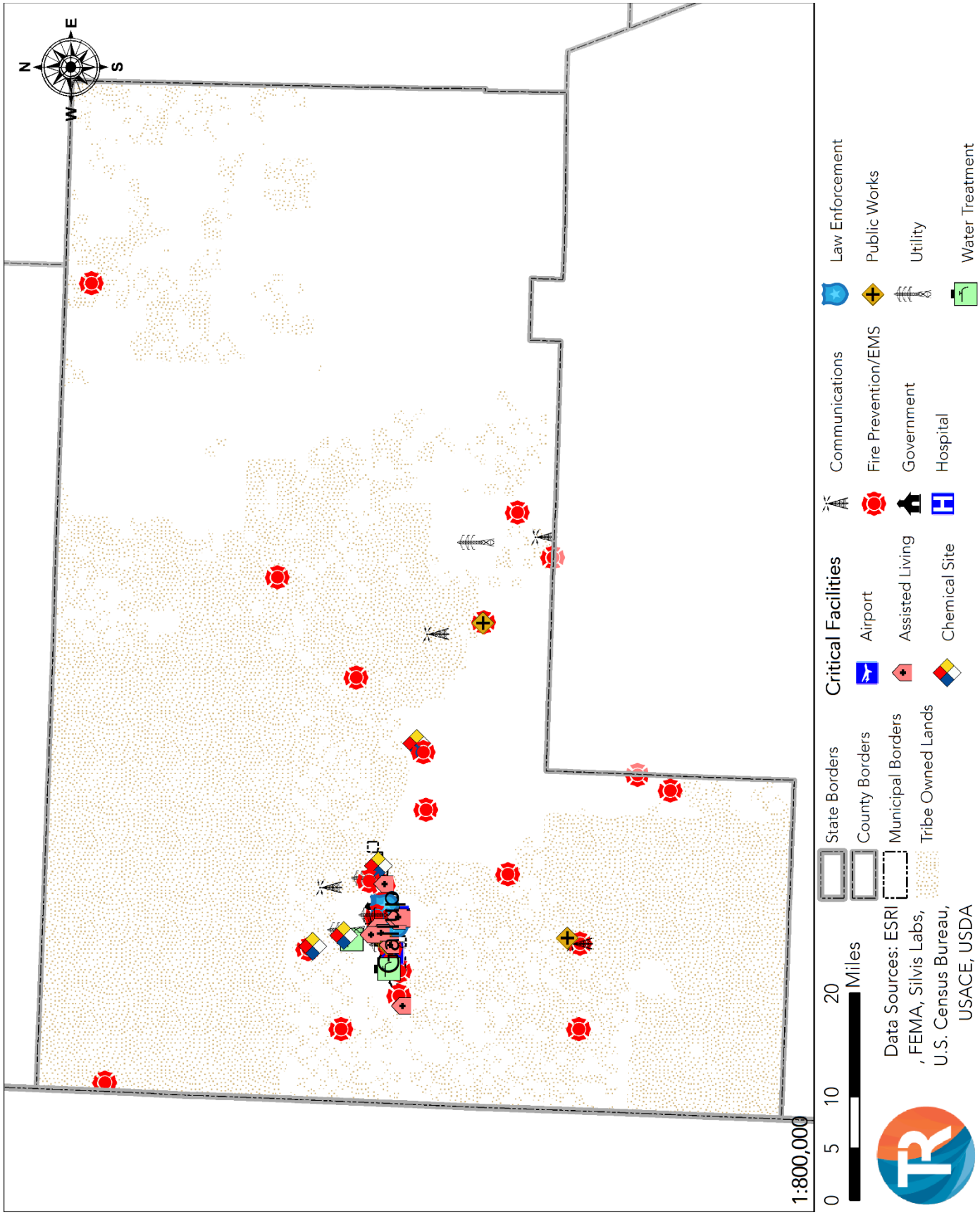
Table 2.4 – Critical Facilities, Planning Area

Facility Type	Critical Facilities
Airport	1
Assisted Living	9
Chemical Site	5
Communications Site	5
Fire Prevention/EMS	26
Government	7
Hospital	2
Law Enforcement	3
Public Works	4
Utility	5
Water Treatment	2
Total =	69

**The data are from McKinley County*

McKinley County and the City of Gallup have not seen any significant population growth or development since the development of their last plan and thus there is no increase in hazard vulnerability or risk due to changes in development. Similarly, the Gallup-McKinley County School District has not expanded in any shape or form since the development of their last plan and thus shows no increase in vulnerability or risk to the natural hazards profiled in this plan due to changes in development.

Map 2.2 – Critical Facilities



2.1 – McKinley County (Unincorporated)

Significant portions of the county at large are owned by the tribal governments of the Pueblo of Zuni and the Navajo Nation. For the purposes of this plan, those tribal governments are excluded as they both have or are developing their own hazard mitigation plans. The reference tables below are for depicting the total structural inventory and housing unit estimates of the unincorporated portions of non-tribal government owned lands. For the purposes of population change, the U.S. Census Bureau does not have up-to-date data on populations living on tribal versus non-tribal portions of the planning area. They do have older estimates available, and those numbers will be used for this plan, but without modern census estimates, we cannot accurately calculate the population changes of the unincorporated, non-tribal owned, people in unincorporated McKinley County. The table below is an estimate of the county as a whole, and included those living on tribal lands.

Table 2.5 – Population Change, McKinley County (Unincorporated)

Year	Estimated Population	Percent Change from 2010	Percent Change from 2014
2010	49,814	-	-
2014	50,348	1.01%	-
2018	50,361	1.01%	0%

**The data are from the U.S. Census Bureau*

The latest Census Bureau estimate places 11,284 people living in the non-tribal unincorporated areas of McKinley County occupying 4,514 housing units.

The unincorporated portions of McKinley County have grown by a slim percentage directly mimicking the countywide population's growth since 2010 and has not grown at all since its participation in the 2014 hazard mitigation plan. Most of the building stock in unincorporated McKinley County are decentralized throughout the rural parts of the planning area. It's building stock consists of 45.91% mid-century, 35.56% late-century, and 17.53% modern construction.

Table 2.6 – Structural Inventory, Total County

Structure Class	Structures	Total Class Value
Agricultural	8	$2,172,000
Commercial	227	$132,938,000
Government	44	$35,519,000
Industrial	46	$18,249,000
Residential	17,443	$2,028,355,000
Multi-Unit Residential*	33	$39,012,000
Total =	17,801	$2,256,245,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*

***The data are from the Federal Emergency Management Agency*

Table 2.7 – Structural Inventory, McKinley County (Unincorporated & Non-Tribal Lands)

Structure Class	Structures	Total Class Value
Agricultural	7	$1,901,000
Commercial	100	$56,800,000
Government	17	$13,000,000
Industrial	29	$11,244,000
Residential	4,275	$513,789,000
Multi-Unit Residential*	16	$14,780,000
Total =	4,444	$611,514,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the Federal Emergency Management Agency*

Of the 69 critical facilities within the planning area, 27 are geographically located with the non-tribal, unincorporated portions of McKinley County. The table below lists these facilities.

Table 2.8 – Critical Facilities by Location, McKinley County (Unincorporated)

Name	Type	Owner
Chemical Storage - Gamerco	Chemical Site	Private
Chemical Storage - Yah-Ta-Hey	Chemical Site	Private
Conoco Natural Gas	Chemical Site	Private
County Roads Dept. - Thoreau	Public Works	County
County Roads Dept. - Vanderwagen	Public Works	County
Gamerco Substation	Utility	Private
Gamerco Water Tower	Water Treatment	Private
Manuelito Navajo Children's Home	Assisted Living	Private
Marathon Refinery	Chemical Site	Private
MCFD & EMS Station 42	Fire Prevention/EMS	County
MCFD & EMS Station 43	Fire Prevention/EMS	County
MCFD & EMS Station 44	Fire Prevention/EMS	County
MCFD & EMS Station 51	Fire Prevention/EMS	County
MCFD & EMS Station 52	Fire Prevention/EMS	County
MCFD & EMS Station 54	Fire Prevention/EMS	County
MCFD & EMS Station 55	Fire Prevention/EMS	County
MCFD & EMS Station 61	Fire Prevention/EMS	County
MCFD & EMS Station 62	Fire Prevention/EMS	County
MCFD & EMS Station 64	Fire Prevention/EMS	County
MCFD & EMS Station 71	Fire Prevention/EMS	County
MCFD & EMS Station 73	Fire Prevention/EMS	County
MCFD & EMS Station 74	Fire Prevention/EMS	County
Prewitt Radio Tower	Communications	County
Transwestern Pipeline Substation	Utility	Private
Tri-State Generating Station	Utility	Private
Vanderwagen Radio Tower	Communications	County

**The data are from the McKinley County & the City of Gallup.*

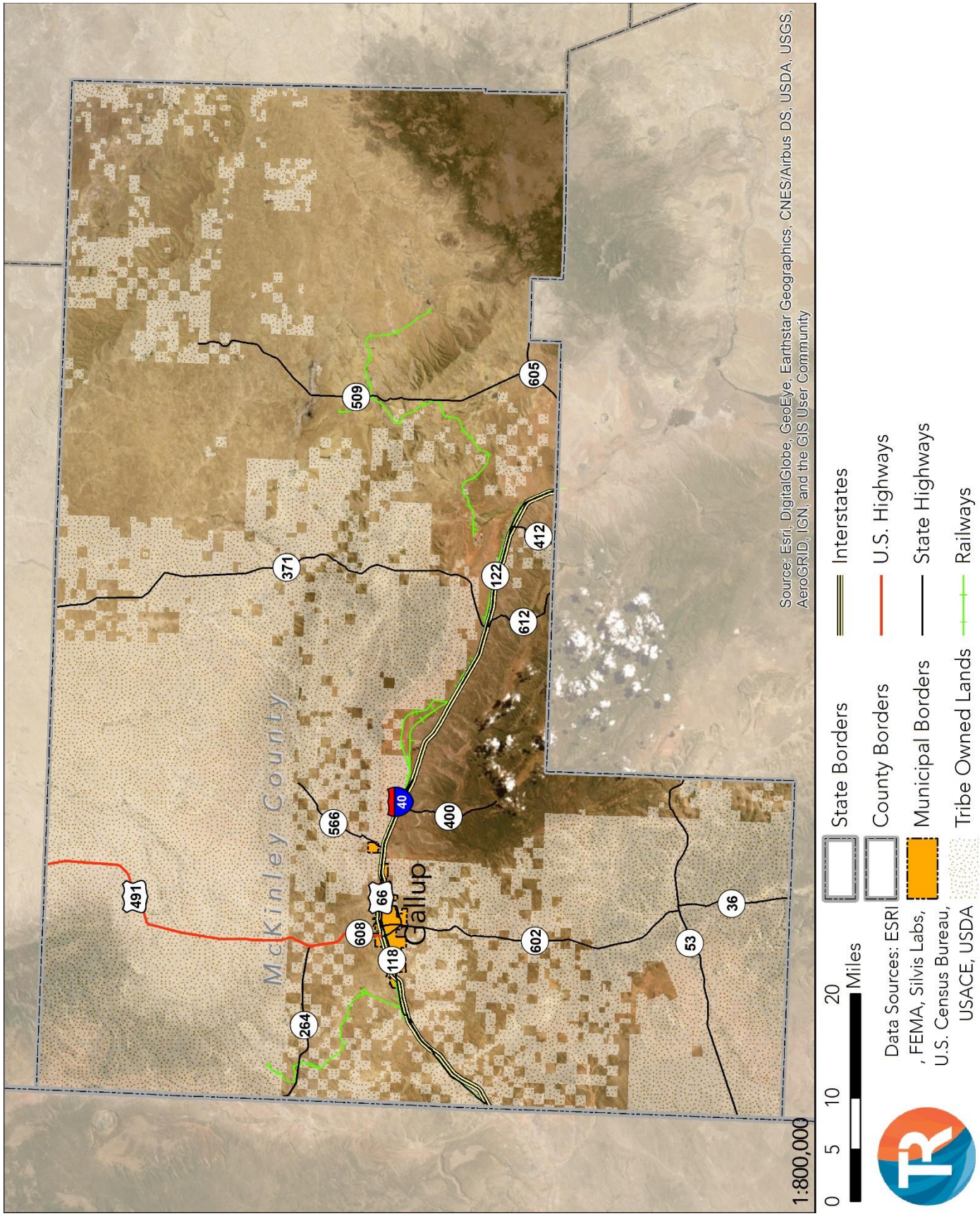
Of the 69 critical facilities within the planning area, 34 are owned and operated by the McKinley County Government. The table below lists all of these facilities and which geographic location they reside.

Table 2.9 – Critical Facilities by Owner, McKinley County (Unincorporated)

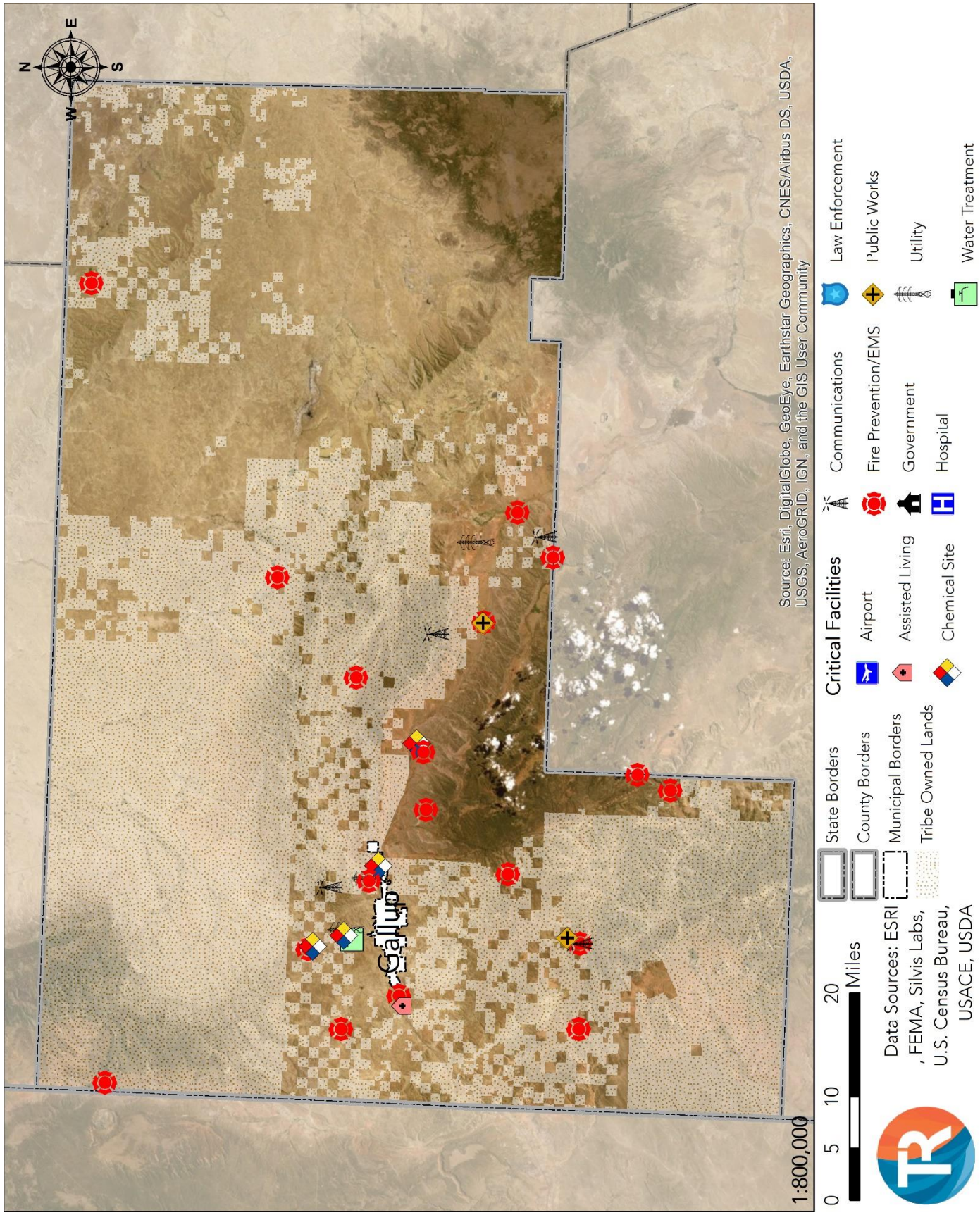
Name	Type	Location
County Adult Detention Center	Law Enforcement	Gallup
County Courthouse	Government	Gallup
County Fire Administration Complex	Fire Prevention/EMS	Gallup
County Metro Dispatch	Government	Gallup
County Roads Dept.	Public Works	Gallup
County Roads Dept. – Thoreau	Public Works	County
County Roads Dept. – Vanderwagen	Public Works	County
Gibson Radio Tower	Communications	Tribal
MCFD & EMS Station 41	Fire Prevention/EMS	Tribal
MCFD & EMS Station 42	Fire Prevention/EMS	County
MCFD & EMS Station 43	Fire Prevention/EMS	County
MCFD & EMS Station 44	Fire Prevention/EMS	County
MCFD & EMS Station 51	Fire Prevention/EMS	County
MCFD & EMS Station 52	Fire Prevention/EMS	County
MCFD & EMS Station 53	Fire Prevention/EMS	Tribal
MCFD & EMS Station 54	Fire Prevention/EMS	County
MCFD & EMS Station 55	Fire Prevention/EMS	County
MCFD & EMS Station 61	Fire Prevention/EMS	County
MCFD & EMS Station 62	Fire Prevention/EMS	County
MCFD & EMS Station 63	Fire Prevention/EMS	Tribal
MCFD & EMS Station 64	Fire Prevention/EMS	County
MCFD & EMS Station 71	Fire Prevention/EMS	County
MCFD & EMS Station 73	Fire Prevention/EMS	County
MCFD & EMS Station 74	Fire Prevention/EMS	County
MCFD & EMS Station 81	Fire Prevention/EMS	Tribal
MCFD & EMS Station 82	Fire Prevention/EMS	Tribal
McKinley County Facilities Management	Government	Gallup
McKinley County OEM	Government	Gallup
McKinley County Public Health Office	Government	Gallup
McKinley County Sheriff's Office	Law Enforcement	Gallup
Powell Radio Tower	Communications	Tribal
Prewitt Radio Tower	Communications	County
Vanderwagen Radio Tower	Communications	County

**The data are from the McKinley County & the City of Gallup.*

Map 2.3 – Community Profile, McKinley County



Map 2.4 – Critical Facilities, McKinley County



2.2 – Gallup

The City of Gallup has grown by a slim percentage mimicking the growth patterns of unincorporated, non-tribal, McKinley County. Its total population has actually decreased by 0.01% since its participation in the planning area's last mitigation plan. Most of the city's growth occurred prior to the 1980s, and has seen little growth since then. As a result, much of its building stock is older with 64.25% being considered mid-century, 23.10% late-century, and only 12.65% modern.

The latest Census Bureau estimate places 21,929 people living in the City of Gallup occupying 8,097 housing units.

Table 2.10 – Population Change

Year	Estimated Population	Percent Change from 2010	Percent Change from 2014
2010	21,678	-	-
2014	22,026	1.02%	-
2018	21,929	1.01%	- 0.01%

**The data are from the U.S. Census Bureau*

Table 2.11 – Structural Inventory, Gallup

Structure Class	Structures	Total Class Value
Agricultural	5	$888,000
Commercial	519	$401,213,000
Government	24	$25,787,000
Industrial	101	$35,518,000
Residential	6,854	$1,039,645,000
Multi-Unit Residential*	125	$199,754,000
Total =	7,628	$1,702,805,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the Federal Emergency Management Agency*

Of the 69 critical facilities within the planning area, 35 are geographically located within Gallup's city limits. The table on the following page lists these facilities.

Table 2.12 – Critical Facilities by Location, Gallup

Name	Type	Owner
BeeHive Homes of Gallup	Assisted Living	Private
BNSF Railyard	Chemical Site	Private
Bonney Family Home	Assisted Living	Private
County Adult Detention Center	Law Enforcement	County
County Courthouse	Government	County
County Fire Administration Complex	Fire Prevention/EMS	County
County Metro Dispatch	Government	County
County Roads Department	Public Works	County
Gallup City Hall	Government	Gallup
Gallup City Streets Dept.	Public Works	Gallup
Gallup Community Center	Government	Gallup
Gallup Group Home	Assisted Living	Private
Gallup Indian Medical Center	Hospital	Federal
Gallup Municipal Airport	Airport	Gallup
Gallup Police Department	Law Enforcement	Gallup
Gallup Substation #1	Utility	Private
Gallup Substation #2	Utility	Private
Gallup Wastewater Treatment Plant	Water Treatment	Gallup
GFD Fire Prevention Building	Fire Prevention/EMS	Gallup
GFD Fire Station #1	Fire Prevention/EMS	Gallup
GFD Fire Station #2	Fire Prevention/EMS	Gallup
GFD Fire Station #3	Fire Prevention/EMS	Gallup
GFD Fire Station #4	Fire Prevention/EMS	Gallup
GFD Fire Station #5	Fire Prevention/EMS	Gallup
GFD Fire Station #6	Fire Prevention/EMS	Gallup
Maloney Residential Care	Assisted Living	Private
McKinley Center	Assisted Living	Private
McKinley County Facilities Management	Government	County
McKinley County OEM	Government	County
McKinley County Public Health Office	Government	County
McKinley County Sheriff's Office	Law Enforcement	County
Northside Radio Tower	Communications	Private
Ramah Care Services	Assisted Living	Private
Red Rocks Care Center	Assisted Living	Private
Rehoboth McKinley Christian Hospital	Hospital	Private
Share Your Care	Assisted Living	Private

**The data are from the McKinley County & the City of Gallup.*

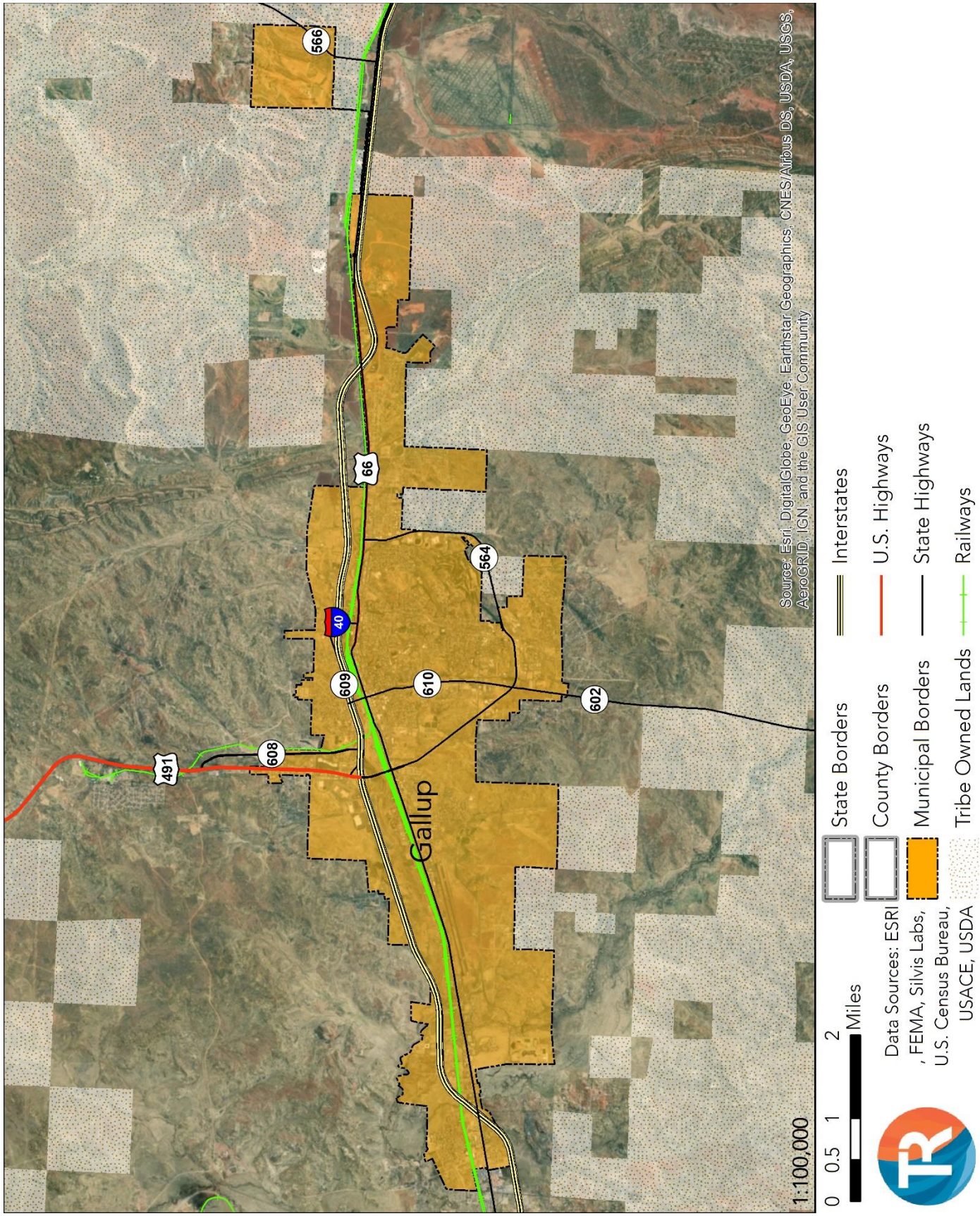
Of the 69 critical facilities within the planning area, 13 are owned and operated by the Gallup City Government. The table below lists all of these facilities and which geographic location they reside.

Table 2.13 – Critical Facilities by Owner, Gallup

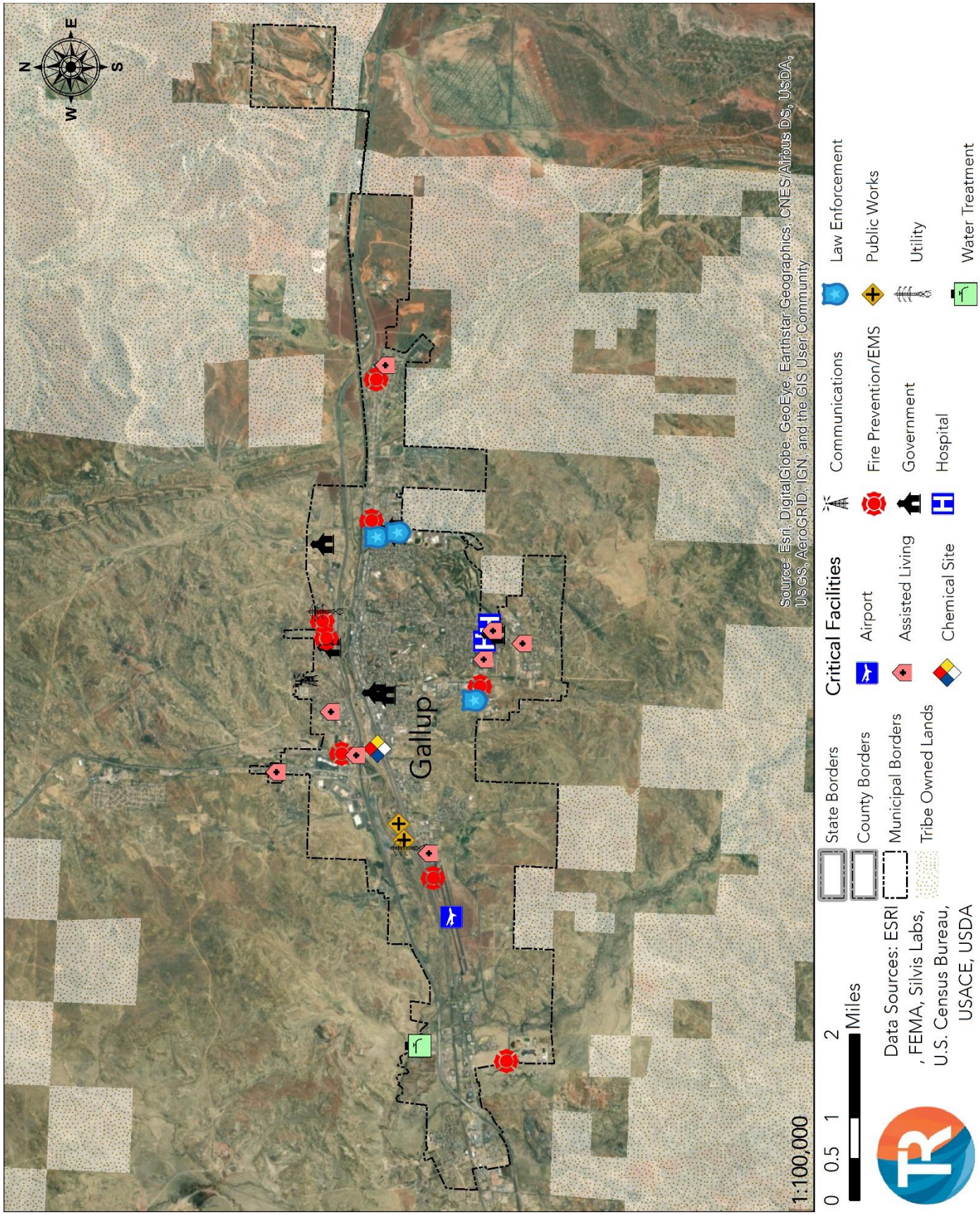
Name	Type	Location
Gallup City Hall	Government	Gallup
Gallup City Streets Department	Public Works	Gallup
Gallup Community Center	Government	Gallup
Gallup Municipal Airport	Airport	Gallup
Gallup Police Department	Law Enforcement	Gallup
Gallup Wastewater Treatment Plant	Water Treatment	Gallup
GFD Fire Prevention Building	Fire Prevention/EMS	Gallup
GFD Fire Station #1	Fire Prevention/EMS	Gallup
GFD Fire Station #2	Fire Prevention/EMS	Gallup
GFD Fire Station #3	Fire Prevention/EMS	Gallup
GFD Fire Station #4	Fire Prevention/EMS	Gallup
GFD Fire Station #5	Fire Prevention/EMS	Gallup
GFD Fire Station #6	Fire Prevention/EMS	Gallup

**The data are from the McKinley County & the City of Gallup.*

Map 2.5 – Community Profile, Gallup



Map 2.6 – Critical Facilities, Gallup



2.3 – Gallup-McKinley County Schools

The Gallup-McKinley County Schools services unincorporated portions of McKinley County, the City of Gallup, and parts of the Navajo Nation that exist within the planning area. It accomplishes this through 2 administrative sites and 31 educational sites. They provide education for 11,130 students provided by 1,826 teachers, administrators, and support staff. A full breakdown of their structural values can be found in Appendix B.

Table 2.14 – Gallup-McKinley County Schools Demographics

District Site	Staff	Students	Total
Catherine A Miller Elementary	51	314	365
Central Offices	262	-	262
Chee Dodge Elementary	39	249	288
Chief Manuelito Middle	44	578	622
Crownpoint Elementary	43	320	363
Crownpoint Middle & High	62	460	522
David Skeet Elementary	31	206	237
Del Norte Elementary	60	522	582
Educational Development Center	76	-	76
Gallup Central High School	36	194	230
Gallup High	96	842	938
Gallup Middle	51	454	505
Hiroshi Miyamura High	104	1,189	1293
Indian Hills Elementary	94	270	364
Jefferson Elementary	48	345	393
Kennedy Middle	65	658	723
Lincoln Elementary	54	379	433
Navajo Elementary	36	289	325
Navajo Middle & Pine High	50	256	306
Ramah Elementary	33	194	227
Ramah Middle & High	30	172	202
Red Rock Elementary	44	327	371
Rocky View Elementary	39	283	322
Stagecoach Elementary	44	290	334
Thoreau Elementary	45	305	350
Thoreau High	47	382	429
Thoreau Middle	33	244	277
Tobe Turpen Elementary	54	392	446
Tohatchi Elementary	36	225	261
Tohatchi High	40	295	335
Tohatchi Middle	28	205	233
Tse' Ye' Gai' High	18	86	104
Twin Lake Elementary	33	205	238
Total =	1,826	11,130	12,956

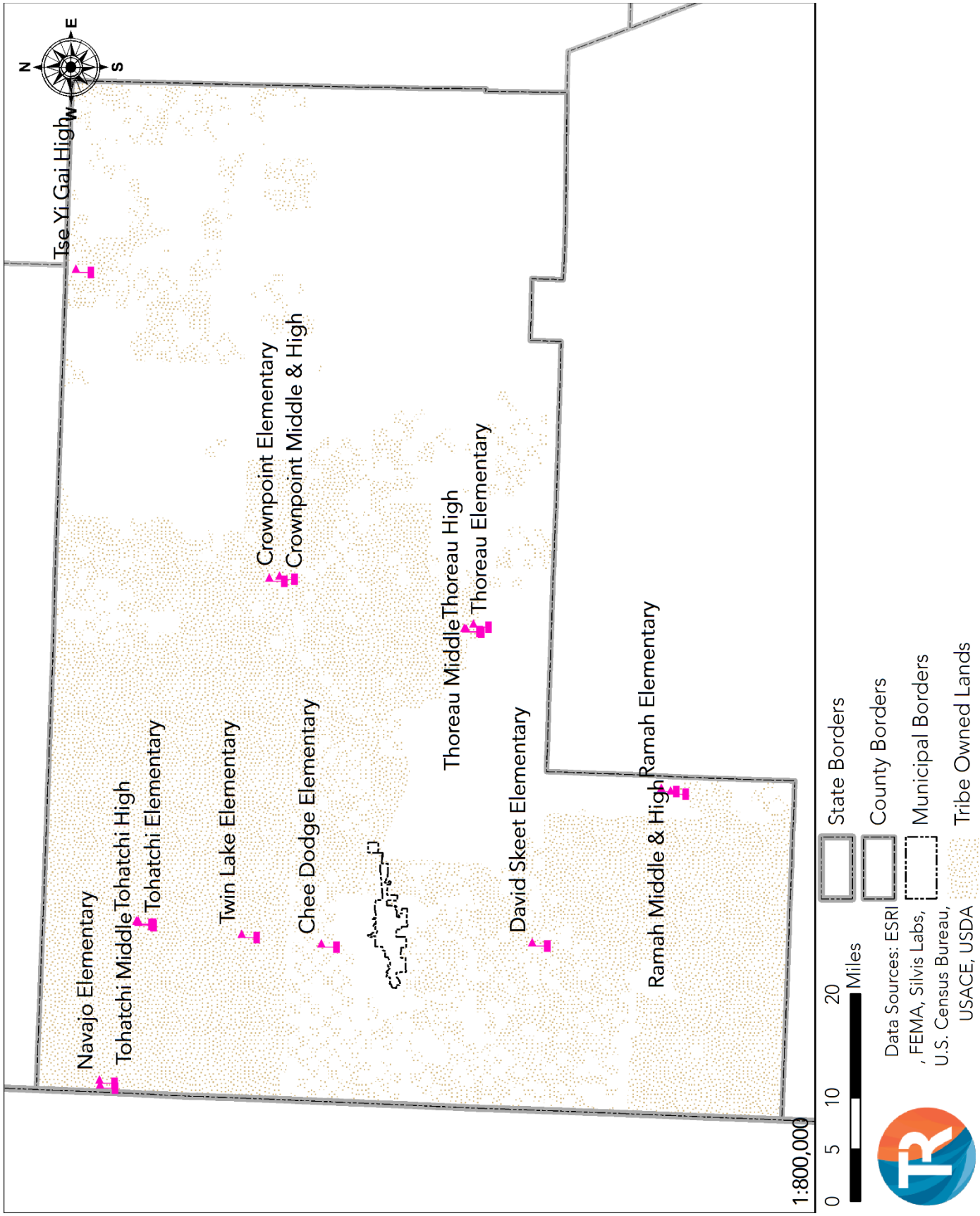
**The data are from the Gallup-McKinley County Schools.*

Table 2.15 – Gallup-McKinley County Schools Structural Summary

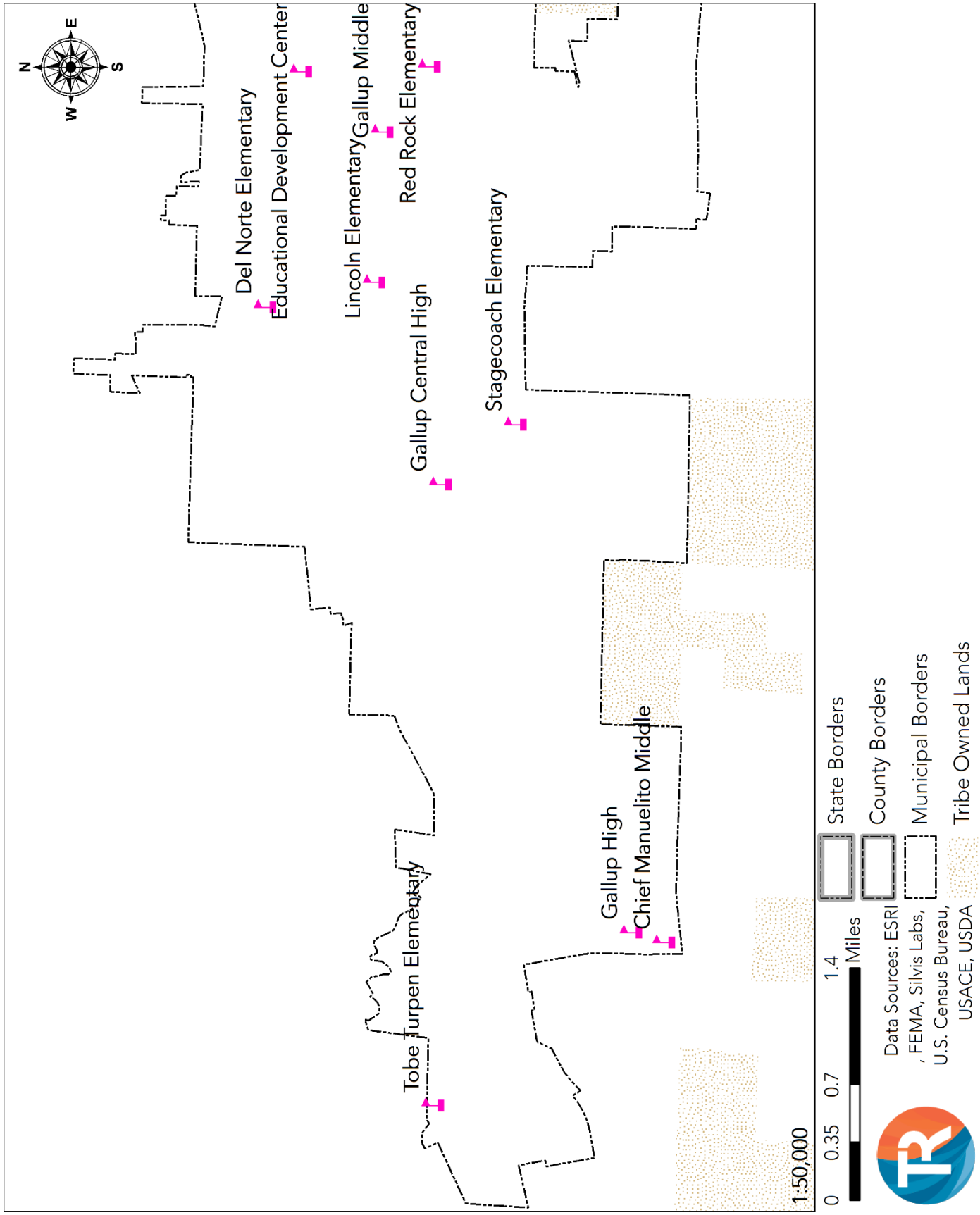
District Site	Contents Value	Structural Value	Total Value
Catherine A Miller Elementary	$716,515	$4,211,716	$4,928,231
Central Offices	$1,882,763	$7,076,538	$8,959,301
Chee Dodge Elementary	$1,877,315	$9,628,458	$11,505,773
Chief Manuelito Middle	$2,202,922	$20,608,493	$22,811,415
Crownpoint Elementary	$876,588	$5,355,094	$6,231,682
Crownpoint Middle & High	$2,873,682	$31,311,680	$34,185,362
David Skeet Elementary	$1,742,288	$7,472,002	$9,214,290
Del Norte Elementary	$280,395	$22,301,987	$22,582,382
Educational Development Center	$323,412	$1,719,119	$2,042,531
Gallup Central High School	$874,417	$6,264,661	$7,139,078
Gallup High	$5,743,013	$54,004,534	$59,747,547
Gallup Middle	$1,989,476	$15,390,649	$17,380,125
Hiroshi Miyamura High	$4,777,132	$37,534,487	$42,311,619
Indian Hills Elementary	$2,379,311	$7,585,992	$9,965,303
Jefferson Elementary	$4,560,667	$22,375,938	$26,936,605
Kennedy Middle	$2,048,275	$28,424,786	$30,473,061
Lincoln Elementary	$404,618	$20,655,518	$21,060,136
Navajo Elementary	$1,070,416	$8,464,158	$9,534,574
Navajo Middle & Pine High	$2,426,133	$23,610,542	$26,036,675
Ramah Elementary	$574,953	$1,098,004	$1,672,957
Ramah Middle & High	$2,347,730	$22,078,696	$24,426,426
Red Rock Elementary	$970,235	$6,090,193	$7,060,428
Rocky View Elementary	$1,055,172	$5,877,338	$6,932,510
Stagecoach Elementary	$1,355,719	$9,490,049	$10,845,768
Thoreau Elementary	$946,280	$6,571,728	$7,518,008
Thoreau High	$2,406,533	$24,133,954	$26,540,487
Thoreau Middle	$1,112,886	$9,602,868	$10,715,754
Tobe Turpen Elementary	$1,036,663	$6,376,327	$7,412,990
Tohatchi Elementary	$1,105,262	$10,655,511	$11,760,773
Tohatchi High	$2,495,827	$24,828,357	$27,324,184
Tohatchi Middle	$683,847	$8,492,091	$9,175,938
Tse' Ye' Gai' High	$1,533,211	$15,331,337	$16,864,548
Twin Lake Elementary	$895,101	$6,526,368	$7,421,469
Total =	$57,568,757	$491,149,173	$548,717,930

**The data are from the Gallup-McKinley County Schools.*

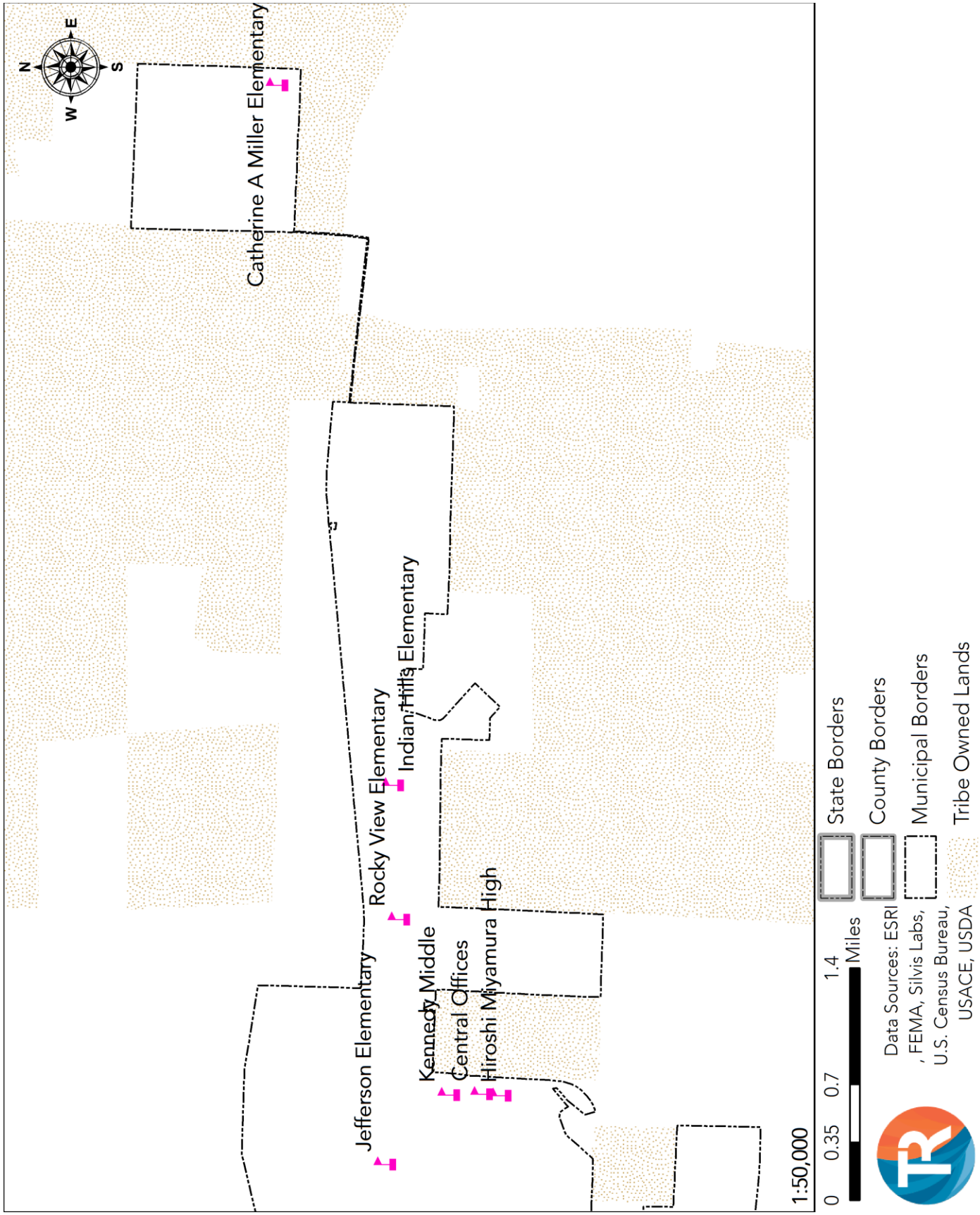
Map 2.7 – Gallup-McKinley County Schools, McKinley County



Map 2.8 - Gallup-McKinley County Schools. Gallup West



Map 2.9 - Gallup-McKinley County Schools, Gallup East



Purpose

This hazard mitigation plan's risk assessment depicts each participating entity's risk to each of the profiled hazards. These calculated risks serve as the justifying basis for the proposed mitigation activities and projects found in Section 4. Additionally, this risk assessment can further serve McKinley County and the plan's participating entities by aiding in decision making processes of other planning initiatives.

Intent

The hazards profiled within this section were identified and selected based on their ability to reasonably affect the entire planning area or portions of McKinley County and its communities. If a hazard has been excluded or removed, justification has been given.

To properly and accurately depict each hazard's risk, Two Rivers Emergency Management employed various methodologies appropriately tailored by hazard application. Generally, each hazard profile; describes the type, location, and extent the hazard; includes information on previous occurrences of hazard events and estimates on future occurrence; describes a hazard's estimated impact; assesses each participating entity's vulnerability to a hazard; and analyzes how changes in development have affected an area since the development of McKinley County's last hazard mitigation plan.

Each hazard profile conforms to FEMA's requirements as set forth in its Local Mitigation Plan Review Guide, Elements B1 through B3, and B4 and D1 where applicable.

3.1 – Methodology

The natural characteristics of each hazard dictate that not one single approach works to accurately depict risk. In general, the hazard profiled in this plan can be categorized as either area-wide hazards or those with discretely identified hazard areas.

Area-Wide Hazards

Area-wide hazards indiscriminately impact the entire planning. Since it is beyond scientific measurement where an area-wide hazard, such as winter storms, will impact, and likely it will impact everywhere, it is reasonable to assume any significant growth and development will increase vulnerability and risk. Additionally, a hazard such as a tornado, will impact a specific path, but we are unable to predict where exactly it will begin. Thus, having any increase in growth or development increases the chance that a tornado will strike a developed segment of a jurisdiction. For this plan, this is relevant for droughts, flash flooding, tornadoes, severe storms, and winter storms.

Hazards with Identified Hazard Areas

If a jurisdiction grows or develops into an established dam spillway, floodplain, WUI zone, or an area with greater linear extensibility, that jurisdiction's vulnerability and risk increase by an amount equal to

the development or growth that now exists in that identified hazard area. For this plan, this is relevant for dam failure, riverine flooding, and wildfires.

3.2 – Hazard Selection

Appropriately identifying and selecting which natural hazards will be assessed is the first step in developing a risk assessment. The State of New Mexico's Department of Homeland Security and Emergency Management profiles thirteen natural and one man-made hazard in its statewide hazard mitigation plan. Of those hazards, this plan profiles ten of the fourteen total hazards.

McKinley County has been designated as an affected area by federal declaration ten times. These declarations show a broad picture of the which hazards pose the greatest threat to the planning area. The table below lists each federal disaster declaration, the hazards which caused the impact, and the dates of the events:

Table 3.1 – Disaster Declarations

Designation	Declaration	Hazards	Start Date	End Date
DR-346	08/01/1972	Flooding, Severe Storms	08/01/1972	08/01/1972
DR-380	05/11/1973	Flooding, Severe Storms	05/11/1973	05/11/1973
DR-992	06/07/1993	Flooding, Severe Storms	01/05/1993	02/27/1993
EM-3154	05/10/2000	Wildfires	05/05/2000	07/07/2000
EM-3229	09/07/2005	Hurricane Katrina	08/29/2005	10/01/2005
DR-1659	08/30/2006	Flooding, Severe Storms	07/26/2006	09/18/2006
DR-1936	09/13/2010	Flooding, Severe Storms	07/25/2010	08/09/2010
DR-4152	10/29/2013	Flooding, Mudslides, Severe Storms	09/09/2013	09/22/2013

**The data are from the Federal Emergency Management Agency*

Selecting only hazards that pose a reasonable risk to the planning area allows the mitigation strategy found in Section 4 to focus McKinley County's capabilities and resources where they are needed most and can be the most effective. We found those hazards to be: Droughts, Floods (River and Flash), Severe Storms (Hail, Thunderstorms, and Windstorms), and Wildfires.

The table below lists all of the natural hazards included in the statewide plan, whether they are included in this plan, and if excluded, a summary justification of why it has been excluded. A lengthier justification for exclusion can be found later in this section, 3.12 – Excluded Hazards.

Table 3.2 – Hazard Inclusion

Hazard	Inclusion	Summary Justification
Dam Failure	Dam Failure	High Hazard Dams Present
Drought	Drought	Historical Records
Earthquake	*Excluded*	No reasonable risk
Extreme Heat	*Excluded*	No reasonable risk
Expansive Soils	*Excluded*	No reasonable risk
Flood/Flash Floods	Floods	Historical Records, Hazard Areas Identified
High Wind	Severe Storms	Historical Records
Landslide	Geologic	Hazard Areas Identified
Land Subsidence	Geologic	Hazard Areas Identified
Severe Winter Storms	Winter Storms	Historical Records
Thunderstorms	Severe Storms	Historical Records
Tornadoes	Tornadoes	Historical Records
Volcanoes	*Excluded*	No reasonable risk
Wildland/WUI Fire	Wildfires	Historical Records, Hazard Areas Identified

3.3 – Dam Failures

A dam is a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously.

Dams can fail in a number of ways. A rainy day failure occurs when heavy rain exceed the storage capacity of the dam and overflow the dam. A sunny day (or piping) failure occurs due to slope failure, smaller structural faults, or a controlled spillway release done to prevent full failure of overflowing water. Sunny day failures release a dam's water over a period of time based on the size of the leak. In these scenarios, it is assumed the dam is holding its normal water volume. A full or sudden failure caused by a major structural integrity issue is classified as a percentage of the probable maximum precipitation (PMP), i.e. a 50% PMP Breach means there was a sudden release of water while the dam is holding 50% of its maximum volume. In each instance an overwhelming amount of water, and potentially debris, is released.

Common causes for dam failure are:

- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer or design error
- Internal erosion, especially in earthen dams.
- Earthquakes

Dam failures are rare, but when they occur can cause loss of life, and immense damage to infrastructure and the environment. The planning area contains three high hazard classified dams, the Escalante Generating Station Evaporation Pond 5, McGaffey Lake Dam, and the Ramah Dam.

Location & Extent

Response to a dam failure would be extensive and require wide ranging recovery efforts for reconstruction of the original flood control structures and any damaged property. There is usually little to no warning in the event of a dam failure, depending on what lies below a dam. By definition, each of the three high hazard dams in the planning area threaten population and structures. The map on the following page depicts the location of the three high hazard dams in the planning area.

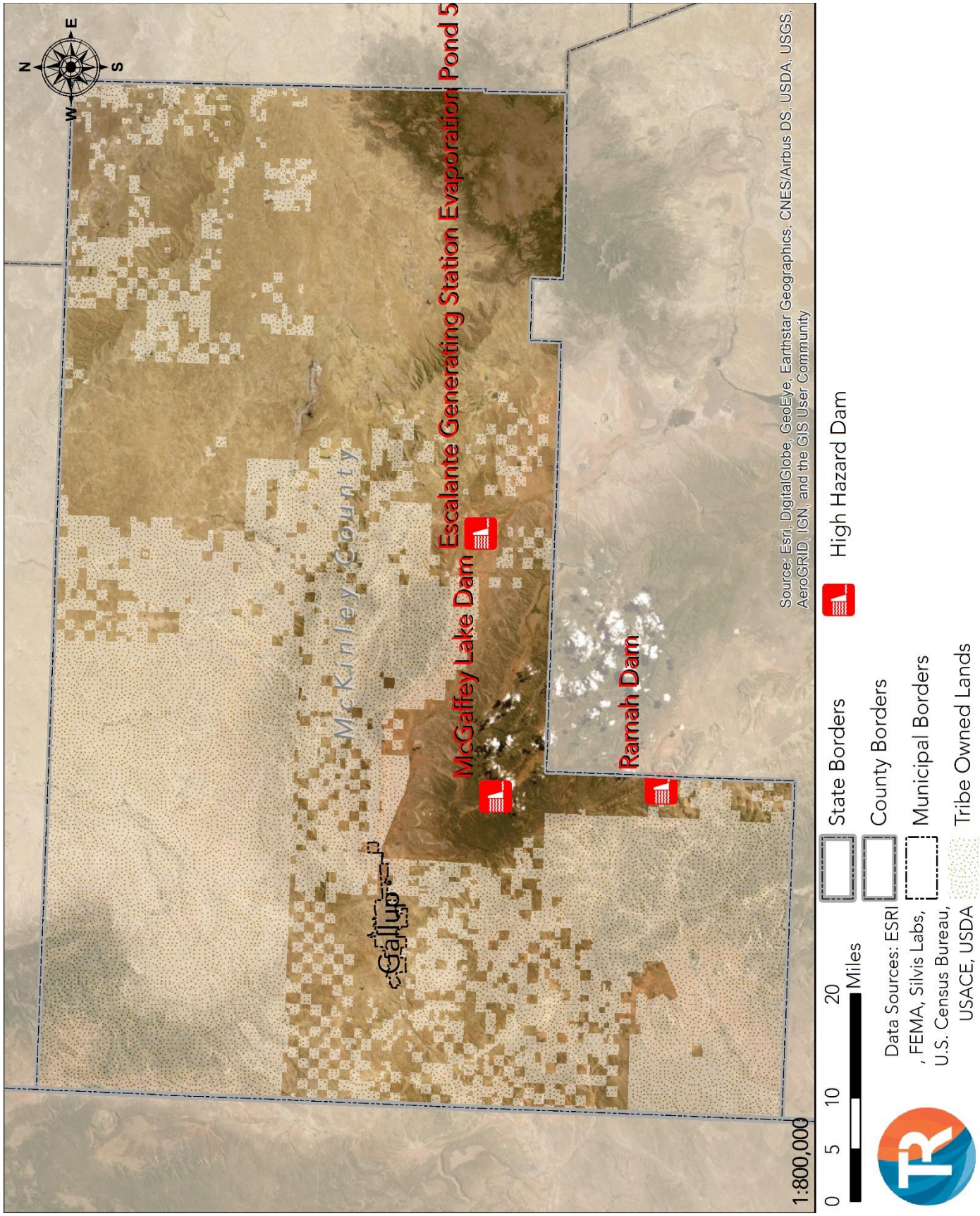
Table 3.3 – Dam Volume, Normal Storage Capacity

Dam	Acre-Feet
Escalante Generating Station Evaporation Pond 5	194
McGaffey Lake Dam	216
Ramah Dam	9,620

**The data are from the USACE.*

Numerous topographic, hydrologic, and weather conditions (how much water is stored at each dam based on rainfall) influence the extent and speed of waterflow exiting a failed or damaged dam. Two of

Map 3.1 – High Hazard Dam Locations



the dams, the Escalante Generating Station Evaporation Pond 5 and the McGaffey Lake Dam have developed EAPs. The EAPs contain mapped dam failure inundation areas. The Escalante Generating Station Evaporation Pong 5's EAP contains inundation for a sunny day failure scenario, while the McGaffey Lake Dam's EAP contains data on sunny day, 50% probable maximum precipitation, and 100% probable maximum precipitation scenarios. These inundation areas are depicted in Maps 3.2 through 3.8.

Table 3.4 – Escalante Generating Station Evaporation Pond 5, Sunny Day Failure

Cross Section	Distance (Miles)	Max Flood Depth (Feet)	Time to Arrival (Hr:Mn)	Time to Max Depth (Hr:Mn)
XS-1	0.3	3.0	00:17	00:22
XS-2	0.7	3.6	00:24	00:38
XS-3	0.8	1.3	00:36	00:59
XS-4	0.9	1.2	01:24	01:39
XS-5	1.1	0.8	01:48	01:55
XS-6	1.7	1.6	02:24	02:46
XS-7	2.1	0.7	03:24	03:48
XS-8	2.8	1.5	03:48	06:03
XS-9	3.0	2.7	08:48	14:45

**The data are from McKinley County OEM.*

Table 3.5 – McGaffey Lake Dam, Inundation Data – Sunny Day Failure

Cross Section	Distance (Miles)	Max Flood Stage (Feet)	Time to Arrival (Hr:Mn)	Time to Max Depth (Hr:Mn)
McGaffey Lake Road	0.46	2.8	00:15	00:17
D/S of McGaffey Lake Road	0.78	4.2	00:24	00:24
D/S of McGaffey Lake Road #2	2.17	4.0	01:00	01:04
Nutria Creek	2.78	4.7	01:15	01:16
Nutria Creek #2	3.62	5.0	01:40	01:42
Nutria Creek #3	4.50	3.2	01:58	01:59
Confluence with the Tributary	6.34	3.6	02:15	02:15
D/S Mouth of Rio Nutria	12.78	1.5	04:34	04:34
Entrance of Nutria Reservoir	16.01	1.1	05:45	06:22

**The data are from McKinley County OEM.*

Table 3.6 – McGaffey Lake Dam, Inundation Data – 50% PMP Breach

Cross Section	Distance (Miles)	Max Flood Stage (Feet)	Time to Arrival (Hr:Mn)	Time to Max Depth (Hr:Mn)
McGaffey Lake Road	0.46	5.1	00:04	00:27
D/S of McGaffey Lake Road	0.78	7.3	00:09	00:31
D/S of McGaffey Lake Road #2	2.17	8.8	00:34	00:44
Nutria Creek	2.78	11.3	00:39	00:47
Nutria Creek #2	3.62	12.4	00:48	00:54
Nutria Creek #3	4.50	9.2	00:58	00:59
Confluence with the Tributary	6.34	12.1	01:03	01:03
D/S Mouth of Rio Nutria	12.78	9.5	01:28	01:28
Entrance of Nutria Reservoir	16.01	3.2	01:39	01:46

**The data are from McKinley County OEM.*

Table 3.7 – McGaffey Lake Dam, Inundation Data – 100% PMP Breach

Cross Section	Distance (Miles)	Max Flood Stage (Feet)	Time to Arrival (Hr:Mn)	Time to Max Depth (Hr:Mn)
McGaffey Lake Road	0.46	6.3	00:03	00:22
D/S of McGaffey Lake Road	0.78	8.7	00:09	00:25
D/S of McGaffey Lake Road #2	2.17	10.9	00:24	00:37
Nutria Creek	2.78	13.7	00:28	00:40
Nutria Creek #2	3.62	15.1	00:39	00:45
Nutria Creek #3	4.50	11.6	00:43	00:49
Confluence with the Tributary	6.34	15.4	00:48	00:52
D/S Mouth of Rio Nutria	12.78	13.2	01:08	01:10
Entrance of Nutria Reservoir	16.01	4.0	01:18	01:22

**The data are from McKinley County OEM.*

Map 3.9 depicts a simulated area for the Ramah Dam that would likely be inundated in the event of a dam failure. In lieu of a complete hydrological study, there is no accurate method of determining water depth levels, arrival time, or inundation areas. The zones selected in the Ramah Dam's rough estimation are based on the U.S. Census Bureau's smallest available unit, the census block. Although the entire block might not be inundated, this is the best available data and no smaller unit of analysis can be selected. This gap is addressed in the mitigation strategy section of this plan.

History & Probability

There have been no failures of high hazard dams in the planning area.

The inspection schedule below shows the last recorded major inspections for each dam as well as the intended intervals for the inspections. It is likely that any major structural problems would be uncovered during these inspections and as of now, they have not. Although the table shows the last inspection dates in 2014 and 2016, it is likely that the NID doesn't have the most up-to-date information.

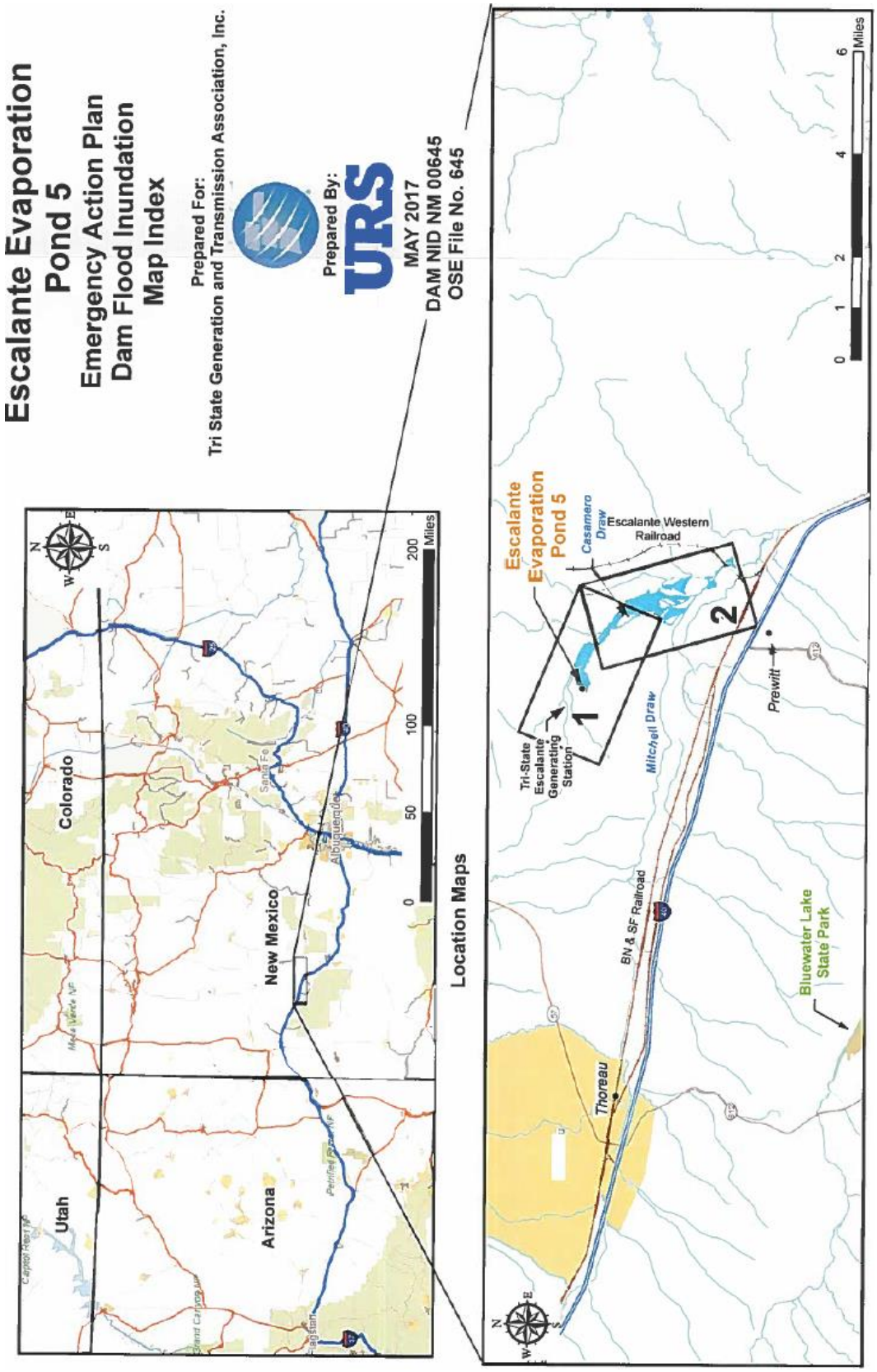
Table 3.8 – Dam Inspection History

Dam	Inspection Frequency	Inspection Date
Escalante Generating Station Evaporation Pond 5	3 Years	06/03/2014
McGaffey Lake Dam	1 Year	04/18/2016
Ramah Dam	1 Year	04/19/2016

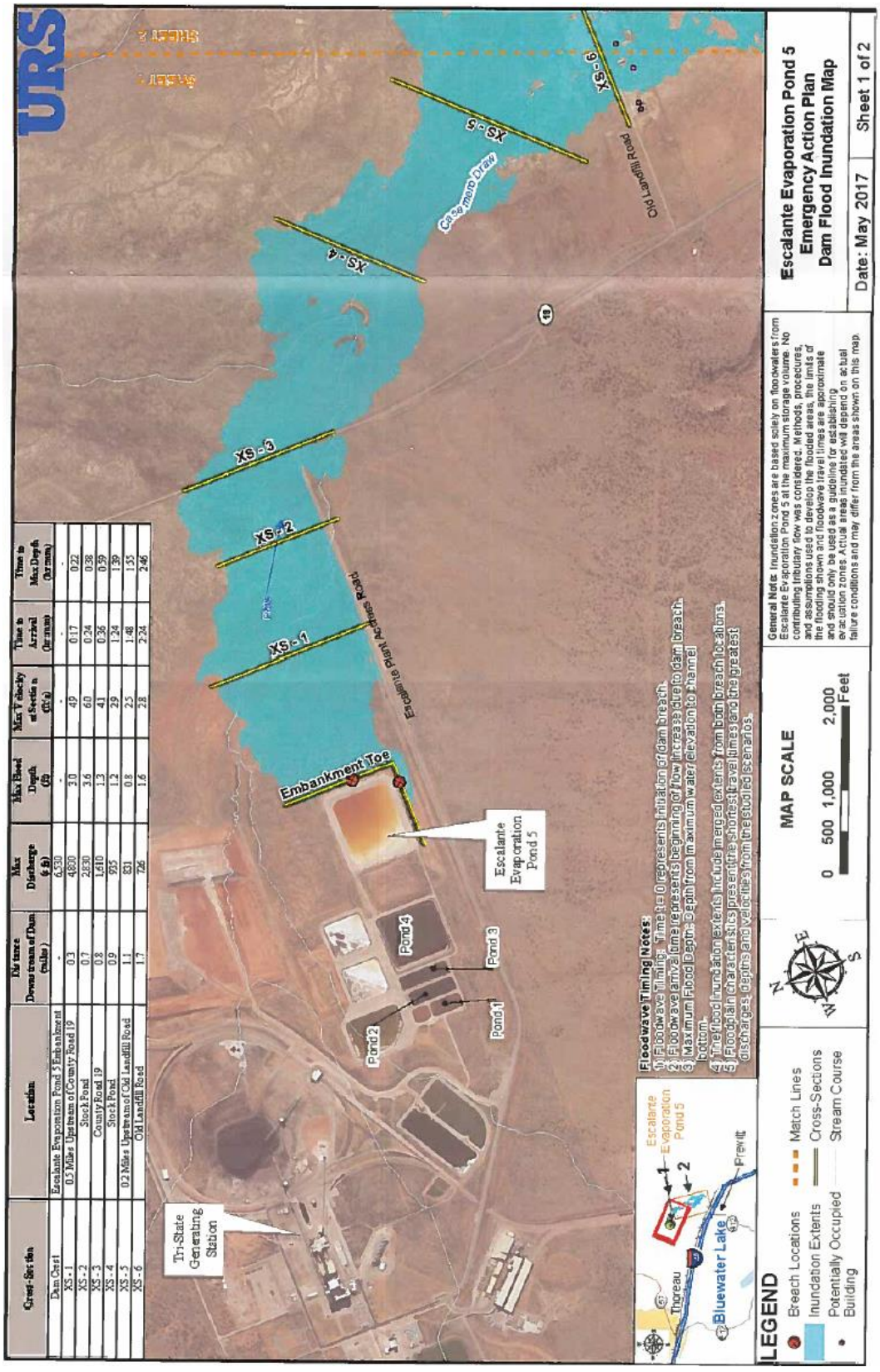
**The data are from the USACE National Inventory of Dams.*

Given the absence of any historical precedence of dam failure in McKinley County, a history having reoccurring structural flaws, or any indication that the dams are being poorly maintained, the probability of experiencing a dam or levee failure event is categorized as 'rare' or less than 1%.

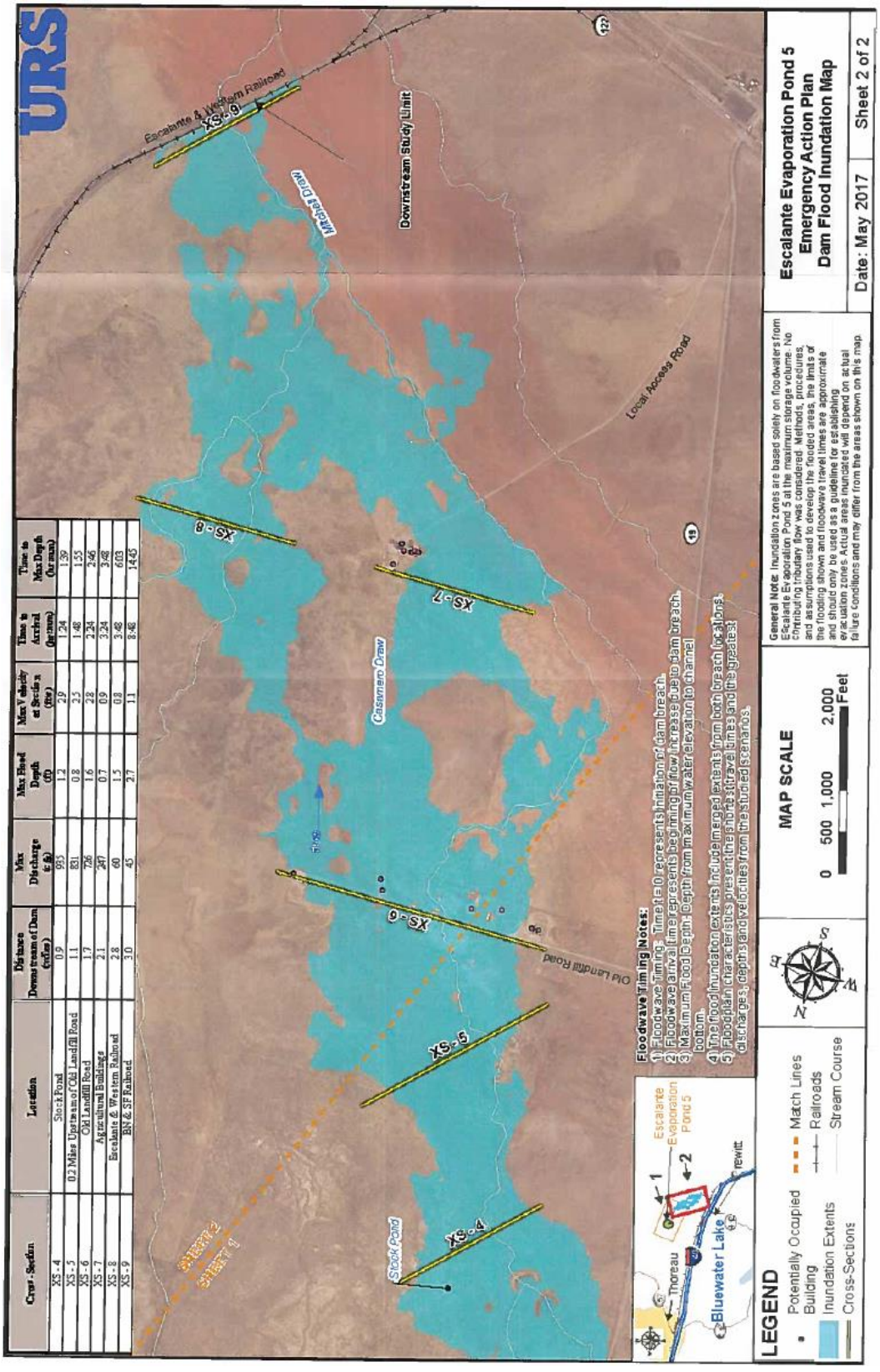
Map 3.2 – Escalante Generating Station Evaporation Pond 5, Inundation Map #1



Map 3.3 – Escalante Generating Station Evaporation Pond 5, Inundation Map #2

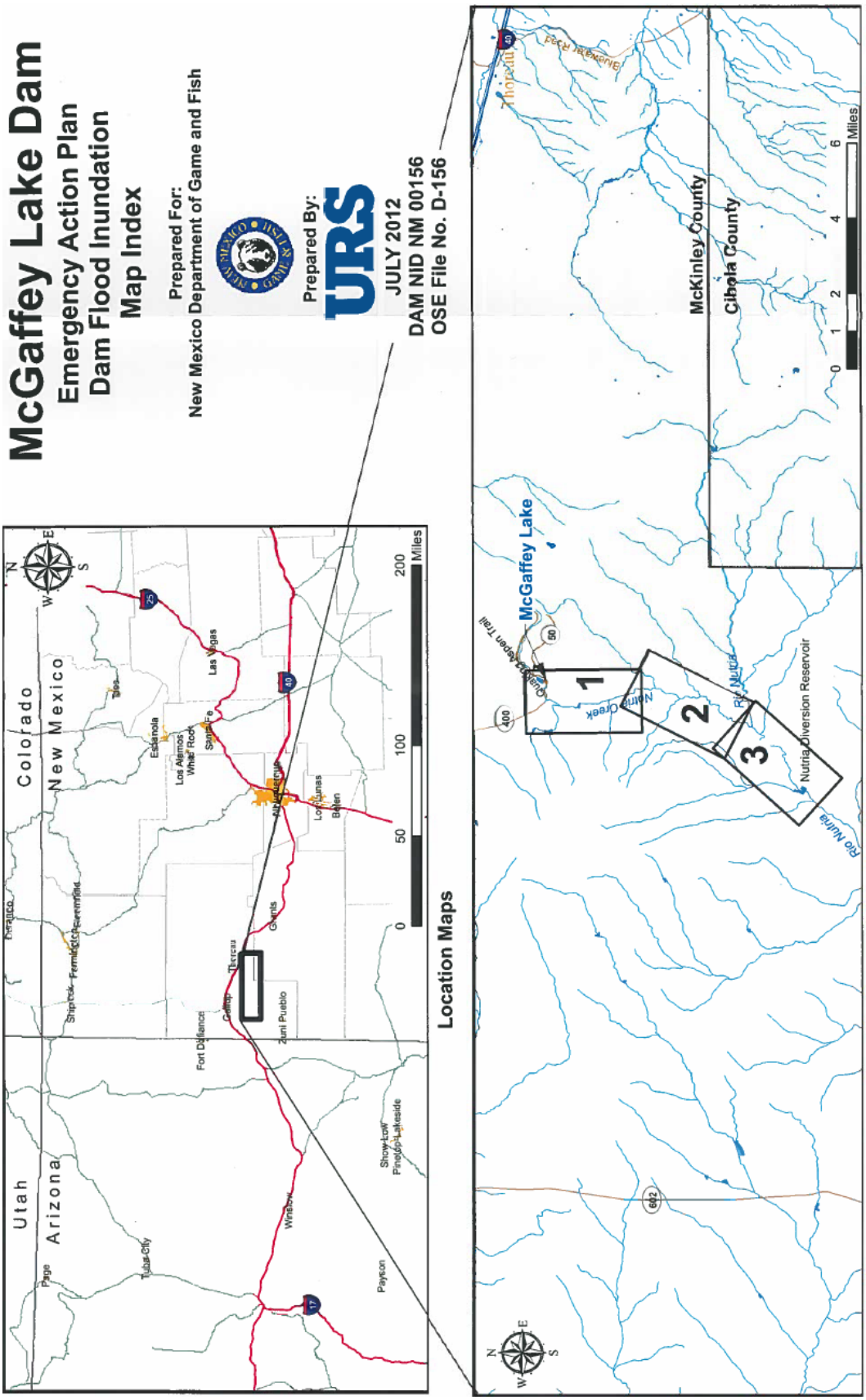


Map 3.4 – Escalante Generating Station Evaporation Pond 5, Inundation Map #3

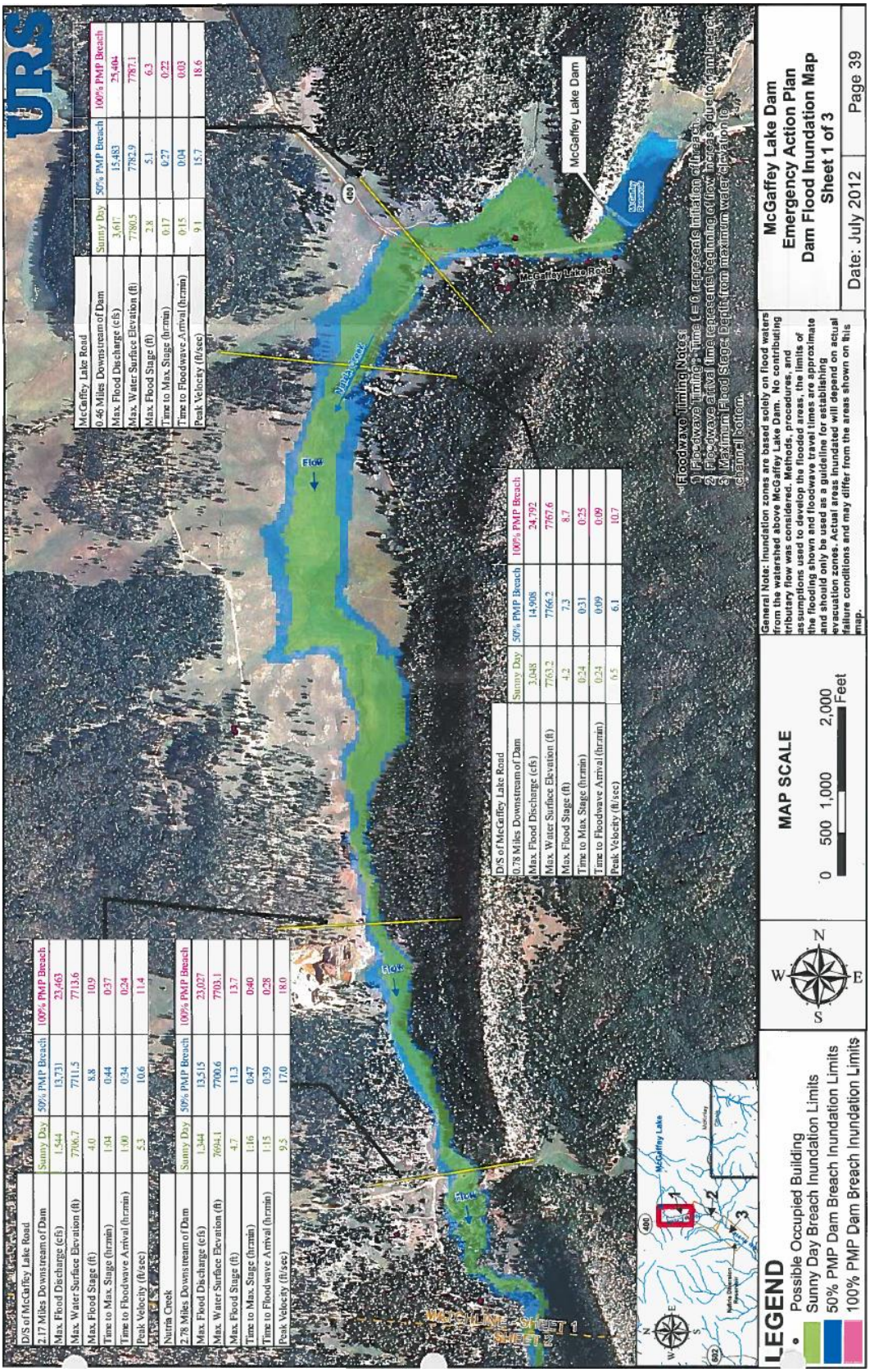


Cross-Section	Location	Distance Downstream of Dam (miles)	Max Discharge (cfs)	Max Flood Depth (ft)	Max Velocity at Section (fps)	Time to Arrival (hr:min)	Time to Max Depth (hr:min)
XS-4	Stock Pond	0.9	995	1.2	2.9	1:24	1:39
XS-5	0.2 Miles Upstream of Old Landfill Road	1.1	831	0.8	2.5	1:48	1:55
XS-6	Old Landfill Road	1.7	726	1.6	2.8	2:24	2:46
XS-7	Agricultural Buildings	2.1	247	0.7	0.9	3:24	3:48
XS-8	Escalante & Western Railroad	2.8	60	1.5	0.8	3:48	6:03
XS-9	BN & SF Railroad	3.0	45	2.7	1.1	8:46	14:45

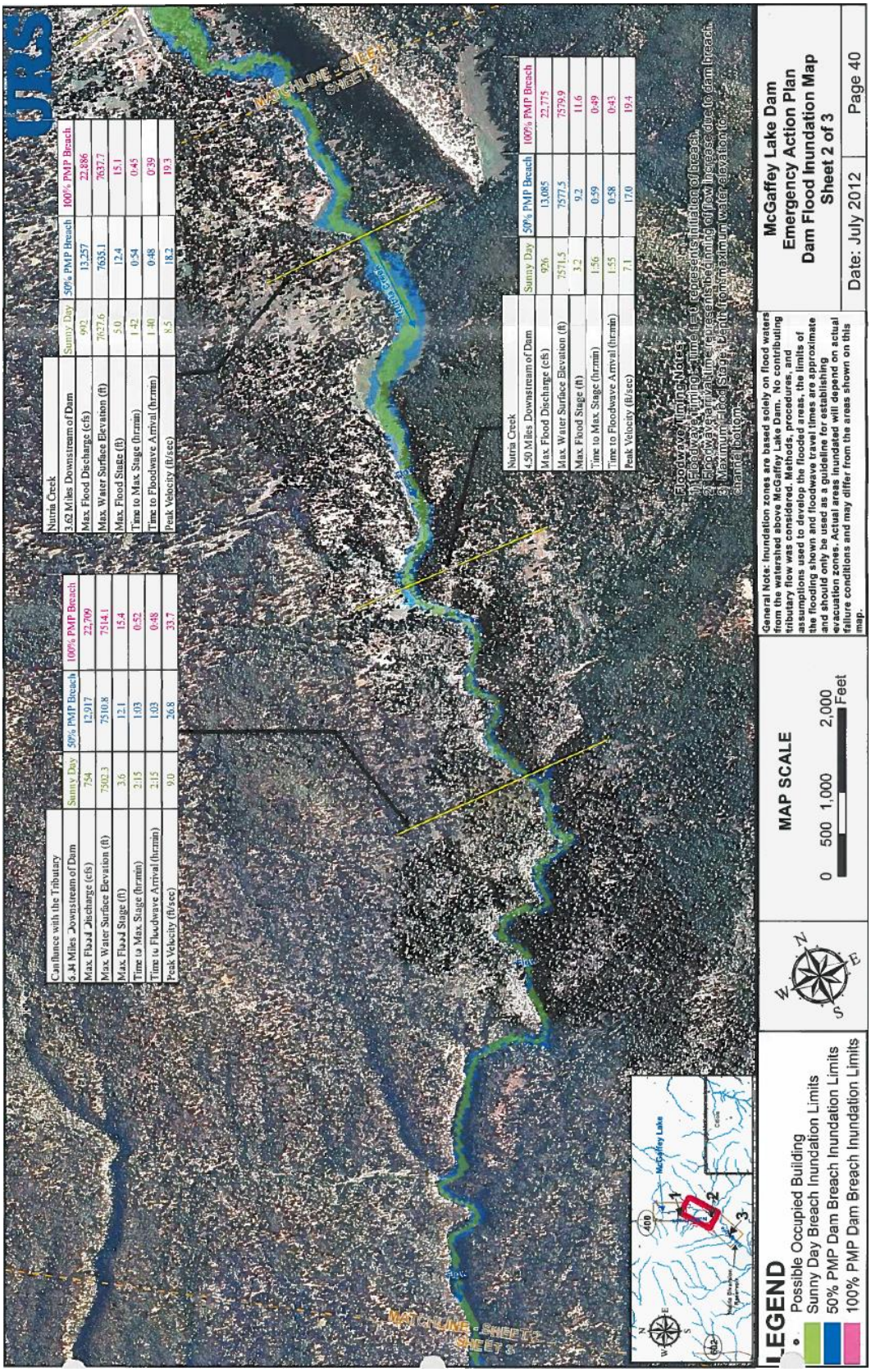
Map 3.5 – McGaffey Lake Dam, Inundation Map #1



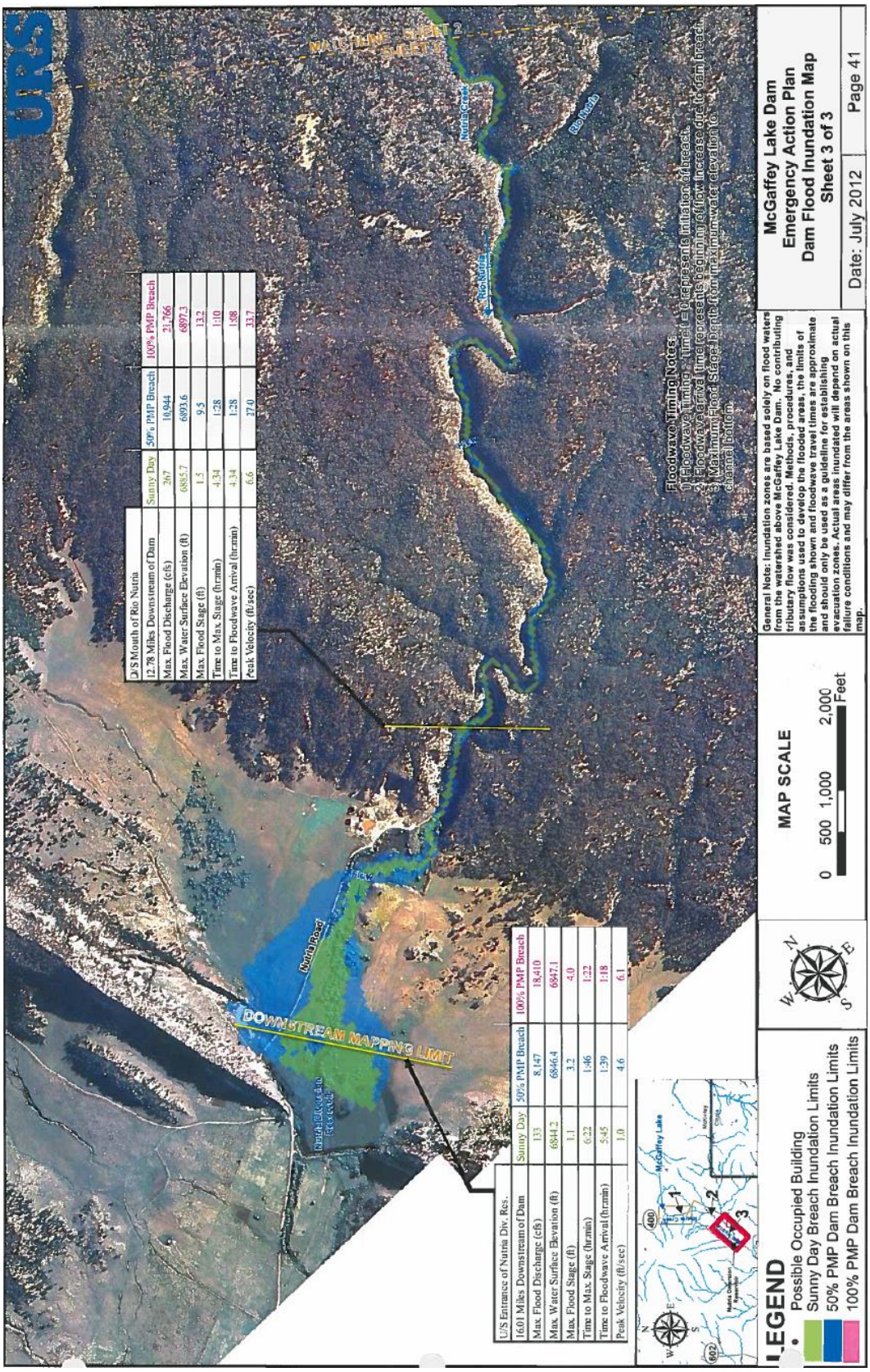
Map 3.6 – McGaffey Lake Dam, Inundation Map #2



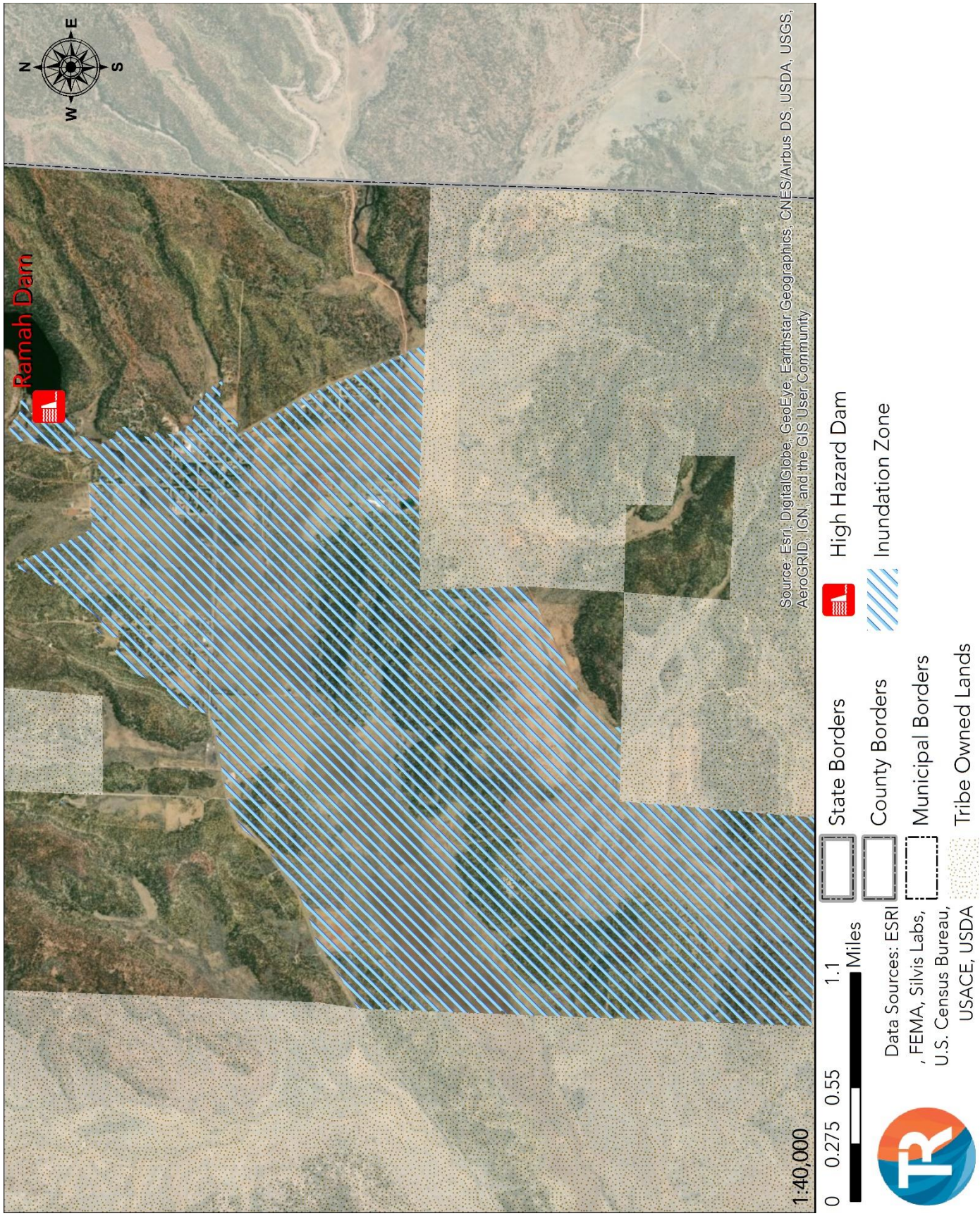
Map 3.7 – McGaffey Lake Dam, Inundation Map #3



Map 3.8 – McGaffey Lake Dam, Inundation Map #4



Map 3.9 – Ramah Dam, Inundation Map



Vulnerability of and Impact on Facilities

Facilities within a dam failure inundation area are typically at extreme risk. The water level of a dam failure can range from inches, causing damage similar to small floods, to completely engulfing a structure in water. Additionally, the speed of the flow can cause variations in the impact. A slow flow will cause damage similar to a riverine flood, however, a fast moving, high level flow has the potential to completely destroy a structure, wash it away, and create debris that impacts other structures. See the tables below for a breakdown of the planning area's structural vulnerability and impact from a failure of the planning area's high-hazard dams. None of the Gallup-McKinley County Schools' structures are threatened by the planning area's high-hazard dams.

Table 3.9 – Vulnerability & Impact of Structures, Escalante Generating Station Evaporation Pond 5

Structure Class	Structure Count	Total Class Value
Agricultural	0	$0
Commercial	0	$0
Government	0	$0
Industrial	0	$0
Residential	6	$588,000
Multi-Unit Residential*	0	$0
Total =	6	$588,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units.*
***The data are from the U.S. Census Bureau and FEMA.*

Table 3.10 – Vulnerability & Impact of Structures, McGaffey Dam

Structure Class	Structure Count	Total Class Value
Agricultural	0	$0
Commercial	0	$0
Government	0	$0
Industrial	0	$0
Residential	11	$1,783,000
Multi-Unit Residential*	0	$0
Total =	11	$1,783,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units.*
***The data are from the U.S. Census Bureau and FEMA.*

Table 3.11 – Vulnerability & Impact of Structures, Ramah Dam

Structure Class	Structure Count	Total Class Value
Agricultural	3	$473,000
Commercial	10	$3,734,000
Government	5	$2,650,000
Industrial	6	$1,470,000
Residential	199	$32,584,000
Multi-Unit Residential*	2	$1,325,000
Total =	225	$42,236,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units.*
***The data are from the U.S. Census Bureau and FEMA.*

Vulnerability of and Impact on Critical Facilities

None of the planning area's critical facilities are threatened by failure from a high hazard dam.

Vulnerability of and Impact on Population

Populations within a dam failure inundation area are at extreme risk. Depending on the speed of the water's arrival, a community's population may not have time to evacuate. Additionally, evacuation routes can be blocked by the dam waters. If flood waters arrive quickly, many people can die. Depending on the elevation of the water, a community's population may not have any available shelter to avoid the waters. See the table below for a breakdown of the planning area's population vulnerability and impact from each high-hazard dam. None of the Gallup-McKinley County Schools' students, staff, or faculty, are threatened by the planning area's high-hazard dams.

Table 3.12 – Vulnerability & Impact of Populations, Dam Failures

Dam	Population	Housing Units
Escalante Generating Station Evaporation Pond 5	6	6
McGaffey Lake Dam	0	11
Ramah Dam	371	205

**Multi-Unit Residential is defined as a structure with 5 or more residential units.*
***The data are from the U.S. Census Bureau and FEMA.*

The identified housing units that are threatened by a failure from the McGaffey Lake Dam are classified as secondary and seasonal properties. Therefor there are no known permanent residents living in these structures. This leaves an unknown number of temporary or seasonal residents at risk.

Vulnerability of and Impact on Systems

A failure of the McGaffey Lake Dam would not have a significant impact on any of the planning area's systems. A failure of the Escalante Generating Station Evaporation Pond 5 would cause a major disruption to the Escalante Generating Station itself which would have an economic impact on the planning area. However, without detailed financial and operations data from the station itself, the full range of these impacts is incalculable. Although the Ramah Dam stands to threaten a significant number of people and structures if it fails, it does not pose a major threat of impact the planning area as a whole as it is not a major population center, nor would it damage critical transportation infrastructure.

Key Considerations

Since none of the planning area's high hazard dams have inundation areas that could impact Gallup or the Gallup-McKinley County School District, those two jurisdictions have no risk.

3.4 – Droughts

Drought is 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. 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.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. Typically, they are seasonal occurring in the late spring through early fall. Drought monitoring focuses on precipitation and temperature. When precipitation is less than normal, and natural water supplied begins to decease, a drought is occurring.

When below average, little or no rain falls soil can dry out and plants can die. If unusually dry weather persists and water supply problems develop the time 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 on the region droughts can happen quicker, noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the quicker 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 environment, agricultural, health, economic, and social consequences. The effects vary depending on 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. See the list below for the most common effects of droughts.

- Diminished crop growth or yield
- Erosion
- Dust storms
- Ecosystem and environmental damage
- Increased probability of wildfires
- Reduced electricity production due to reduced flow through hydroelectric dams
- Shortages of water for industrial production

Location & Extent

Drought is part of normal climate fluctuations in the United States. According to McKinley County's drought history, most drought events affect the state for at least two to three months at a time, but there have been a few years where a drought has only last one month. It should be noted, though, that

climatic variability can cause dry conditions for up to years at a time. Droughts occur over large geographic areas. It is extremely likely that if any part of the planning area is experiencing a drought that the whole planning area will also be experiencing drought conditions.

Historically, droughts have been measured by a number of indices, most notably the Palmer Drought Severity Index. However, NOAA currently uses an updated drought severity classification, the Drought Monitor Scale, shown below. Given the complex nature and unpredictability of droughts, the planning area can be affected by a drought ranging from D0 to D4 on the Drought Monitor Scale.

Table 3.13 – Drought Monitor Scale

Category	Description	Possible Impacts	Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term 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	21-30	21-30	-0.5 to -0.7	21-30
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	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Drought warning is based on a complex interaction of many different variables, water uses, and consumer needs. Drought warning is directly related to the ability to predict conditions that produce drought, primarily precipitation and temperature. A drought is not official or declared until dry conditions have been met for a period of time, meaning that it is inherent that the planning area would be experiencing drought conditions prior to a drought being officially declared.

History & Probability

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.

Since 2000, the NADM has recorded 823 weeks of drought in the planning area with an average index of 2.42. Please see the table on the following page for a breakdown of the severity of the recorded droughts. For a complete list of recorded drought events, please reference Appendix C.

Table 3.14 – Drought History

Drought Severity	Number of Weeks
D0	183
D1	203
D2	276
D3	125
D4	36
Total =	823

*The data are from the NADM.

Given the historic precedent set by past droughts, it is highly likely that the planning area will experience season-long droughts in the future. As a rough estimate, the planning area should expect to see a month-long drought every year and two to three-month long droughts every three to four years.

Vulnerability of and Impact on Facilities

Droughts do not have an impact on structures.

Vulnerability of and Impact on Critical Facilities

Droughts do not have an impact on structures.

Vulnerability of and Impact on Population

Droughts do not have a direct impact that threatens injury or death to the planning area's population.

Vulnerability of and Impact on Systems

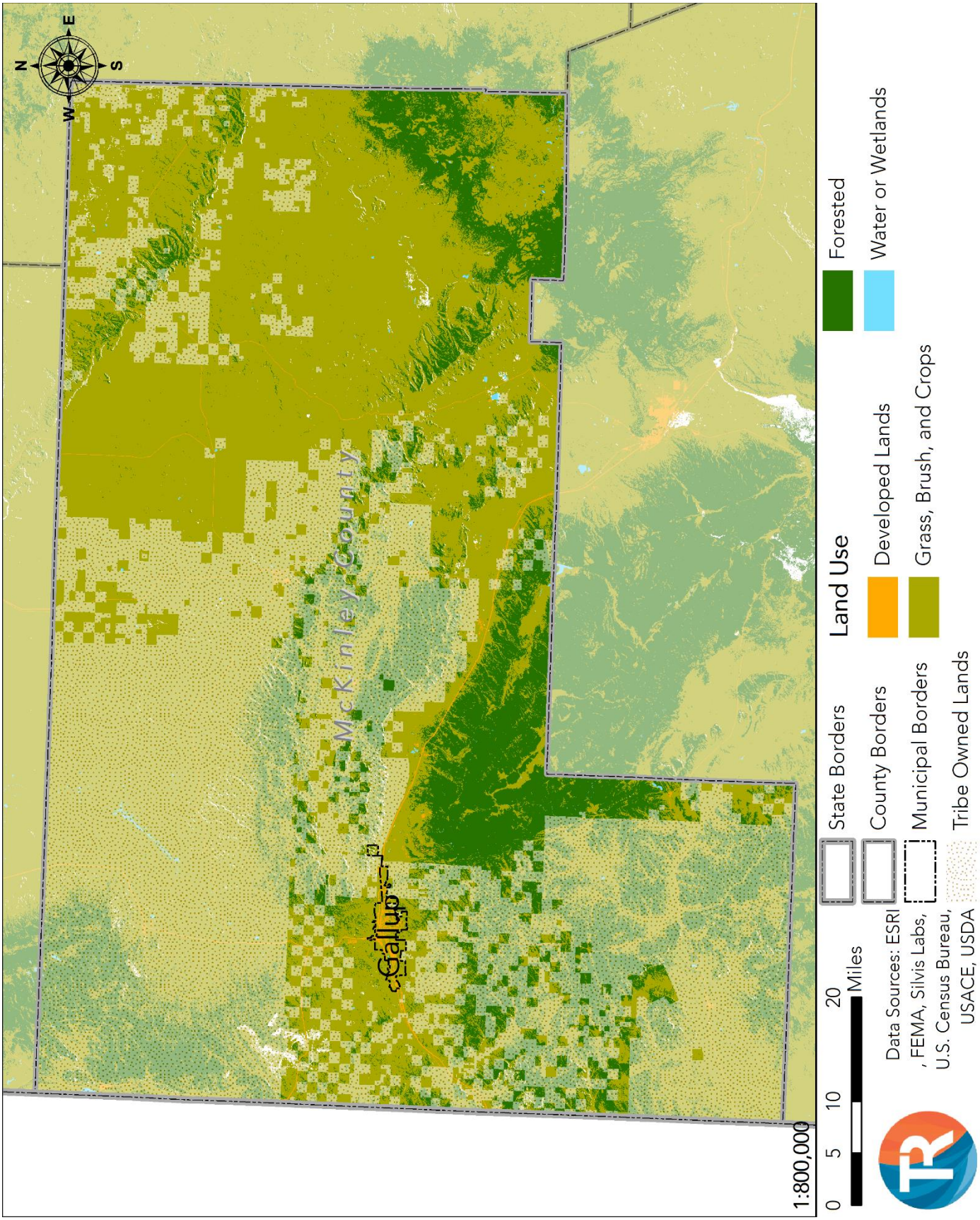
Drought's primary impact is on agriculture and livestock and thus can have significant effects on a jurisdiction's agricultural and tourist economies. If the precipitation level is below normal, farmers and ranchers will struggle to grow their crops and feed their livestock. If rivers, streams, and lakes dry up, tourists will be less likely to enjoy a jurisdiction's amenity resources.

The planning area hosts 2,441 farms across 2,569,810 acres of land. The USDA estimates that the total value of products from these farms is $8,139,000 per year. All of them are considered vulnerable to droughts. An estimate of the land engaged in agricultural activities can be found in the map at the end of this section.

Key Considerations

The entire planning area is at risk to droughts. Even though the direct impact of a drought will likely affect the county at large instead of Gallup due to the lack of agriculture, a drought's effects would quickly spread to the interdependent economies. Additionally, although population growth would place various communities at a higher vulnerability to droughts, the usage of water by the population pales in comparison to the amount used by agricultural activities and is largely negated. The Gallup-McKinley County School District is not considered vulnerable or at-risk to droughts.

Map 3.10 – Land Use, McKinley County



3.5 – Floods

Flooding is the most prevalent and costly disaster in the United States. Flooding occurs when water, due to dam failures, rain, or melting snows, exceeds the absorptive capacity of the soil and the flow capacity of rivers, streams or coastal areas. At this point, the water concentration hyper extends the capacity of the flood way and the water enters the floodplain. Floods are most common in seasons of rain and thunderstorms.

Intense rainfall, accompanying the large thunderstorms in McKinley County and Gallup, may result in water flowing rapidly from higher elevations, exceeding river flow capacity, collecting in agricultural areas, inadequate municipal stormwater drainage, or inadequate soil absorption capacity caused by urban and suburban development.

Location & Extent

Various types of floods can happen quickly, under an hour, in the form of a flash flood, or accumulate seasonally over a period of weeks as is the case in a riverine flood. Flooding can occur anytime throughout the year, but in the planning area it occurs from mid-June to the end of September which is also known as their monsoon season. A variety of factors affect the severity of flash and riverine flooding. 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.

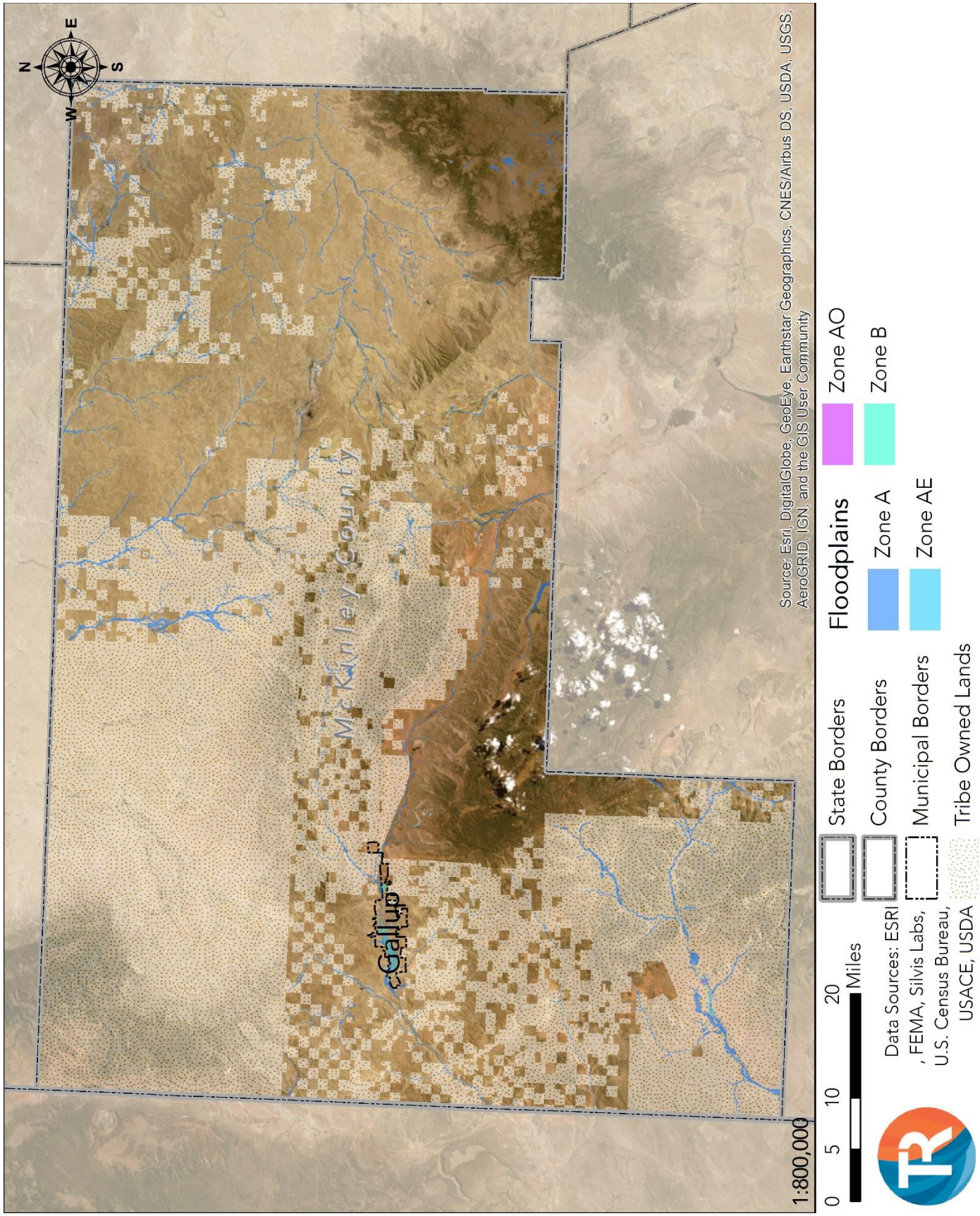
Flash flooding is unpredictable and can occur anywhere throughout the planning area. McKinley County, Gallup, and the Gallup-McKinley County Schools are generally equally likely to experience flash flooding in low-lying areas, areas of poor drainage, or suburban sprawl.

Highways 53, 66, 112, 118, 371, and 602 have all been blocked off from numerous events making travel impossible. One event reported that over five feet of mud was carried along with rushing rain waters. Additionally, flash floods have taken out two bridges, the Thompson Bridge, and the Tse Bonito Bridge. The Thompson Bridge is the only way of access for the Church Rock community. There are also multiple reports of vehicles being swept away carrying with them their passengers.

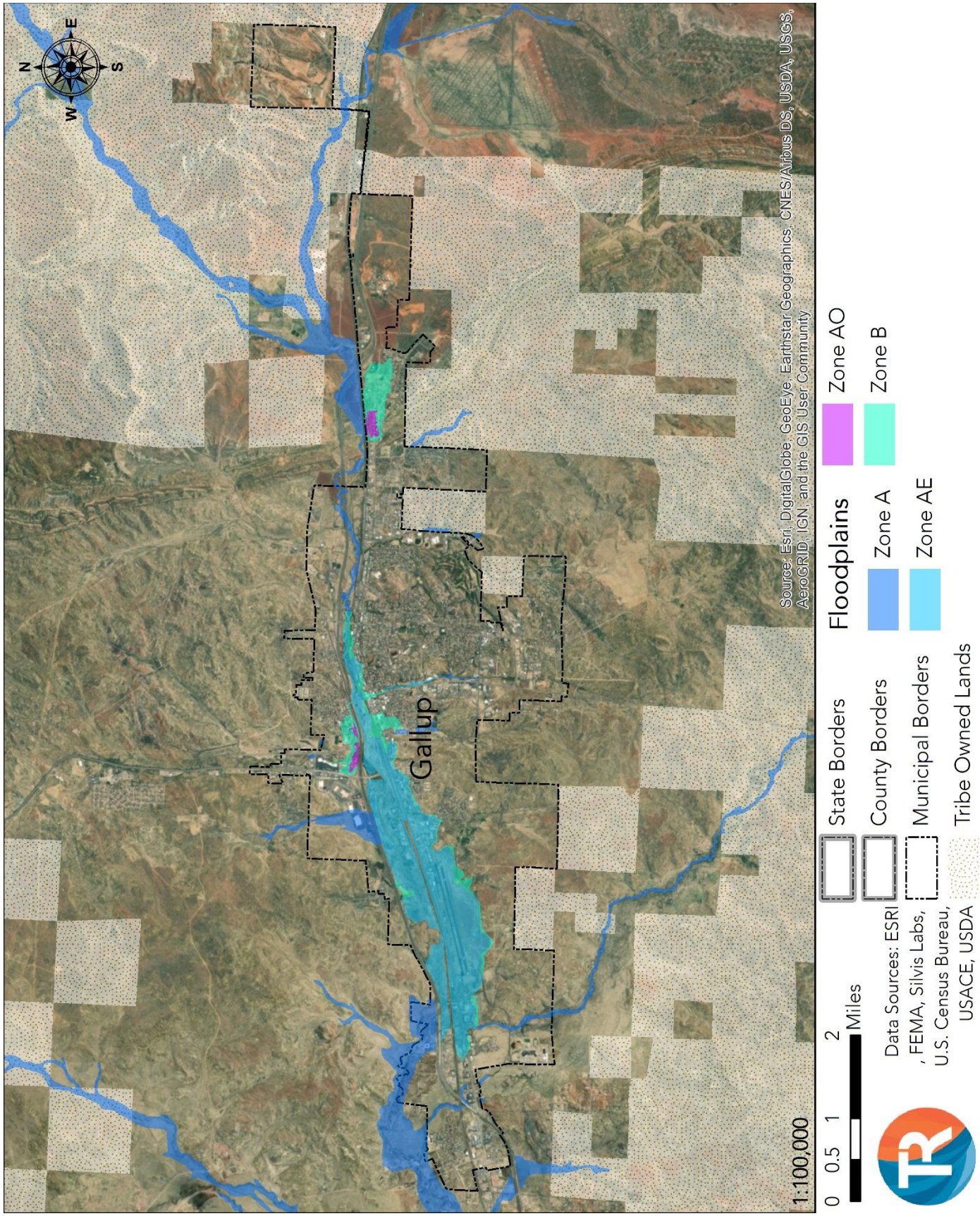
NOAA flash flood records indicate that rural parts of the planning area have seen up to 4 feet of accumulation, downtown Gallup has seen 2 inches of standing water, however the general average is between 1 to 2 inches during a singular event.

Riverine flooding throughout the planning area varies, but has had less of a historical effect on the planning area. Special Flood Hazard Areas (SFHA) were identified via effective NFHL maps produced by FEMA and are located later in this hazard profile. FEMA's established Zone AO's identify both one and two-foot floodplains depths.

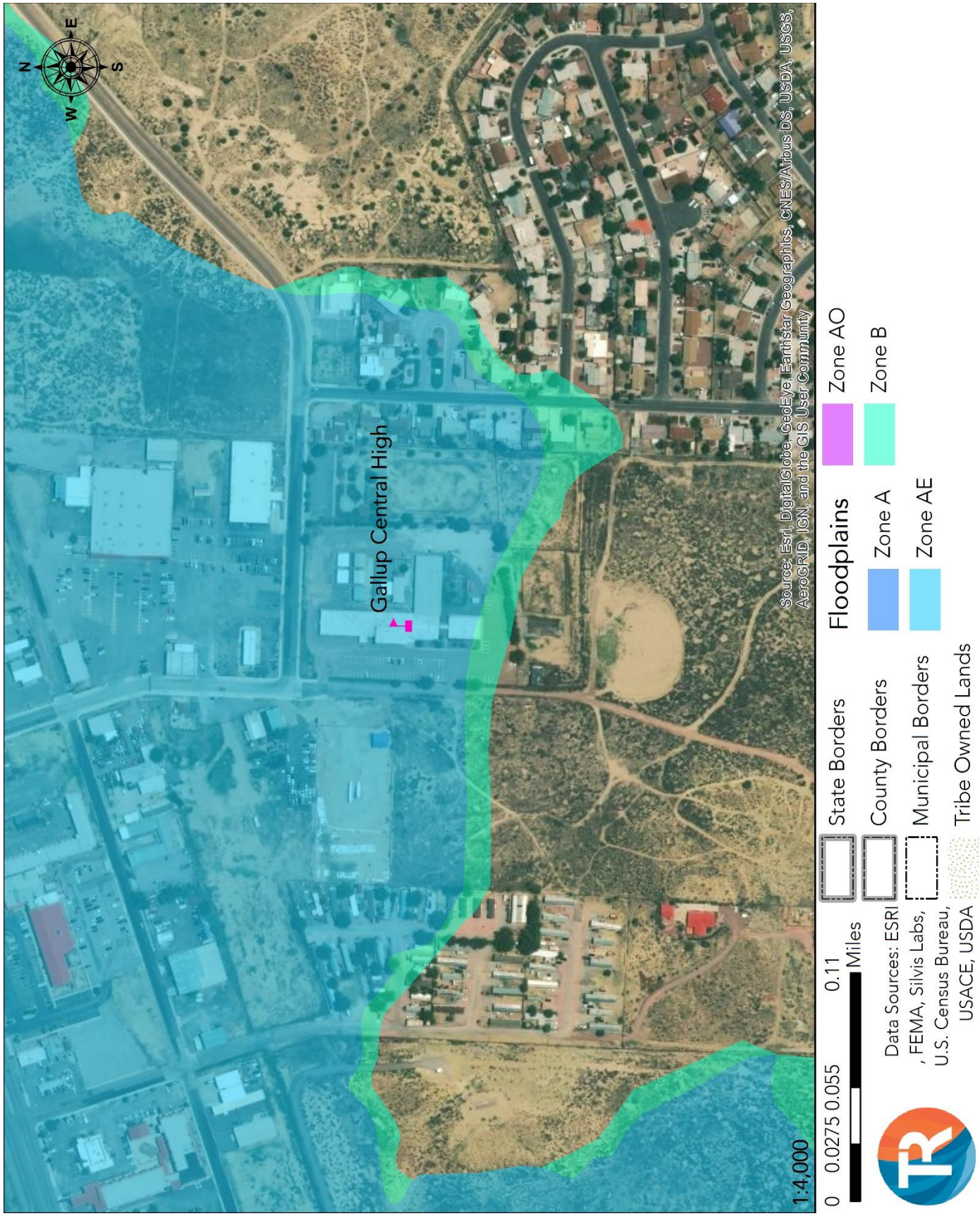
Map 3.11 – Floodplains, McKinley County



Map 3.12 – Floodplains, Gallup



Map 3.13 – Floodplains, Gallup Central High



Map 3.14 – Floodplains, Tobe Turpen Elementary

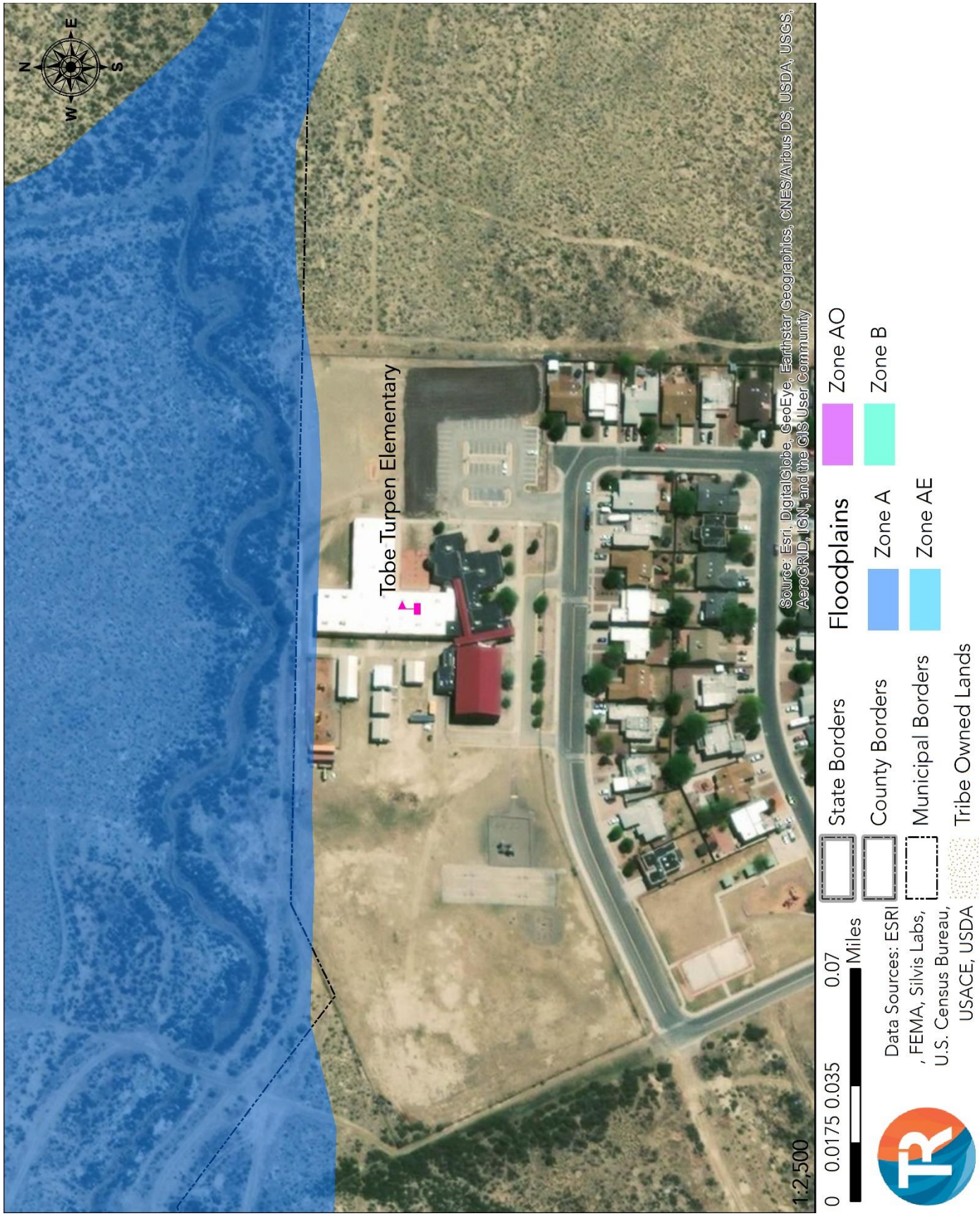


Table 3.15 – Floodplain Classifications

Zone Class	Description
A	Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Some Zone AO have been designated in areas with high flood velocities such as alluvial fans and washes. Communities are encouraged to adopt more restrictive requirements for these areas.
B	Areas subject to inundation by 0.2-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.

History & Probability

Since 1996, NOAA has recorded 50 floods (49 flash and 1 riverine) in the planning area. Most floods have shown to accumulate under 2 inches, but a few have reach upwards of 1 to 5 feet in some areas. These floods have caused one recorded injury and 11 deaths in the planning area. Additionally, they have caused $4,280,597 ($2,755,097 to GMCS) in property damage. For a complete list of NOAA recorded flash and riverine floods, please reference Appendix C.

Based on the data recorded by NOAA, the planning area should expect a notable flash flood at a rate of 2.22 per year or at a 222% chance per year. All FEMA identified SFHAs classified as primary zone A floodplains meaning they are subject to inundation at a rate of 1% per year, while those identified as zone B are subject to riverine flood at 0.2% per year. Please see the table on the following page for the various floodplain classifications that exist throughout the planning area.

Vulnerability of and Impact on Facilities

The planning area has commercial, industrial, and residential structures located in floodplains throughout the planning area. Flooding can cause minimal or complete damage to any of these types of facilities taking them offline for days to years depending on the resources available and remediation costs after an event.

The average flood event in the planning area costs $85,611, while the existing range of a single incident has been from $0 to $848,304. The planning area has incurred a total of $4,280,597 ($2,755,097 to GMCS) property damage from flooding.

The planning area's municipal structures are valued at $2,314,319,000. Since flash flooding threatens the entire planning area, all structures are considered exposed and vulnerable. A GIS analysis of FEMA's identified SFHAs puts a total of $92,105,000 worth of the planning area's municipal structural

inventory exposed to flooding. Please see the following table for a breakdown of these values by type of structure.

Table 3.16 – Vulnerable Municipal Structures by Count, Riverine Floods

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	0	16	2	1	656	4	679
Gallup	0	82	0	10	478	17	587
Total =	0	98	2	11	1,314	21	1,266

*Multi-Unit Residential is defined as a structure with 5 or more residential units
**The data are from the U.S. Census Bureau and FEMA

Table 3.17 – Vulnerable Municipal Structures by Value, Riverine Floods

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	$0	$6,172,000	$879,000	$189,000	$812,460,000	$3,619,000	$921,050,000
Gallup	$0	$59,840,000	$0	$3,737,000	$61,394,000	$52,317,000	$177,288,000
Total =	$0	$66,012,000	879,000	$3,926,000	$864,777,000	55,936,000	$1,098,338,000

*Multi-Unit Residential is defined as a structure with 5 or more residential units
**The data are from the U.S. Census Bureau and FEMA

All of $548,717,930 of the Gallup-McKinley County Schools' structural inventory is exposed and vulnerable to flash flooding. Two of the Gallup McKinley County Public School District's school sites exist with identified FEMA floodplains. Gallup Central High is completely within a 100-year, Zone AE floodplain shown in Map 3.13. Also, the Tobe Turpen Elementary is on the very edge of a 100-year, Zone A floodplain shown in Map 3.14. Therefore, both of these school sites are considered exposed and vulnerable to riverine flooding totaling $14,552,068 worth of the school district's structural inventory.

Table 3.18 – Vulnerable School District Facilities – Riverine Floods

School District Site	Floodplain Class	Location	Value
Gallup Central High	Zone AE & B	Gallup	$7,139,078
Tobe Turpen Elementary	Zone A	Gallup	$7,412,990
		Total =	$14,552,068

*The data are from the Gallup-McKinley County Schools.

Vulnerability of and Impact on Critical Facilities

Since flash floods have the potential to affect the entire planning area, all of this plan's identified critical facilities are equally vulnerable to flash flooding. Of the planning area's 69 critical facilities, 12 are located within FEMA identified SFHAs. Please see the table below for a list of these facilities.

Table 3.19 – Vulnerable Critical Facilities, Floods

Facility	Type
BNSF Railyard	Chemical Site
Bonney Family Home	Assisted Living
County Roads Dept. – Gallup	Public Works
Gallup City Hall	Government
Gallup City Streets Dept.	Public Works
Gallup Municipal Airport	Airport

Gallup Wastewater Treatment Plan	Water Treatments
GFD Fire Station #3	Fire Prevention/EMS
GFD Fire Station #5	Fire Prevention/EMS
Maloney Residential Care	Assisted Living
Red Rocks Care Center	Assisted Living
Substation – Gallup #2	Utility

Vulnerability of and Impact on Population

If evacuation is not heeded, or flood waters rise quickly enough, McKinley County and Gallup's population can drown or become trapped on rooftops or points of high elevations. Depending on the conditions, this will expose them to elements and deprive them of basic needs and services.
As described previously, water that is long lasting and slow to drain will encourage the growth of mold and other bio-hazardous material, rendering a facility unusable until remediation is finished. Extra care, assessment, and sanitization are required before students and staff can re-inhabit a school facility, or they may face serious health concerns. Assisted care facilities housing vulnerable populations can take longer to evacuate. Additionally, the potential presence of mold after a flood requires extra care to be taken before their population can re-inhabit an assisted care facility where the inhabitants are at greater risk of infection.

The planning area has experienced 1 injury and 11 deaths as a result of flash and riverine flooding. The entire population of 33,213 and their 12,611 housing units are considered vulnerable and exposed to flash flooding while 2,467 residents in 892 housing units are currently identified as exposed and vulnerable to riverine floods. Similarly, all of the Gallup-McKinley County Schools' students, staff, and faculty are considered vulnerable to flash flooding while 586 students and 90 staff and faculty are exposed and at risk to riverine flooding.

Table 3.20 – Vulnerable Municipal Populations, Riverine Flooding

Municipality	Population	Housing Units
McKinley County	904	328
Gallup	1,563	564
Total =	2,467	892

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

Table 3.21 – Vulnerable School District Sites – Riverine Floods

School District Site	Floodplain Class	Staff	Students
Gallup Central High	Zone AE & B	36	194
Tobe Turpen Elementary	Zone A	54	392
Total =		90	586

**The data are from the Gallup-McKinley County Schools.*

Vulnerability of and Impact on Systems

Flash flooding does not often cause widespread damage to property or infrastructure limited its ability to impact systems. Even in the case of a swept away roadway, the problem is often limited to secondary

roadways. However, as previously mentioned, the Church Rock area of the county has been completely cut-off by flash flooding in the past. Further incidents like this one can severely hamper these small, rural communities.

Any significant riverine flooding can cause significant damage to the City of Gallup's systems. Extensive riverine flooding can significantly impact local governments' ability to provide basic goods and services to their communities either by losing essential facilities or by blocked infrastructure. This can take the form of lost law enforcement, fire prevention, medical, or water treatment facilities. Significant damage to residential and or commercial structures can irrevocably damage a community and its economy creating refugees and economic hardship. If a chemical facility is significantly impacted it is possible the chemicals stored at the facilities can wash away with the flood waters and have detrimental effects on the local environment.

Most of the planning area's large public works facilities are located in the same floodplain. A significant flood would take out these facilities significantly hampering the government's ability to directly recover from a large-magnitude disaster.

Key Considerations

Currently, there are no repetitive loss or severe repetitive loss properties within the planning area. Additionally, since there is no significant population growth in the county or Gallup and there are numerous floodplain construction regulations in place, new construction has not occurred in the identified FEMA floodplains.

3.6 – Geologic

Landslides are the downward and outward movement of slopes. Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steepened slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters. Other contributing factors include the following: erosion; steep slopes; rain and snow; and earthquakes.

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

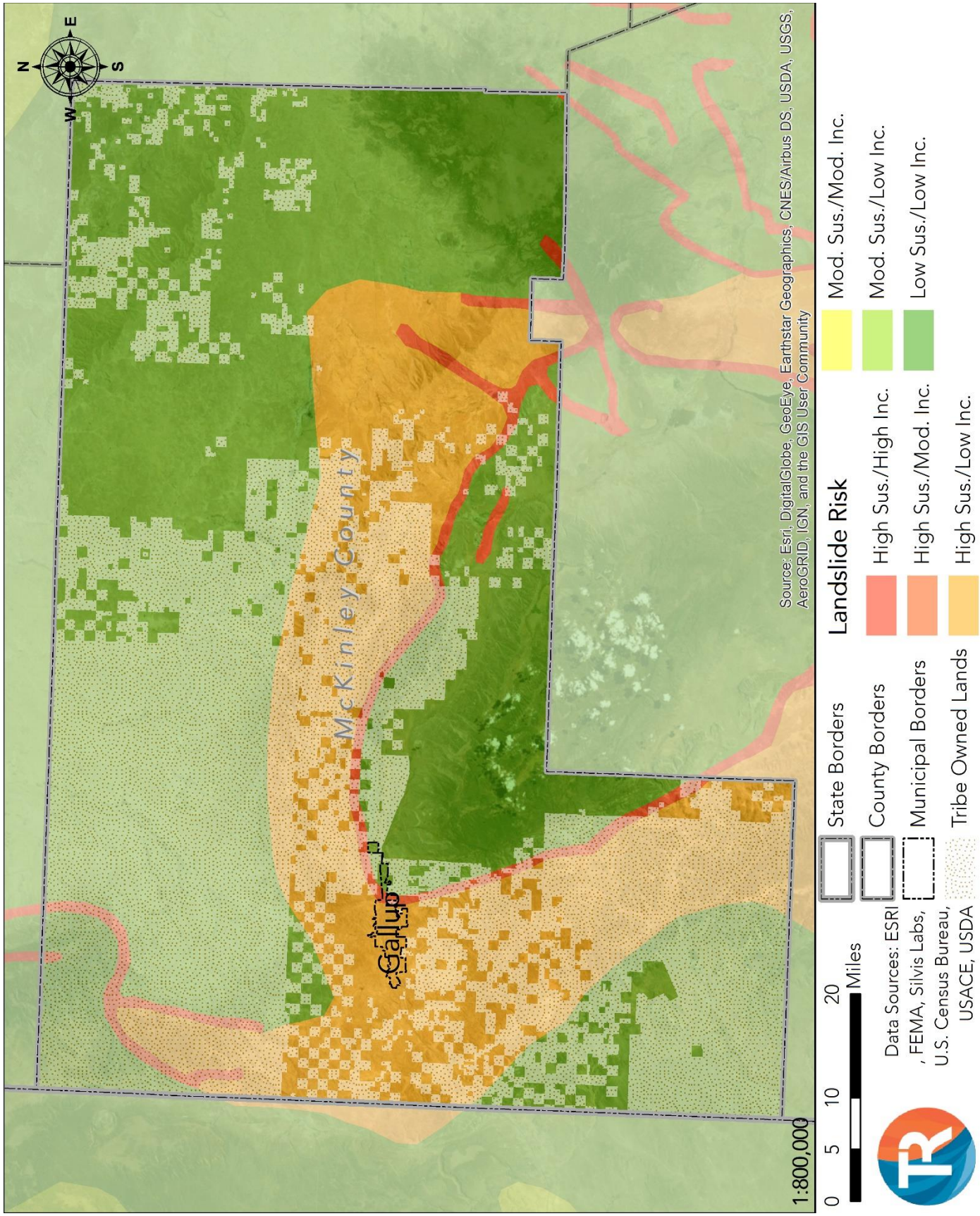
Land subsidence is the loss of surface elevation and occurs when large amounts of groundwater have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rock falls in on itself. Subsidence may occur abruptly or over many years. It can occur uniformly over large areas or as localized sinkholes. They typically originate in rock formations classified as “Karst.”

Location & Extent

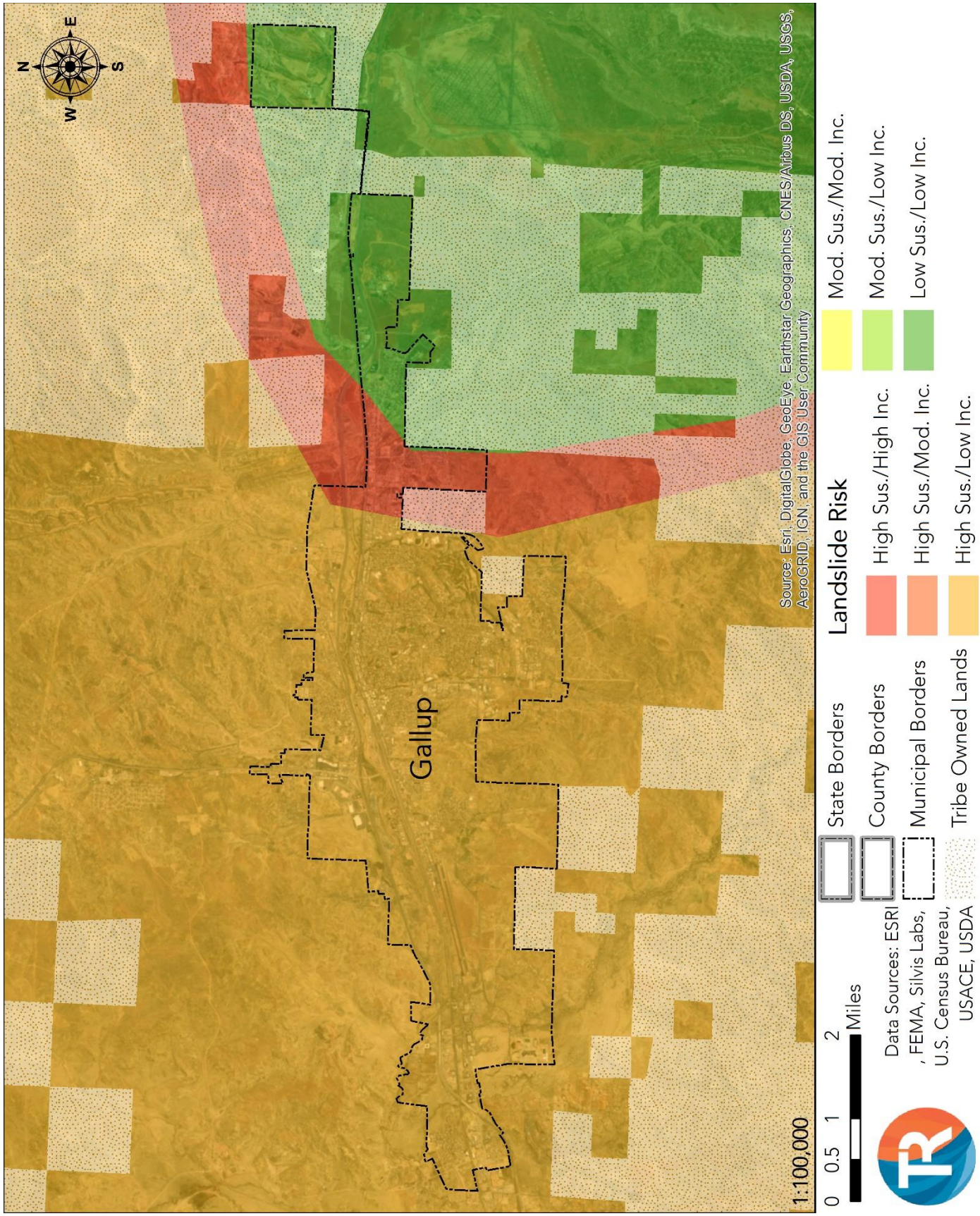
Typically, landslides have the potential to destroy structures, infrastructure, or block transportation routes. A USGS landslide assessment and local input is congruent in that the greatest threat areas for landslides exist through the central and south portions of the planning area and are depicted in the maps on the following pages. Specifically, any butte or plateau in this area can experience a landslide. These areas are identified on the map on the following page. Most major transportation routes at some point converge with the identified landslide risk areas, including Interstate 40 and Highway 66.

Land Subsidence, or commonly known as sinkholes, are a potential threat to the planning area. These formations exist sparsely in the central portion of the planning area converging with the eastern Gallup and the community of Ramah. At large though, these formations exist largely outside the planning area’s developed lands. In two locations, formations cross the major transportation infrastructure routes of Interstate 40 and Highway 66. Please see the maps on the following pages for the identified potential risk areas.

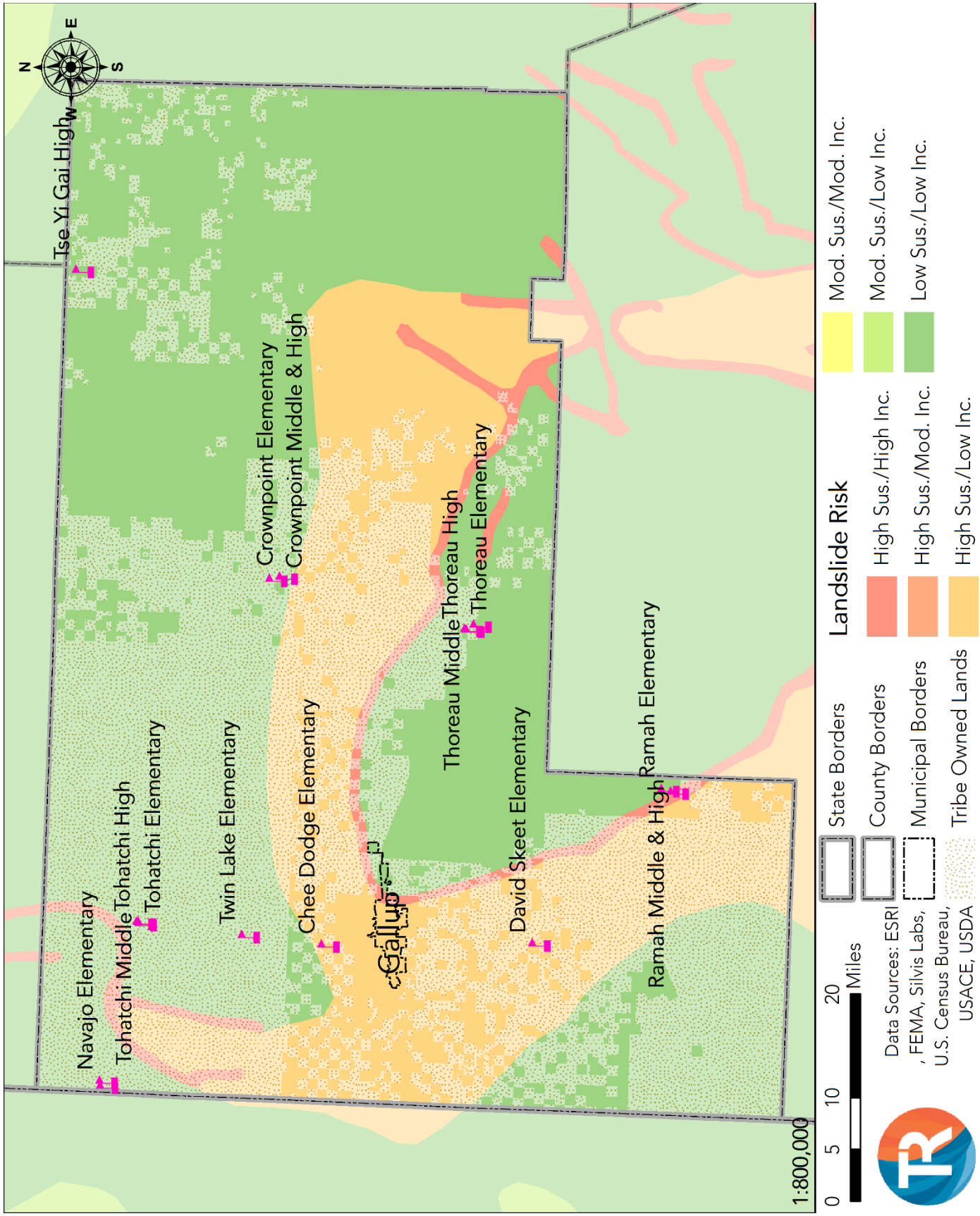
Map 3.15 – Landslide Potential, McKinley County



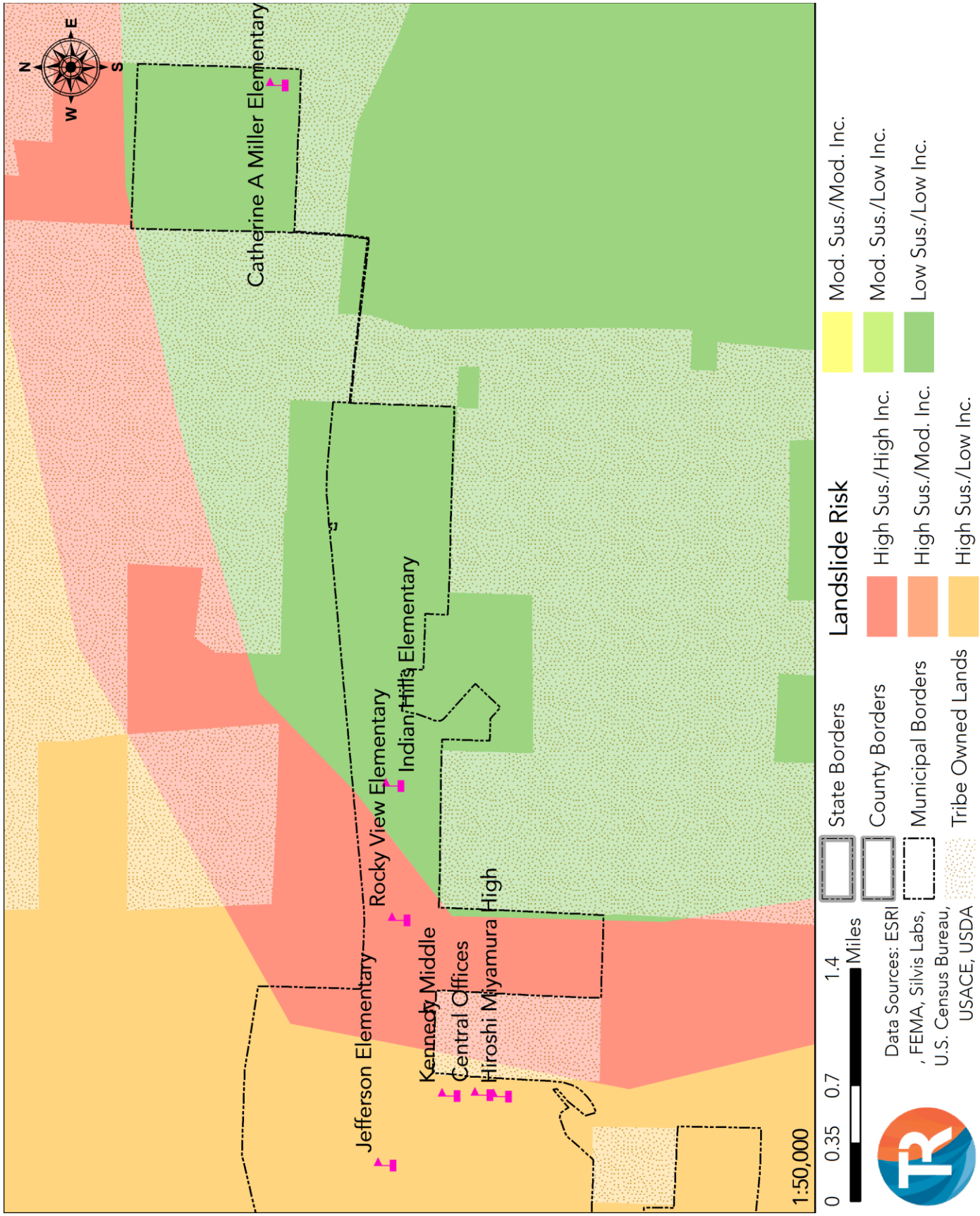
Map 3.16 – Landslide Potential, Gallup



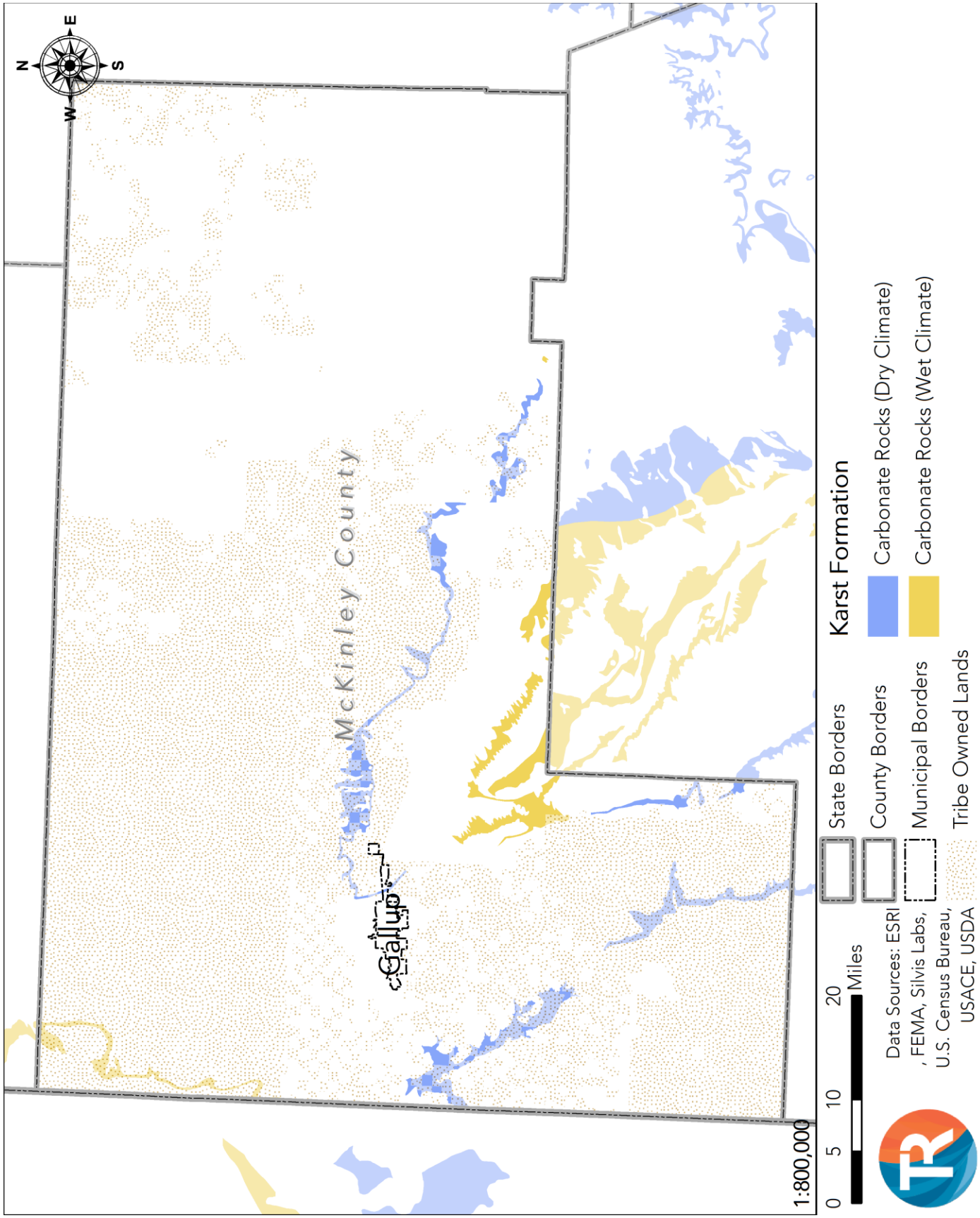
Map 3.17 – Landslide Potential, Gallup-McKinley County Schools, County



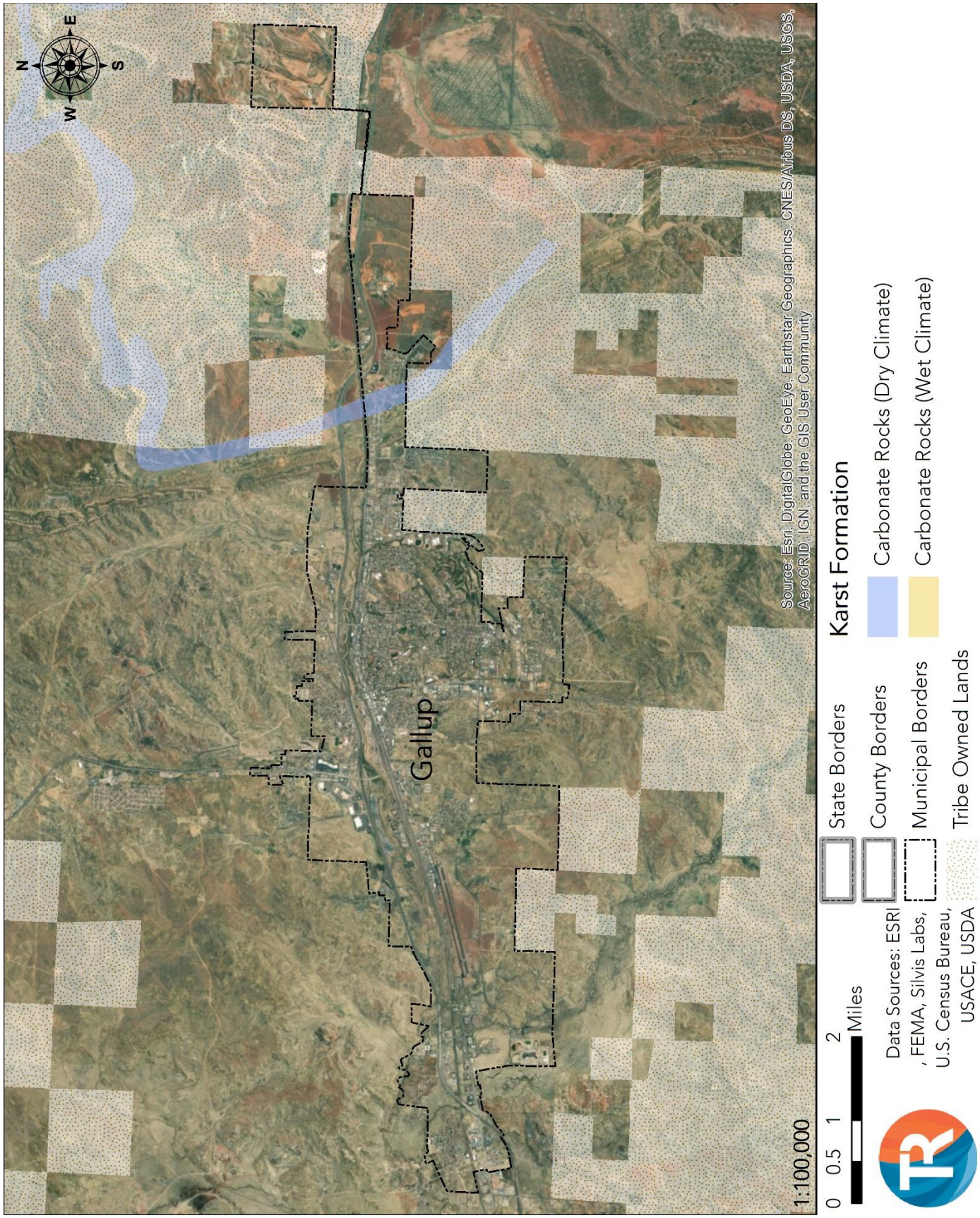
Map 3.18 – Landslide Potential, Gallup-McKinley County Schools, Gallup East



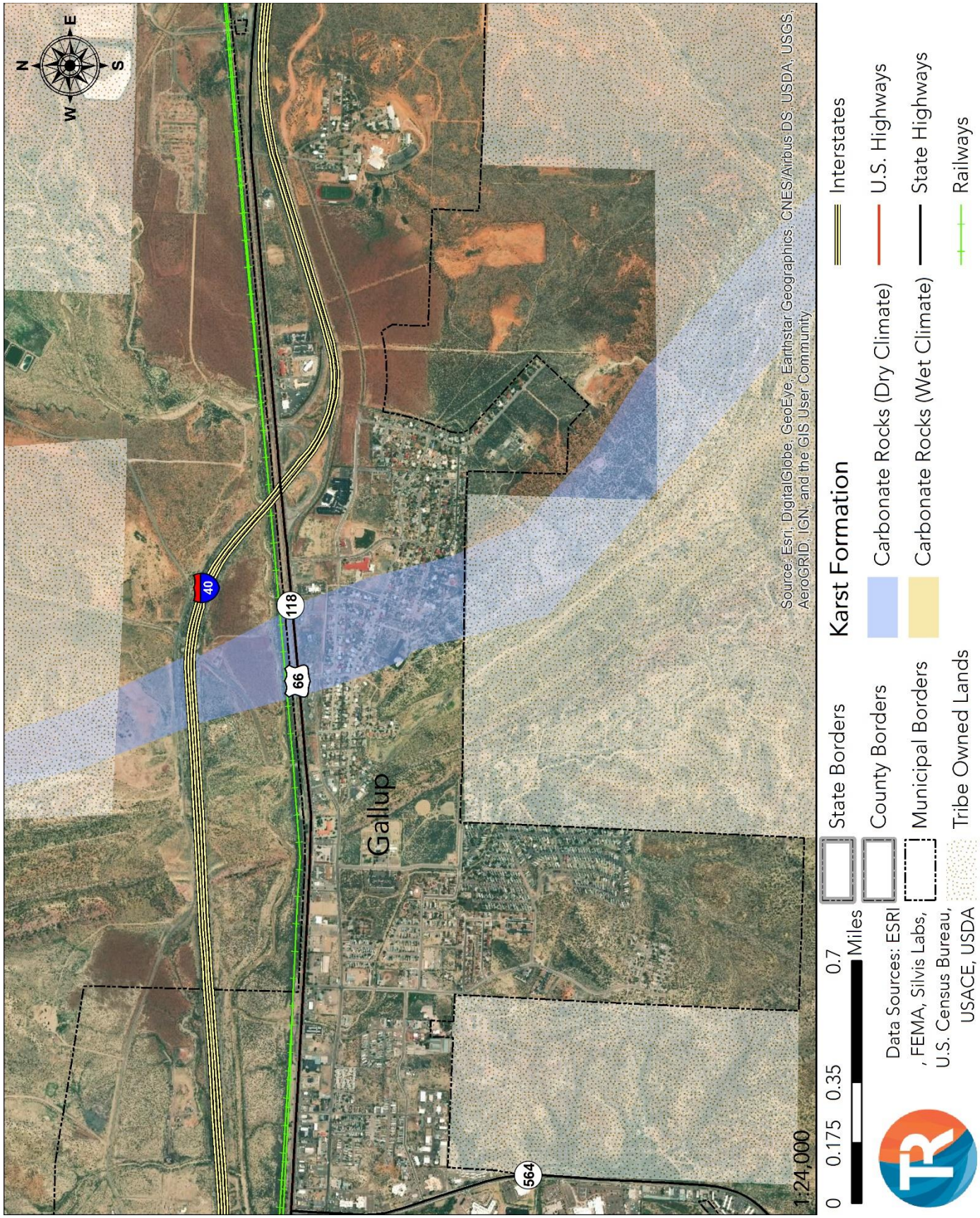
Map 3.19 – Karst Formations, McKinley County



Map 3.20 – Karst Formations, Gallup #1



Map 3.21 – Karst Formations, Gallup #2



Map 3.22 – Karst Formations, Indian Hills Elementary

History & Probability

There are no recorded incidents of landslide, land subsidence, or sinkholes damaging and buildings or infrastructure within the planning area. Nor are there any recorded incidents of people being injured or killed. Minor landslides, land subsidence events, and sinkholes have been reported in remote areas, but as of yet, none have been close enough to any populated or developed area to merit serious concern.

Based on this information and the lack of quantifiable data, the probability of a dangerous geologic event occurring is categorized as 'rare' or less than 1%.

Vulnerability of and Impact on Facilities

Landslides, land subsidence events, and sinkholes can have minimal or devastating impacts on facilities. The degree of vulnerability depends on the varying conditions of the geologic event itself. Given that there have not been past recorded events that have affected the planning are, we are not able to predict a historical range or average of structural impacts.

The planning areas total structures are valued at $2,314,319,000 of which $157,782,000 are within identified high risk landslide areas. A GIS analysis of karst formations places $159,884,000 worth of the planning area's municipal structures within potential land subsidence and sinkhole vulnerable areas. Please see the following table for a breakdown of these values by structure type.

Table 3.22 – Vulnerable Municipal Structures by Count, Landslides

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	1	10	5	3	206	1	226
Gallup	0	22	1	9	1,010	9	1,051
Total =	1	32	6	12	1,216	10	1,277

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

Table 3.23 – Vulnerable Municipal Structures by Value, Landslides

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	$171,000	$3,204,000	$2,848,000	$610,000	$31,775,000	$1,017,000	$39,625,000
Gallup	$0	$11,770,000	$1,582,000	$2,588,000	$94,578,000	$7,639,000	$118,157,000
Total =	$171,000	$14,974,000	$4,430,000	$3,198,000	$126,353,000	$8,656,000	$157,782,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

Table 3.24 – Vulnerable Municipal Structures by Count, Land Subsidence

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	0	5	1	0	197	0	203
Gallup	0	8	0	4	235	3	250
Total =	0	13	1	4	432	3	453

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

Table 3.25 – Vulnerable Municipal Structures by Value, Land Subsidence

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
McKinley County	$0	$4,784,000	$271,000	$0	$23,758,000	$0	$28,813,000
Gallup	$0	$5,210,000	$0	$1,656,000	$44,204,000	$4,399,000	$55,469,000
Total =	$0	$9,994,000	$271,000	$1,656,000	$67,962,000	$4,399,000	$84,282,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

The Gallup-McKinley County Schools has two of its school sites vulnerable to geologic hazards. The Rocky View Elementary, valued at $6,932,311 is located within a USGS highly-probably landslide area while the western portion of the Indian Hills Elementary, valued at $2,379,311, is built over identified karst formations.

Table 3.26 – Vulnerable School District Facilities, Geologic Hazards

School District Site	Geologic Type	Location	Value
Indian Hills Elementary	Land Subsidence	Gallup	$2,379,311
Rocky View Elementary	Landslides	Gallup	$6,932,510
		Total =	$9,311,821

**The data are from the Gallup-McKinley County Schools.*

Vulnerability of and Impact on Critical Facilities

Of the 60 identified critical facilities, 4 are vulnerable to geologic hazards. Please see the table below for a list of these critical facilities.

Table 3.27 – Vulnerable Critical Facilities, Geologic Hazards

Facility	Geologic Type	Type
MCFD & EMS Station 51	Landslides	Fire Prevention/EMS
MCFD & EMS Station 61	Landslides	Fire Prevention/EMS
MCFD & EMS Station 73	Land Subsidence	Fire Prevention/EMS
Transwestern Pipeline Substation	Landslides	Utility

Vulnerability of and Impact on Population

Landslides pose extremely minimal risk to the planning area's population. Although some populations do exist in some USGS identified landslide risk areas, history does not lead us to believe there is a high risk. The most likely scenario is of a landslide along a road hitting travelling motorists or a rural landslide hitting hikers or other outdoor tourists. Depending on the topography and circumstances of the landslide, this could simply immobilize a vehicle, cover it in debris, or cause serious to mortal bodily harm to the vehicle's inhabitants.

A land subsidence event or sinkhole could occur in within any of the identified areas marked in the previous map causing significant damage to a structure occupied by people. This possibility could not only swallow up or cause people to fall down significant heights, but cause a structure to collapse upon the inhabitants, trapping, injuring, or killing them in the process.

Table 3.28 – Vulnerable Municipal Populations, Landslides

Municipality	Population	Housing Units
McKinley County	568	211
Gallup	3,292	1,055
Total =	3,860	1,266

*Multi-Unit Residential is defined as a structure with 5 or more residential units
**The data are from the U.S. Census Bureau and FEMA

Table 3.29 – Vulnerable Municipal Populations, Land Subsidence

Municipality	Population	Housing Units
McKinley County	383	196
Gallup	666	240
Total =	1,049	436

*Multi-Unit Residential is defined as a structure with 5 or more residential units
**The data are from the U.S. Census Bureau and FEMA

The planning area has not experienced any injuries or deaths as a result of landslides, land subsidence, or sinkholes. 3,860 of the planning area's population reside in identified high-risk landslides areas in 1,266 housing units. 1,049 people live in 436 housing units that are built upon identified karst formations.

Table 3.30 – Vulnerable School District Sites, Geologic Hazards

School District Site	Geologic Type	Staff & Faculty	Students
Indian Hills Elementary	Land Subsidence	94	270
Rocky View Elementary	Landslides	39	283
	Total =	133	553

*The data are from the Gallup-McKinley County Schools.

553 students and 133 staff and faculty of the Gallup-McKinley County Schools are considered vulnerable to geologic hazards.

Vulnerability of and Impact on Systems

The planning area's economic, transportation, and other systems are minimally vulnerable to landslides, land subsidence, and sinkholes. Both local governments' ability to deliver goods and services to its people encompasses many single points of failure such as its water treatment facilities, utility substations, and various other services. If any one or a number of these at-risk facilities is damaged by a landslide, land subsidence event, or sinkhole event, the planning area could see compounding impacts for a period of months to a year.

A landslide, land subsidence event, or sinkhole has the potential to temporarily block or damage the Interstate 40 and Highway 66 for weeks at a time. Additionally, if the geologic event occurs in tandem with another hazard, such a severe storm event, the blocking of a major route will have compounded effects on response and recovery operations. Emergency personnel may have to use far, out of the way routes, delaying necessary aid.

Key Considerations

Since there are no historical incidents of significant or damaging landslides, land subsidence, or sinkholes, demarking any particular jurisdiction at a greater risk than another becomes difficult. Additionally, this problem is further compounded by the USGS' analysis of landslide risk. There are areas of vulnerability for landslides, land subsidence, or sinkholes as identified previously, but making very specific and discrete judgements on the total risk of the participating jurisdictions becomes nebulous at best.

3.7 – Severe Storms

Severe storms comprise the hazardous and damaging weather effects often found in violent storm fronts. They can occur together or separate, they are common and usually not hazardous, but on occasion they can pose a threat to life and property.

This plan defines Severe Storms as a combination of the following severe weather effects as defined by NOAA and the NWS.

Hail: Showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.

High/Strong Wind: Sustained wind speeds of 40 miles per hour or greater lasting for 1 hour or longer, or winds of 58 miles per hour or greater for any duration. Often referred to as straight line winds to differentiate from rotating or tornado associated wind.

Lightning: A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.

Thunderstorm Winds: The same classification as high or strong winds, but accompanies a thunderstorm. It is also referred to as a straight-line wind to differentiate from rotating or tornado associated wind.

For consistency with the NWS and NOAA, high and strong winds are shown separate from thunderstorm winds when raw, collected data is displayed. However, for their impacts and probability, they are combined and referred to simply as "wind" events. Undoubtedly, numerous more lightning strikes have occurred in the planning area throughout recorded history. However, for the purposes of assessing the planning area's vulnerabilities and risk, only the strikes recorded by the NWS and NOAA are considered. The NWS and NOAA records consist of lightning strikes that have caused a significant impact, that is, they damaged property, infrastructure, or harmed people.

Location & Extent

Severe storms are an area-wide hazard as they can strike anywhere in the planning area. Storms, severe or not, are often predicted within a day or multiple days in advance.

The severity of a storm is not as easily predicted and when it is, the window of notification is up to a few hours to under an hour. When a storm is imminent, it is unknown whether or not hail, lightning, or damaging winds will occur until after an incident has been reported. Since severe storms typically affect an area the size of a region, the expected intensity is the same throughout the planning area. Thunderstorms, and the accompanying hail, lightning, and wind, typically last less than an hour. The portions of this timeframe where each storm classification would be considered "severe" should last less than 30 minutes.

Hail rarely falls in the planning area, but when it has, has been recorded up to 1.0 inch. A complete hail index with size and typical damages can be found in the table below. Any incidents of hail can cause injury to the planning area's citizens, while anything above 1 inch could cause damage to structures. If windows are broken, some facilities will be rendered unusable until repaired.

Table 3.31 – NOAA/TORRO Hailstorm Intensity Scale

Class	Intensity Category	Diameter (Inches)	Size Comparison	Damage Impacts
H0	Hard Hail	0 – 0.33	Pea	No damage
H1	Potentially Damaging	0.33 – 0.60	Marble/Mothball	Slight damage to crops
H2	Potentially Damaging	0.60 – 0.80	Dime/Grape	Significant damage to crops
H3	Severe	0.80 - 1.20	Nickel to Quarter	Severe damage to crops, damage to glass and plastic, paint and wood scored
H4	Severe	1.20 - 1.60	Half Dollar	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.60 - 2.00	Silver Dollar to Golf Ball	Damage to tiled roofs, significant risk of personal injury.
H6	Destructive	2.00 - 2.40	Egg	Aircraft bodywork dented, brick walls pitted
H7	Very Destructive	2.40 - 3.00	Tennis Ball	Severe roof damage, risk of serious injuries to persons not protected
H8	Very Destructive	3.00 - 3.50	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.50 - 4.00	Grapefruit	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected
H10	Super Hailstorms	4.00 +	Softball and up	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected

It can safely be assumed any severe storm has the potential to cause a lightning strike. It can happen instantly with no warning and happen anytime throughout the storm's passage. A storm's lightning intensity is measured by lightning activity intensity levels outlined in the table on the following page. A strike could damage structures throughout the planning area and render it unusable for a period of time, or cause it to catch fire and damage it beyond repair. Most lightning strikes do not hit structures or people and therefore go unreported. The planning area can and has experienced lightning of all intensities listed in the table below.

Table 3.32 – Lightning Activity Intensity Scale

Level	Description
LAL 1	No activity
LAL 2	Isolated thunderstorms: Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud-to-ground strikes in a 5-minute period.
LAL 3	Widely scattered thunderstorms: Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud-to-ground strikes in a 5-minute period.
LAL 4	Scattered thunderstorms: Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud-to-ground strikes in a 5-minute period.
LAL 5	Numerous thunderstorms: Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud-to-ground strikes in a 5-minute period.

Strong, high, and thunderstorm winds are classified as winds which occur between 40 and 70 miles per hour lasting for 1 hour or greater or of 58 miles per hour for any duration. The Beaufort Scale shown on the next page displays the ranges of wind speed and correlates them with their typical effects. At a level 7 and 8 citizens should remain indoors and anywhere above a level 8 will cause damage to structures. Damage to any amount of structures can cause serious disruption to McKinley County and Gallup. The scope of damage can range from one residential house up to widespread destruction of homes and reinforced buildings throughout the planning area. The planning area occasionally receives wind events between 50 and 65 miles per hour or a Beaufort level between 9 and 10.

Table 3.33 – Beaufort Scale

Beaufort Number	Wind Speed (MpH)	Seaman's Term	Effects
0	Under 1	Calm	Calm, smoke rise vertically
1	1 – 3	Light Air	Smoke drift indicates wind direction, but vanes do not move
2	4 – 7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8 – 12	Gentle Breeze	Leaves, small twigs in constant motion, light flags extended
4	13 – 18	Moderate Breeze	Dust, leaves, and loose paper raised up, small branches move
5	19 – 24	Fresh Breeze	Small trees begin to sway
6	25 – 31	Strong Breeze	Large branches of trees in motion, whistling heard in wires
7	32 – 38	Moderate Gale	Whole trees in motion, resistance felt in walking against the wind
8	39 – 46	Fresh Gale	Twigs and small branches brake off of trees
9	47 – 54	Strong Gale	Slight structural damage occurs, slate blown from roofs
10	55 – 63	Whole Gale	Trees broken, structural damage occurs
11	64 – 72	Storm	Widespread damage
12	73 or Higher	Hurricane Force	Violence and destruction

History & Probability

Since 1996, NOAA has recorded 5 hailstorms in the planning area. In most of these cases the hail remained under 1 inch in size. This hailstorm did not cause any personal injuries or deaths in the planning area, nor did it cause any significant property damage.

Since 1996, NOAA has recorded 1 lightning strike in the planning area. This event caused 2 injuries and 0 deaths.

Since 1996, NOAA has recorded 59 wind events in the planning area. Most of these events have been measured at between 50 to 60 miles per hour, but have a few have been measured in the upper 60s. None of these events have caused injuries or deaths in the planning area. Wind events have caused a total of $720,493 ($207,993 to GMCS) in property damage throughout the planning area.

Based on the data recorded by NOAA, the planning area should expect a lightning strike in rarity, about once every 25 years while it should experience a hailstorm about once every 4 to 5 years or at a

rate of 0.23 events per year. Additionally, the planning area should expect a significant wind event over twice a year or at a rate of 2.68 events per year.

For a complete list of NOAA recorded hail, high wind, lightning, and thunderstorm winds, please reference Appendix C.

Vulnerability of and Impact on Facilities

Structural vulnerability to severe storms is the same throughout the planning area. Hail can be costly by damaging rooftops, outdoor equipment, and windows. Lightning can strike anything with the potential to significantly damage electrical infrastructure or ignite a fire. Wind events create flying debris which can damage infrastructure and buildings. Strong enough wind can cause structure damage to older, less well constructed buildings even toppling or leveling them. A FEMA Code 361 Tornado Safe Room will provide more than sufficient protection and resistance to any form of severe storm as they are designed and constructed above the standard metrics of a severe storm. Significant changes to national building codes were implemented in 1999, and structures built before then are considered to be more vulnerable than those constructed afterwards. The majority of the planning area's structures were constructed before 1999.

The average hailstorm in the planning area is will not cause any property damage as the recorded events have not historically caused any damage.

The average lightning strike in the planning area will not cause any property damage as the single recorded event did not cause any damage.

The average wind event in the planning area costs $12,211, while the existing range of a single incident has been from $0 to $400,000.

McKinley County and Gallup's municipal structures are valued at $2,314,319,000 and the Gallup-McKinley County Schools' structures are valued at $548,717,930. Since severe storms threaten the entire planning area equally, all structures are considered exposed and vulnerable.

Vulnerability of and Impact on Critical Facilities

All infrastructure and critical facilities within the planning are equally vulnerable and at risk since severe storms can affect any portion of the planning area and damage indiscriminately.

Vulnerability of and Impact on Population

In the absence of proper shelter, hail can cause serious injury to an unprotected person. As long as the planning area's citizens stay indoors and away from windows, they will be protected against hail injury and death. Similarly, they can avoid being struck by lightning by staying indoors. Although lightning may strike a structure sheltering people, it is extremely unlikely that the strike itself will directly injure or kill a sheltered person. As long as a structure is able to maintain its integrity during high speed winds, it will protect people from wind injury or death. However, old or poorly constructed facilities are not

good shelters as previously mentioned, flying debris can break windows or cause structural damage. Either of these instances have the potential to seriously injure or kill anyone taking shelter in older, less well constructed building.

McKinley County and Gallup have a total population of 33,213 in 12,611 housing units all of which are vulnerable and at risk to severe storms. Similarly, all of the Gallup-McKinley County Schools' 11,130 students, 1,826 staff and faculty are vulnerable and at risk.

Historically, there have been no fatalities, but 2 recorded injuries from severe storms in the planning area.

Vulnerability of and Impact on Systems

The planning area's assets and systems' vulnerability to severe storms is directly correlated to its population density throughout the planning area with its power grid being the most likely to suffer damage. Where there are people, there are power related infrastructure.

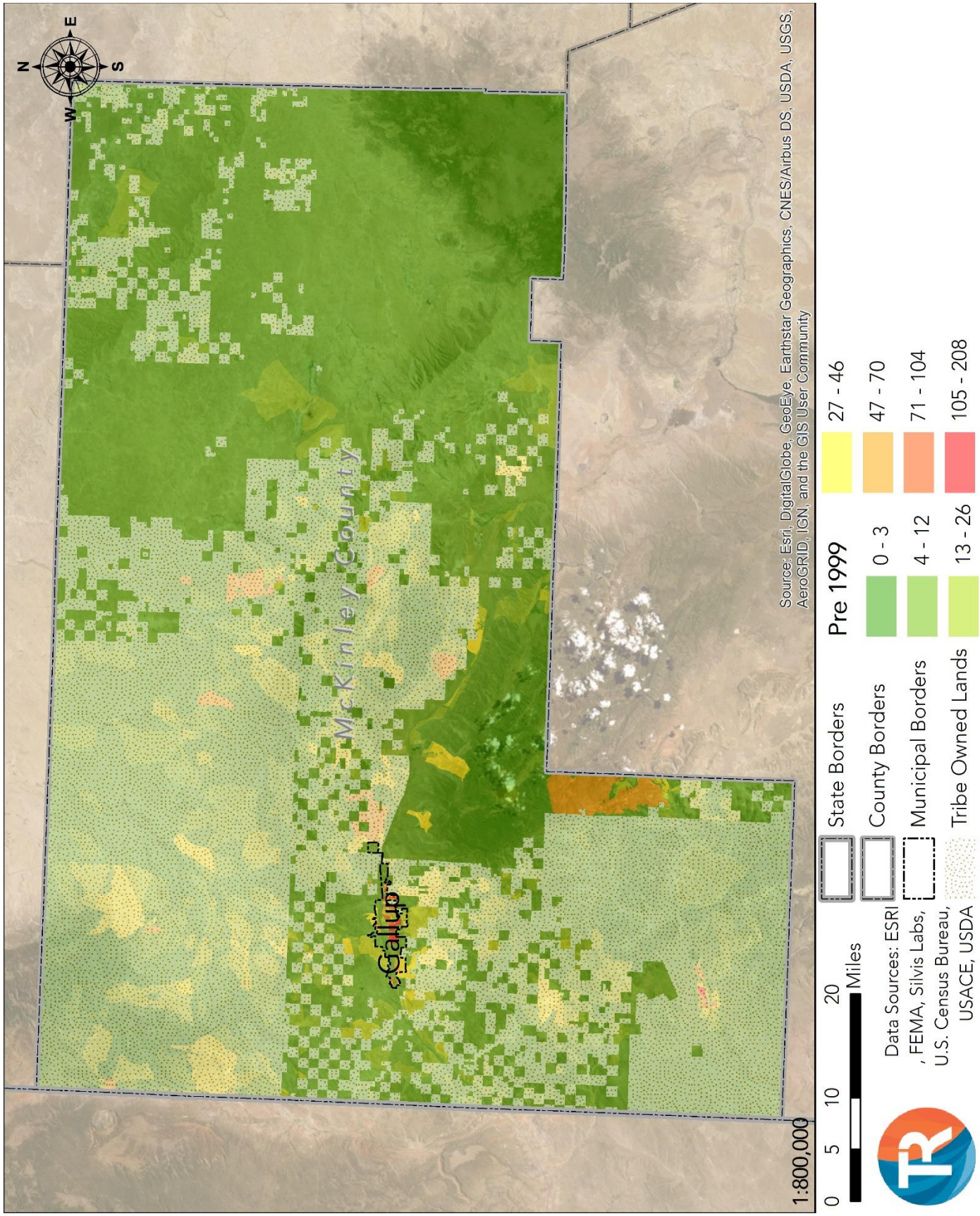
Hail damage is typically superficial and does not hamper a community's assets, systems, or activities. Lightning strikes can destroy or damage a community asset, but since their strikes are typically isolated and rarely hit anything, it is unlikely to significantly impact a larger system. Wind events can destroy and damage multiple structures and points of infrastructure. It has the potential to significantly impact a community's power grid compounding the effects of other hazards such as tornadoes, and winter storms.

Key Considerations

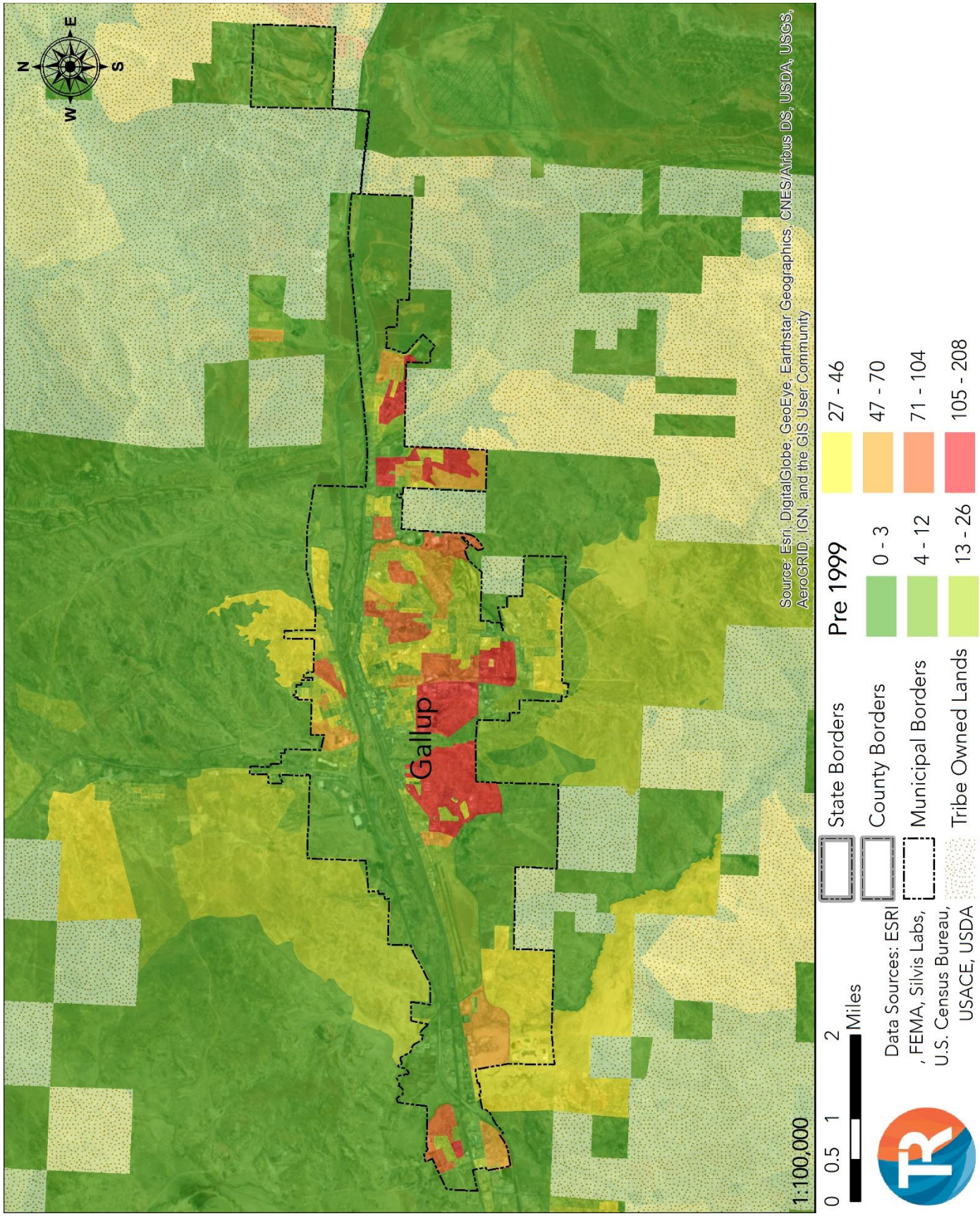
Since severe storms strike over large areas and indiscriminately, there is not any particular portion of the planning area that is more likely than another to experience a severe storm. However, there are portions of the planning area that are more vulnerable to hail and wind related damage due to the age of a significant portion of their building stock.

As previously mentioned, the majority of the planning area's structures were built prior to 1999 and thus are more vulnerable and at risk to severe storms. The maps on the following pages depict the density and areas where these buildings exist in greater numbers in relation to structures built after 1999.

Map 3.23 – Pre-1999 Built Structures, McKinley County



Map 3.24 – Pre-1999 Built Structures, Gallup



3.8 – Severe Winter Storms

A severe winter storm encompasses multiple effects caused by winter weather. Included ice storms, heavy or prolonged snow, sleet, and extreme temperatures.

This plan defines severe 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. In forecasts, snowfall amounts are expressed as a range of values, e.g., "8 to 12 inches." However, in heavy snow situations where there is considerable uncertainty concerning the range of values, more appropriate phrases are used, such as "...up to 12 inches..." or alternatively "...8 inches or more."

Winter Storm: Hazardous winter weather in the form of heavy snow, heavy freezing rain, or heavy sleet. May also include extremely low temperatures and increased wind.

Location & Extent

Severe winter storms are an area-wide hazard as they can strike anywhere in the planning area. Severe 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.

Severe winter storms typically form with warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted and when it is, the window of notification is up to few hours to under an hour. Although meteorologists estimate the amount of snowfall a severe 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.

McKinley County, Gallup, and the Gallup-McKinley County Schools will typically receive 3 to 6 inches of snow during a severe winter storm, but a single storm in the planning area has managed to accumulate up to a reported 12 inches and potentially more in the highlands. Currently, NOAA or the NWS has not recorded any ice storms affecting the planning area, but the potential for such an event exists. Since there are no records to base an extent measurement off of, we can't make a reasonable assumption as to how many inches the planning area might expect.

History & Probability

Since 1996, NOAA has recorded 10 severe winter storms in the planning area. It has not experienced any severe winter storms categorized as ice storms. Snowfall from these storms has been on average been low.

These severe winter storms have not caused any direct personal injury or deaths in the planning, but has created hazardous driving conditions that have caused 3 exposure deaths and more in neighboring communities. These deaths were not recorded by NOAA. Additionally, there are no recorded incidents that have caused direct property damage as a result of severe winter storms in the planning area. For a complete list of NOAA recorded severe winter storms, please reference Appendix C.

Based on the data recorded by NOAA, the planning area should expect a severe winter storm at a rate of 0.4166 per year.

Vulnerability of and Impact on Facilities

Structural vulnerability to severe winter storms is the same throughout the planning area. 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 water pipes and plumbing systems to freeze. As the water in these systems turns to ice it expands and eventually will cause pipes to burst.

McKinley County and Gallup's municipal structures are valued at $2,314,319,000. Since severe winter storms threaten the entire planning area equally, all municipal structures are considered exposed and vulnerable. Similarly, all of the Gallup-McKinley County Schools' structures, valued at $548,717,930, are considered exposed and vulnerable.

The average severe winter storm in the planning area costs $0 in recorded property damage.

Vulnerability of and Impact on Critical Facilities

All infrastructure and critical facilities within the planning are equally vulnerable and at risk since severe winter storms can affect any portion of the planning area and damage indiscriminately.

Vulnerability of and Impact on Population

McKinley County and Gallup's population is equally vulnerable throughout the planning area. Their citizens are at risk from prolonged, cold temperatures if they fail to be sheltered in an adequately heated structure or are unable to reach shelter. Some structures are dependent on electricity for their heating making them vulnerable if a severe winter storm causes a power outage. Additionally, if a severe winter storm restricts travel, people may become immobile on roadways and be at the mercy of

their vehicle's fuel supply. Exposure from severe winter storms in any of these cases can lead to frostbite and hypothermia. Both of these conditions if untreated can lead to death.

McKinley County and Gallup have a total population of 33,213 in 12,611 housing units all of which are vulnerable and at risk to severe winter storms. Similarly, all 11,130 students, 1,826 staff and faculty, of the Gallup-McKinley County Schools are considered exposed and vulnerable.

Historically, there have been no direct fatalities or injuries recorded from severe winter storms in the planning area while 3 people have died due to exposure and more motorists in neighboring communities have died indirectly from severe winter storms.

Vulnerability of and Impact on Systems

McKinley County and Gallup face similar assets and systems vulnerability to severe winter storms is roughly the same throughout the planning area. Severe winter storms create havoc on roads impacting travel from decreased speeds and traffic jams to an ice storm or blowing snow drifts making any travel impossible or extremely dangerous. Additionally, ice storms and snow accumulation can directly bring down power lines or bring down vegetation onto power lines. From these scenarios, the planning area can suffer power outages making it difficult to heat structures and exposing its citizens to prolonged cold temperatures. Severe winter storms can cause a problem for school districts in lost education days and transportation to and from their schools. Severe winter storms can trap students and staff on roadways exposing them to hazardous conditions and cold temperature.

Key Considerations

Severe winter storms have ability to affect a portion of or the entire planning area. Unfortunately, there is no way to predict ahead of time which areas will likely be more or less adversely directly affected since the basis for a specific impact can vary greatly. It stands that rural, more remote areas of the county are at a higher risk as they are more likely to go without power for an extended period of time and have their ability to use roadways restricted. This can deprive them of effective shelter, food, and water, as well as the ability of emergency response to provide aid.

3.9 – Tornadoes

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornadoes come in many shapes and sizes, but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust.

Tornadoes can cause several kinds of damage to buildings. Tornadoes have been known to lift and move objects weighing more than 3 tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common. Houses and other obstructions in the path of the wind cause the wind to change direction. This change in wind direction increases pressure on parts of the building. The combination of increased pressures and fluctuating wind speeds creates stress on the building that frequently causes connections between building components, roofing, siding, windows, etc., to fail. Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be thrown at buildings with enough force to penetrate windows, roofs, and walls.

Location & Extent

Many tornadoes only exist for a few seconds in the form of a touchdown. A tornado may arrive with a storm front and touchdown in a matter of seconds without warning. Other times tornado watches and sirens will alert communities of high potential tornado producing weather or an already formed tornado and its likely path.

The most extreme tornados can attain wind speeds of more than 200 mph, stretch more than two miles across, and travel dozens of miles. Tornadoes are an area-wide hazard as they can strike anywhere in the planning area.

Until 2007 the Fujita Tornado Scale ranked the severity of tornadoes. The Fujita scale assigned a numerical F value, F0 through F5, based on the wind speeds and estimated damage. Since 2007 the U.S. switched over to the Enhanced Fujita Scale. The altered scale adjusted the wind speed values per F level and introduced a rubric for estimating damage. Most tornados have wind speeds less than 110 miles per hour, and travel a few miles before dissipating. The planning area has only ever been impacted by EF0 tornadoes. Therefore, it is likely that they will experience one again, but should not expect a tornado above EF1.

Table 3.34 – Fujita Scale

Fujita Scale		EF Scale	
Fujita Scale	3-Second Gust Speed (mph)	EF Scale	3-Second Gust Speed (mph)
F0	45-78	EF0	65-85
F1	79-117	EF1	86-109
F2	118-161	EF2	110-137
F3	162-209	EF3	138-167
F4	210-261	EF4	168-199
F5	262-317	EF5	200-234

History & Probability

Since 1954, the NWS has recorded three tornadoes within the planning area. All three were rated as an EF0 on the Enhanced Fujita Scale. It didn't cause any injuries or deaths, nor did it cause any property damage. For a complete list of NWS recorded tornadoes, please reference Appendix C.

Based on the data recorded by the NWS, the probability of a tornado hitting the planning area is 4.62% or at a rate of 0.0462 tornadoes per year.

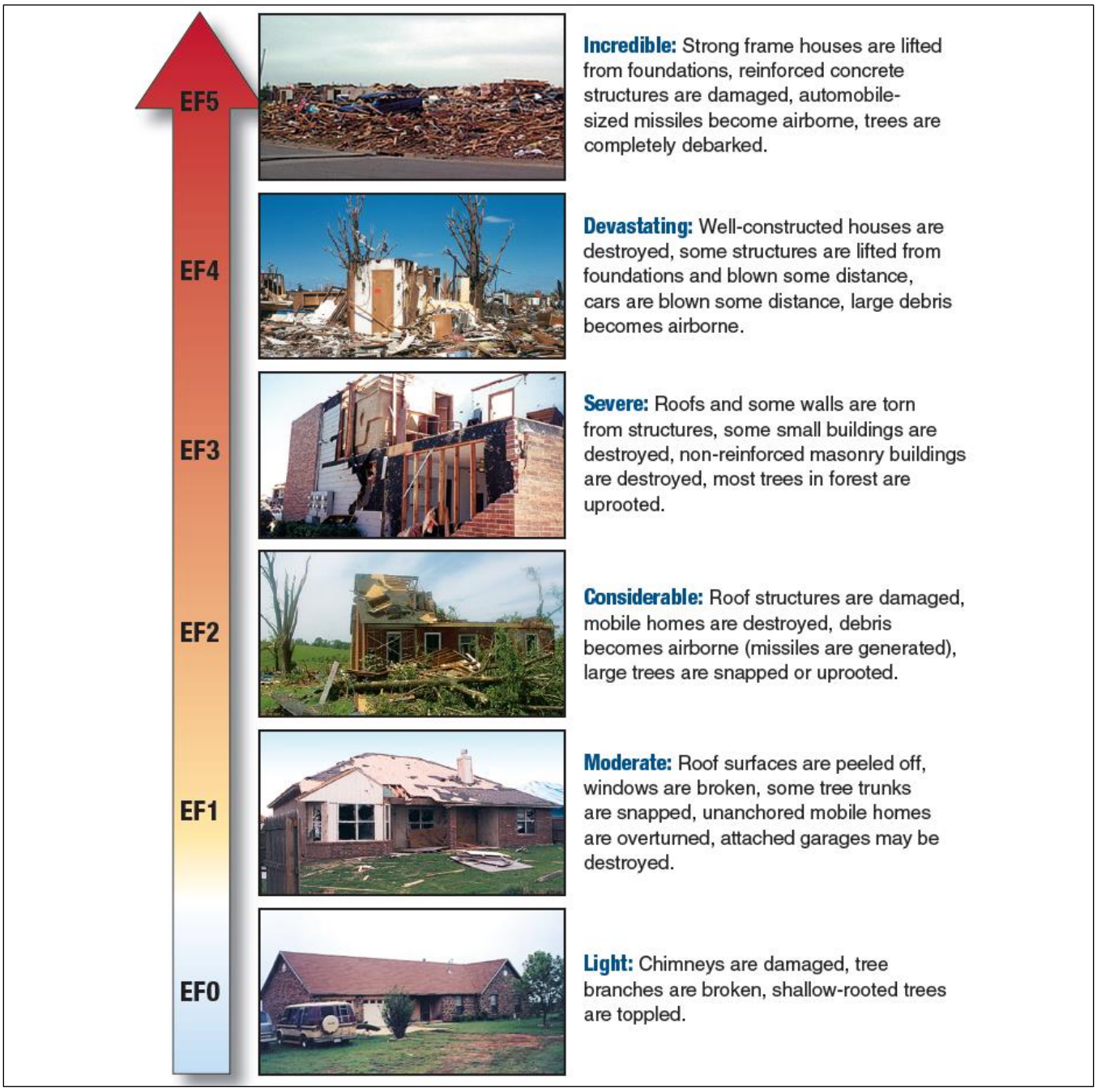
Vulnerability of and Impact on Facilities

Most tornadoes are in the planning area are EF0 – EF1 class. Building to modern wind standards and state codes provides significant protection from these hazard events; however, a community in the direct path of a violent, high scale tornado can do little to prevent significant property damage. Designing buildings to protect against extreme wind speeds, such as those associated with an EF4 or EF5 is extremely challenging and cost prohibitive. Anything less than a FEMA Code 361 compliant structure is susceptible to significant damage or complete destruction. A comparison of EF scale to the expected impact on facilities can be seen in the table on the following page.

As of now, the NWS has recorded three, EF0 tornadoes in the planning area, but non have cause any recorded property damage.

The planning area's municipal structures are valued at $2,314,319,000 and the Gallup-McKinley County Schools' structures are valued at $548,717,930. Since tornadoes threaten the entire planning area equally, all municipal and school district structures are considered exposed and vulnerable.

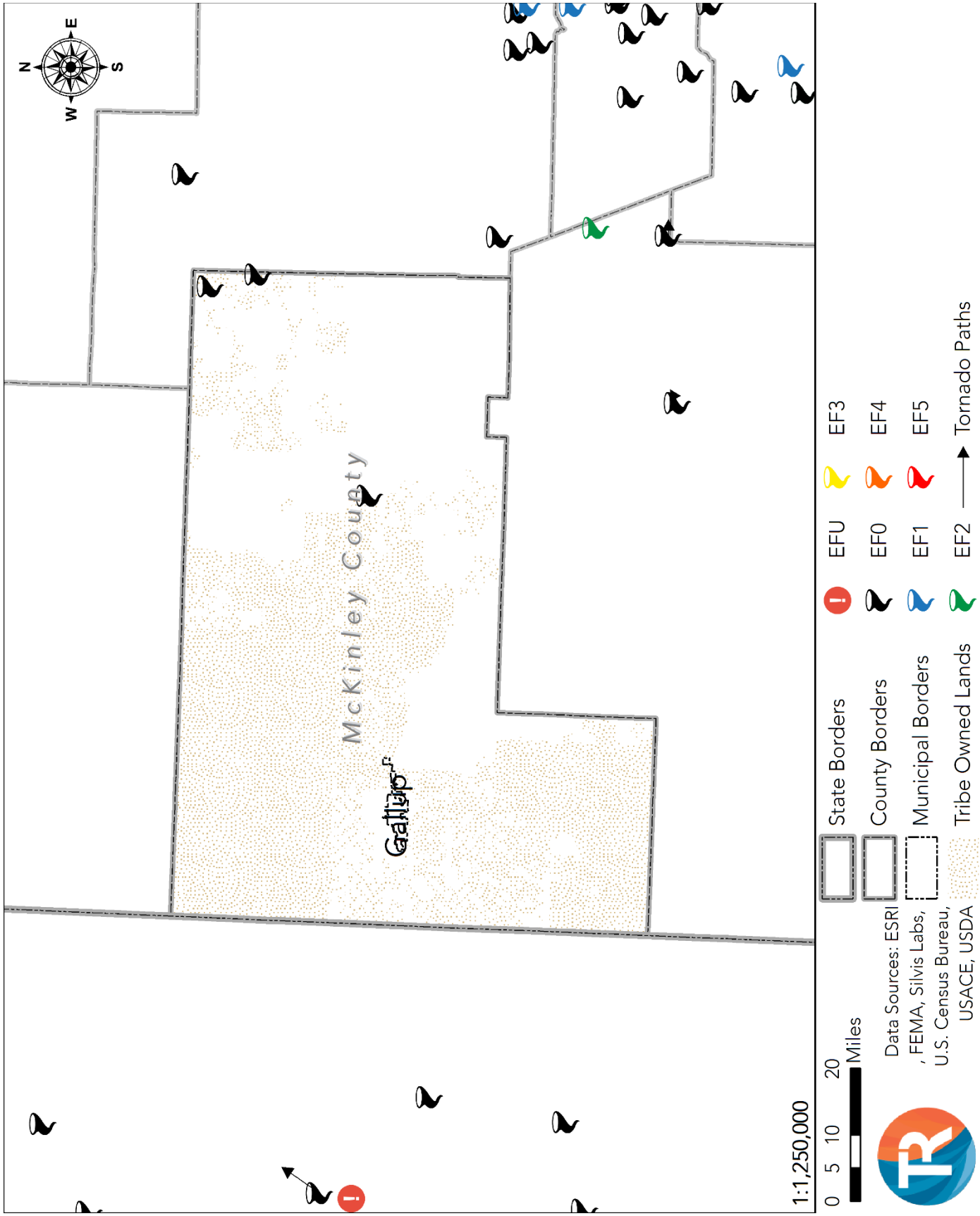
Table 3.35 – Fujita Damage Scale



Vulnerability of & Impact on Critical Facilities

All infrastructure and critical facilities within the planning are equally vulnerable and at risk since tornadoes can affect any portion of the planning area and damage indiscriminately.

Map 3.25 – Historical Tornadoes, McKinley County



Vulnerability of and Impact on Population

Although it would be unexpected in the planning area, an EF4 or EF5 tornado has the potential to level the smaller jurisdictions and kill everyone in them while being able to do nearly the same in the larger ones. A lesser magnitude tornado, like the ones we expect in the planning, an EF0 or EF1, has the ability to kill and injure citizens as it rips off the roofs and walls of its structures while launching airborne missiles born from debris.

The planning area has a total non-tribal population of 33,213 people in 12,611 housing units all of which are vulnerable and at risk to tornadoes. Additionally, all of the Gallup-McKinley County Schools' 11,130 students, 1,826 staff and faculty are vulnerable and at risk.

Historically, there have been no fatalities or injuries recorded from tornadoes in the planning area.

Vulnerability of and Impact on Systems

All of the planning area's community assets and systems' vulnerability to tornadoes is equal throughout the planning area. A small magnitude tornado will not significantly damage a community and its systems, but a larger magnitude tornado can impact a community for weeks, months, or years and even destroy a city completely. Significant damage to any portion of the planning area would hinder the community's economy and increase its social vulnerability.

Key Considerations

Since tornadoes strike over large areas and indiscriminately, there is not any particular portion of the planning area that is more likely than another to experience a tornado. However, there are portions of the planning area that are more vulnerable to wind related damage due to the age of a significant portion of their building stock.

As previously mentioned, the majority of the planning area's structures were built prior to 1999 and thus are more vulnerable and at risk to tornadoes. Concentrations of pre-1999 constructed buildings exist in Gallup as well as the community of Ramah (located in the central-south portion of the planning area, south-east of Gallup, marked in orange in the previous hazard profile's maps). Please reference Maps 3.23 and 3.24 in Section 3.7 depicting the discussed areas and others of density and where these buildings exist in greater numbers in relation to structures built after 1999.

3.10 – Wildfires

The 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. They can occur naturally, by human accident, and on rare occasions by human action. Typically, their point of origin is far from human development with the exception of roads, power lines, and similar rural infrastructure. There is a constant threat to hikers, campers, and other people engaging in outdoor activities. Significant danger to life and property occurs when human development meets and becomes intertwined with wildland's vegetation. The threat of wildfire and grass fires increases in areas prone to intermittent drought, or are generally arid or dry.

Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of metropolitan areas and in rural areas with attractive recreational and aesthetic amenities, especially forests, communities bordering forests and prairies where fires branch off. This demographic change is increasing the size of the wildland-urban interface (WUI), defined as the area where structures and other human development meet or intermingle with undeveloped wildland. Its expansion has increased the likelihood that wildland and grass fires will threaten life and property.

Location & Extent

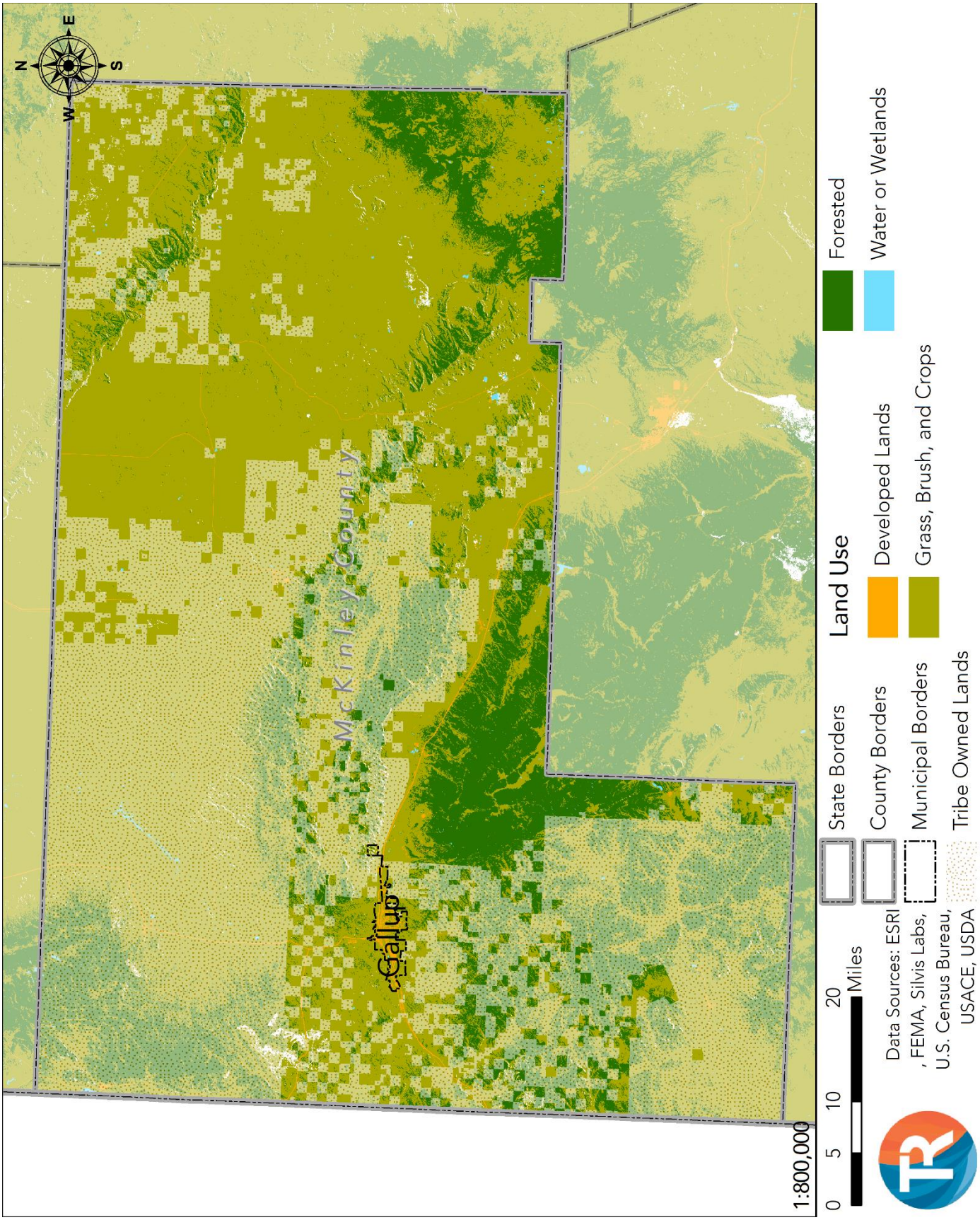
Most wildfires occur without warning and spread quickly but the event depends upon a number of conditions. Wind can turn a small flame into a multi-acre grassfire within a matter of minutes, while this can be further compounded by the level of moisture and available fuel based on the area's land use. McKinley County and the planning area's fire response efforts are confronted with both open land brushfires as well as difficult to reach and extinguish mountain-based wildfires.

Nearly every acre of undeveloped land in the planning area is covered in by some form of vegetation that could act as fuel for a fire. The map on the following page depicts the basic varieties of vegetation throughout the planning area.

The south eastern portion of the county encompasses a large portion of Mount Taylor, while the south-central portions of the county (south east of Gallup) contains a ridgeline descended from Lookout Mountain. Both of these areas are heavily vegetated as is depicted on the map on the following page. Additionally, a smaller portion of a mountainous ridgeline exists in the northwestern corner of the planning area comprising of the same traits, fully within Navajo lands.

The planning area experiences other, although sporadic brushfires, that can occur almost anywhere. These fires are typically smaller and burn less area as they are mostly fed by grass and brush versus the previously mentioned heavily vegetated mountains. Additionally, although wildland and grass fires can occur almost anywhere throughout the planning area, the fuel available for a fire to burn and spread is less dense and thus does not create fires that have momentum that they do along the previously

Map 3.26 – Land Use, Vegetative Fuel



mentioned mountainous areas. Although a majority of wildfire that start within non-tribal, unincorporated McKinley County, a disproportionate number human-caused, brush and grass-based fires originate outside of county owned lands to the south of the planning area, within the Pueblo of Zuni's tribal lands.

The USGS' Earth Resources Observation and Science Center's MFRI for the planning area is depicted on the map on the following page. This data shows the predicted rate of a naturally occurring wildfire in specific areas of the United States. The intervals for the planning area near perfectly correlate with the vegetation map shown on the previous page and thus depicts the most likely areas that wildfires will originate.

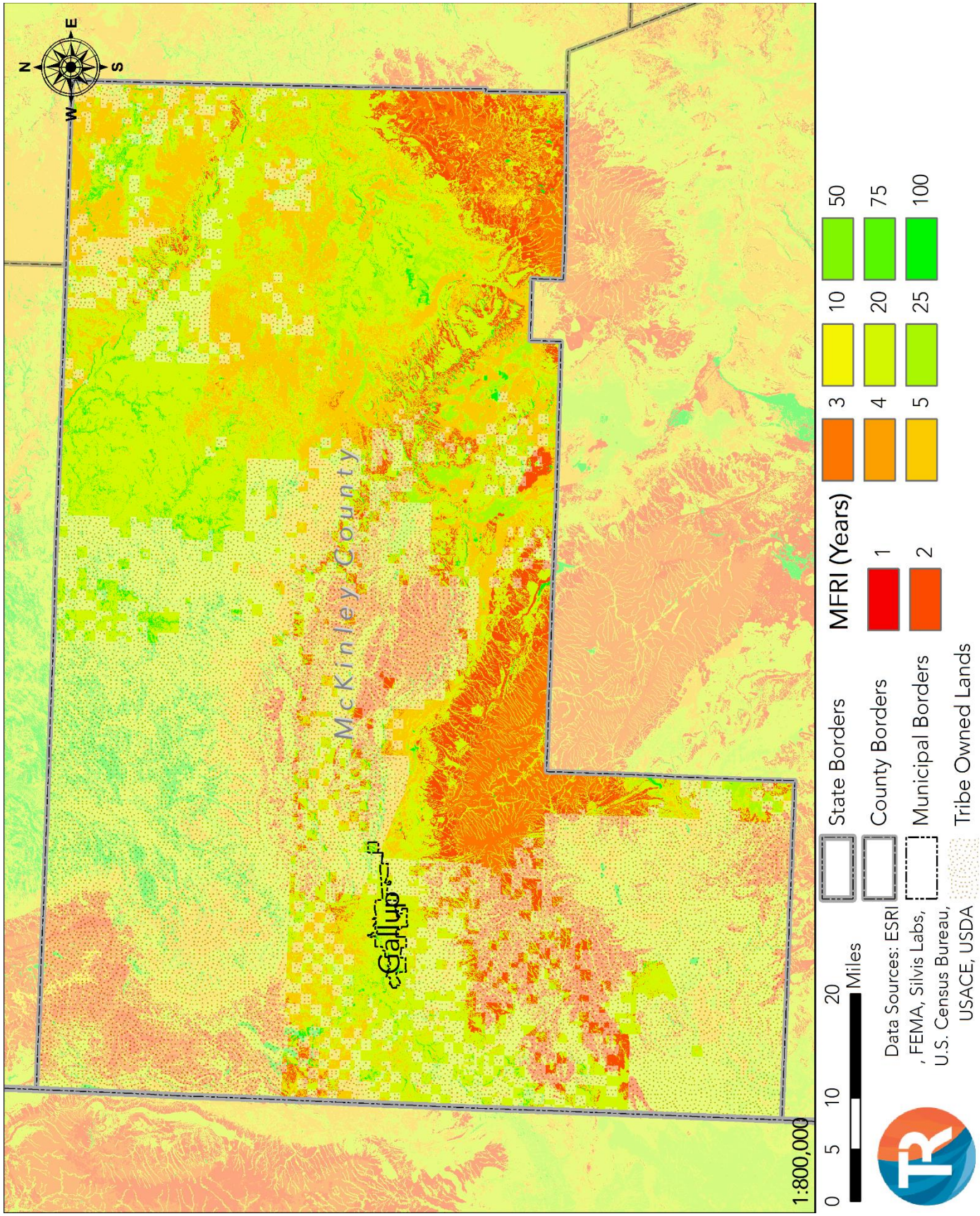
Given these conditions, a wildfire occurring outside the mountainous areas previously mentioned should expect wildfires to occur at a rank 0 to 1 on the burn severity index, while major wildfires that originate anywhere in the mountainous regions previously mentioned can likely occur anywhere from 0 to 4 on the burn severity index. Based on historical data, the planning area should expect its wildfires to average around 39.5 acres per wildfire, but should expect most to burn below 20 acres with a rare outlier burning in excess of 10,000 acres.

Table 3.36 – Burn Severity Index

Rank	Burn Severity	Description	Characteristics
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 seedlings 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 and shrubs (<0.5 m) • No significant decreases in overstory & understory basal area, diversity or species richness from pre-burn assessments • Usually burning below 80 ° C
2	Medium-Low Severity Burn	No significant differences in overstory density and basal area, & 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 < 2 m • 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 occasional hot spots that killed large trees, With significant reduction in the understory	• Soil exposure on l-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

**This index is courtesy of the Southern Appalachian Forest Coalition.*

Map 3.27 – Mean Fire Return Interval



History & Probability

Since 1980, the planning area has experienced 655 significant wildfires (those burning greater than 1 acre of land). In total, these fires have burned 25,920.28 acres of land. These occur at a yearly rate of 18.19 significant (burning over 1 acre) wildfires per year in which an average of 720.01 acres will be burnt per year. Of the 655 fires, 136 have been deemed to have started naturally while 519 have been linked to human behavior. These wildfires are depicted on the maps on the following two pages.

Although wildfires happen at a high rate yearly throughout the planning area, and although it is possible, it is unlikely that will directly affect the City of Gallup. The greater planning area however should expect to see the historical trend of 18.19 wildfires per year to continue.

Vulnerability of and Impact on Facilities

A wildland fire burning near a jurisdiction may cover it in soot, cause secondary fires from traveling coals, or directly engulf facilities burning them to the ground. Properties located in some rural areas can prove more difficult to reach by first responders. Additionally, many of these rural locations do not have adequate water supplies for first responders to utilize in extinguishing these fires, causing them to spread farther than they normally would. Facilities can be protected by creating defensible spaces or buffer zones, maintaining a fuel free environment, and structural modifications to prevent the growth of a wildland fire.

Wildfires threaten almost every structure that exists in a vegetated area as depicted in Map 3.26 located earlier in this hazard profile. McKinley County and Gallup's 12,072 structures are valued at $2,314,319,000. A GIS analysis of the identified WUI puts a total of 10,462 of the planning area's municipal structure inventory worth $1,834,779,000 vulnerable to and at high risk to wildfires. Please see the table below for a breakdown of these values by jurisdiction and maps located at the end of this hazard profile for depictions of the WUI zones.

Table 3.37 – Vulnerable Municipal Structures by Count, Wildfires

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
Uni-McKinley Co.	3	49	7	12	3,042	12	3,125
Gallup	5	325	11	81	6,810	105	7,337
Total =	8	374	18	93	9,852	117	10,462

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

Table 3.38 – Vulnerable Municipal Structures by Value, Wildfires

Municipality	Ag	Com	Gov	Ind	Res	Res-M	Total
Uni-McKinley Co.	$587,000	$24,147,000	$3,406,000	$5,020,000	$366,582,000	$13,008,000	$412,750,000
Gallup	$861,000	$203,391,000	$13,508,000	$28,298,000	$1,033,763,000	$142,208,000	$1,422,029,000
Total =	$1,448,000	$227,538,000	$16,914,000	$33,318,000	$1,400,345,000	$155,216,000	$1,834,779,000

**Multi-Unit Residential is defined as a structure with 5 or more residential units*
***The data are from the U.S. Census Bureau and FEMA*

The Gallup-McKinley County Schools has 33 school locations spread throughout the planning area. Of these, 23 are were identified through GIS analysis to be within either low, medium, or high WUI zones. These sites are valued at $403,762,493.

Table 3.39 – Vulnerable School District Facilities, Wildfires

School	Location	WUI Level	Value
Central Offices	Gallup	Medium	$8,959,301
Chief Manuelito Middle	Gallup	Low	$22,811,415
Crownpoint Elementary	County/Tribal	Low	$6,231,682
Crownpoint Middle & High	County/Tribal	Medium	$34,185,362
Del Norte Elementary	Gallup	Medium	$22,582,383
Gallup Central High	Gallup	Medium	$7,139,078
Gallup High	Gallup	Low	$59,747,547
Gallup Middle	Gallup	Medium	$17,380,125
Hiroshi Miyamura High	Gallup	Medium	$42,311,619
Indian Hills Elementary	Gallup	Medium	$9,965,303
Jefferson Elementary	Gallup	Medium	$26,936,605
Lincoln Elementary	Gallup	Low	$21,060,136
McKinley Academy	Gallup	Medium	$2,042,531
Navajo Elementary	County/Tribal	Medium	$9,534,574
Navajo Middle & Pine High	County/Tribal	Low	$26,036,675
Ramah Elementary	County/Non-Tribal	Medium	$1,672,957
Red Rock Elementary	Gallup	Medium	$7,060,428
Stagecoach Elementary	Gallup	Medium	$10,845,768
Thoreau Elementary	County/Non-Tribal	Medium	$7,518,007
Tobe Turpen Elementary	Gallup	Medium	$6,376,327
Tohatchi High	County/Tribal	Low	$27,324,184
Tohatchi Middle	County/Tribal	Low	$9,175,938
Tse Yi Gai High	County/Non-Tribal	Medium	$16,864,548
		Total =	$403,762,493

Vulnerability of and Impact on Critical Facilities

Of the planning area's 69 critical facilities, 38 are located in high risk WUI zones. Please see the table below for a breakdown of these facilities and their WUI risk level.

Table 3.40 – Vulnerable Critical Facilities, Wildfires

Facility	Type	Location	WUI Level
BeeHive Home of Gallup	Assisted Living	Gallup	Medium
County Adult Detention Center	Law Enforcement	Gallup	Medium
County Courthouse	Government	Gallup	Low
County Fire Administration Complex	Fire Prevention/EMS	Gallup	Medium
County Metro Dispatch	Government	Gallup	Medium
County Roads Dept. - Thoreau	Public Works	County	Medium
County Roads Dept. - Vanderwagen	Public Works	County	Low
Gallup Community Center	Government	Gallup	Medium
Gallup Group Home	Assisted Living	Gallup	Medium
Gallup Indian Medical Center	Hospital	Gallup	Medium
Water Tower - Gamerco	Water Treatment	County	Medium
GFD Fire Prevention Building	Fire Prevention/EMS	Gallup	Medium

GFD Fire Station #1	Fire Prevention/EMS	Gallup	Low
GFD Fire Station #2	Fire Prevention/EMS	Gallup	Medium
GFD Fire Station #3	Fire Prevention/EMS	Gallup	Medium
GFD Fire Station #4	Fire Prevention/EMS	Gallup	Medium
GFD Fire Station #6	Fire Prevention/EMS	Gallup	Low
Maloney Residential Care	Assisted Living	Gallup	High
Manuelito Navajo Children's Home	Assisted Living	County	Low
MCFD & EMS Station 41	Fire Prevention/EMS	Tribal	Medium
MCFD & EMS Station 42	Fire Prevention/EMS	County	Low
MCFD & EMS Station 43	Fire Prevention/EMS	County	Medium
MCFD & EMS Station 44	Fire Prevention/EMS	County	Low
MCFD & EMS Station 51	Fire Prevention/EMS	County	Low
MCFD & EMS Station 54	Fire Prevention/EMS	County	Medium
MCFD & EMS Station 61	Fire Prevention/EMS	County	Medium
MCFD & EMS Station 63	Fire Prevention/EMS	Tribal	Medium
MCFD & EMS Station 64	Fire Prevention/EMS	County	Low
MCFD & EMS Station 71	Fire Prevention/EMS	County	Medium
MCFD & EMS Station 73	Fire Prevention/EMS	County	Medium
MCFD & EMS Station 81	Fire Prevention/EMS	Tribal	Medium
MCFD & EMS Station 82	Fire Prevention/EMS	Tribal	Low
McKinley Center	Assisted Living	Gallup	Medium
McKinley County OEM	Government	Gallup	Medium
McKinley County Sheriff's Office	Law Enforcement	Gallup	Medium
Ramah Care Services	Assisted Living	Gallup	Medium
Red Rocks Care Center	Assisted Living	Gallup	Medium
Transwestern Pipeline Substation	Utility	County	Low

**The data are from the Gallup-McKinley County Schools.*

Vulnerability of and Impact on Population

An inability to properly evacuate is a populations greatest vulnerability. They can be caught off guard due to improper warning systems and become trapped in a growing wildfire. McKinley County and Gallup have a population of 33,213 of which 29,874 are considered vulnerable and at high risk to wildfires. Similarly, of the total 12,611 housing units in the planning area, 11,174 are considered vulnerable and at high risk to wildfires. Of the Gallup-McKinley County Schools' locations at risk, 8,192 students and 1,422 staff and faculty are considered vulnerable and at high risk to wildfires.

Table 3.41 – Vulnerable Municipal Populations, Wildfires

Municipality	Population	Housing Units
Uni-McKinley County	8,357	3,123
Gallup	21,517	8,051
Total =	29,874	11,174

**Multi-Unit Residential is defined as a structure with 5 or more residential units*

***The data are from the U.S. Census Bureau and FEMA*

Table 3.42 – Vulnerable School District Sites, Wildfires

School	Location	WUI Level	Students	Staff	Total
Central Offices	Gallup	Medium	262	0	262
Chief Manuelito Middle	Gallup	Low	44	578	622

Crownpoint Elementary	County/Tribal	Low	43	320	363
Crownpoint Middle & High	County/Tribal	Medium	62	460	522
Del Norte Elementary	Gallup	Medium	60	522	582
Gallup Central High	Gallup	Medium	36	194	230
Gallup High	Gallup	Low	96	842	938
Gallup Middle	Gallup	Medium	51	454	505
Hiroshi Miyamura High	Gallup	Medium	104	1189	1293
Indian Hills Elementary	Gallup	Medium	94	270	364
Jefferson Elementary	Gallup	Medium	48	345	393
Lincoln Elementary	Gallup	Low	54	379	433
McKinley Academy	Gallup	Medium	76	0	76
Navajo Elementary	County/Tribal	Medium	36	289	325
Navajo Middle & Pine High	County/Tribal	Low	50	256	306
Ramah Elementary	County/Non-Tribal	Medium	33	194	227
Red Rock Elementary	Gallup	Medium	44	327	371
Stagecoach Elementary	Gallup	Medium	44	290	334
Thoreau Elementary	County/Non-Tribal	Medium	45	305	350
Tobe Turpen Elementary	Gallup	Medium	54	392	446
Tohatchi High	County/Tribal	Low	40	295	335
Tohatchi Middle	County/Tribal	Low	28	205	233
Tse Yi Gai High	County/Non-Tribal	Medium	18	86	104
		Total =	1,422	8,192	9,614

**The data are from the Gallup-McKinley County Schools.*

Vulnerability of and Impact on Systems

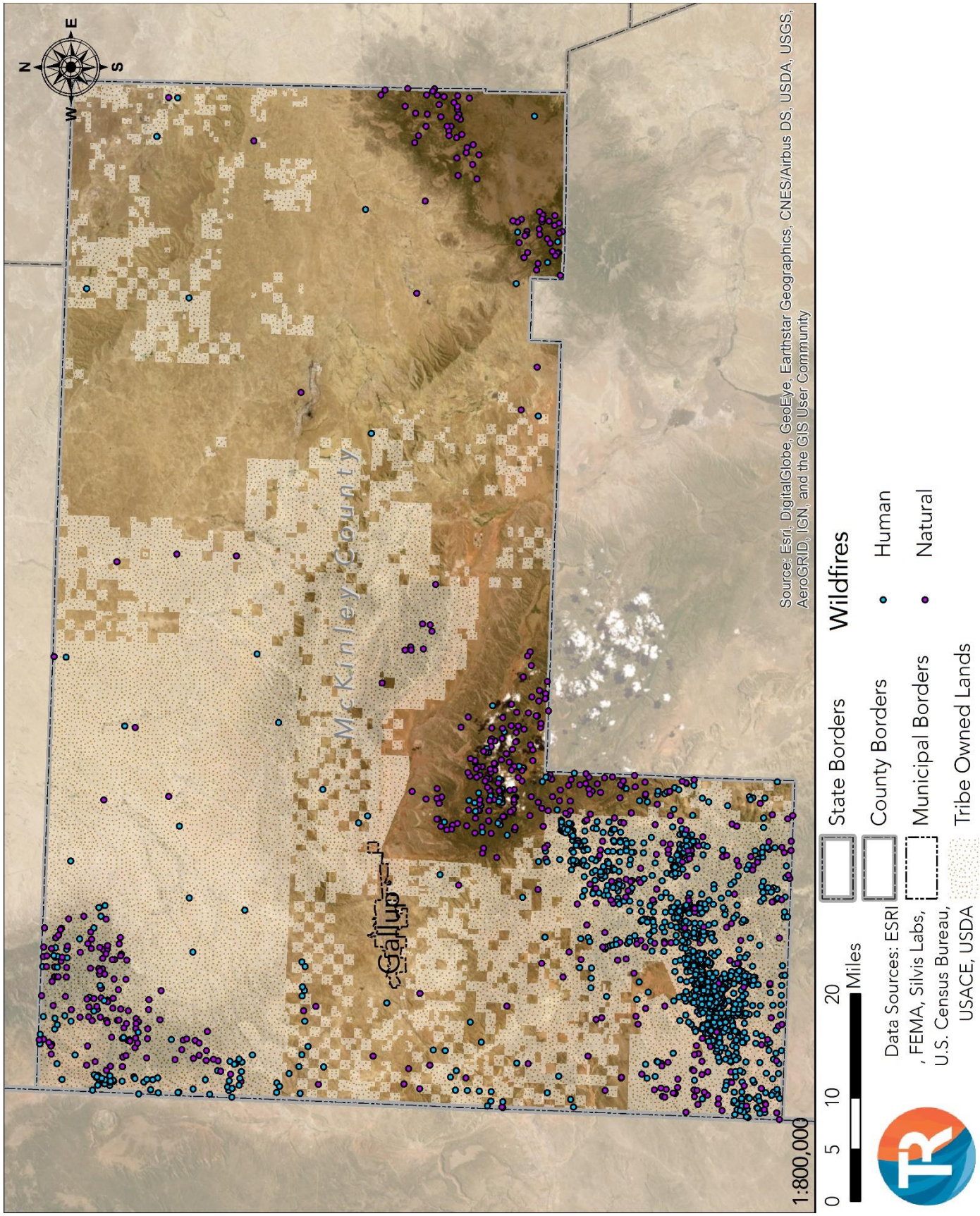
It is unlikely that a single wildfire will grow large enough to cause significant or long-lasting damage to McKinley County or Gallup's economies, education services, or hinder the local governments' ability to provide services to their more demographically dense communities. However, a potent enough incident may cause short-term problems for their transportation systems in regards to response operations. Additionally, even a low-level wildfire can provide significant problems for pockets of rural, outlying unincorporated communities.

In the event a wildfire begins to burn and grow, evacuation routes may become blocked by the fire or by other people attempting to evacuate. The impingement of the local transportation system makes appropriate warning and information paramount in mitigating McKinley County and Gallup's systems vulnerability to wildfires. It is unlikely that the Gallup-McKinley County Schools' buses would become trapped by wildfires since exceptional care will be taken by the pertinent emergency services to reroute these buses.

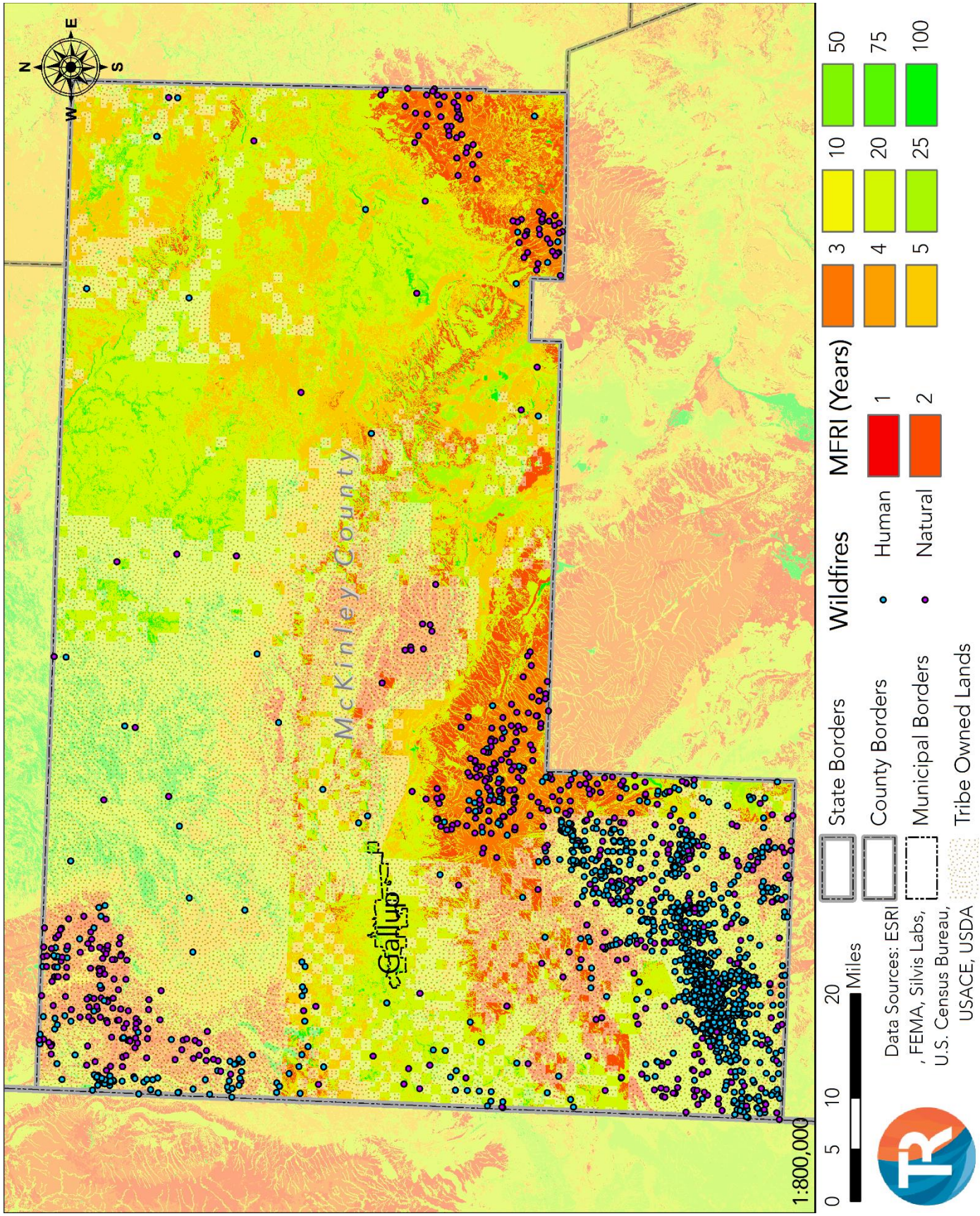
Key Considerations

The planning area is faced with both rural, brush and grassfires, as well as difficult to fight mountainous and hill-based wildfires as discusses in the Location & Extent portion of this hazard profile. Both of these types of wildfires pose a reasonable risk to the planning area and as such, neither can be neglected. Both types of wildfires need to be addressed when applying the mitigation strategies found in Section 4 of this plan.

Map 3.28 – Wildfire History



Map 3.29 – Wildfire History & MFRI



3.11 – Excluded Hazards

There exists a slim chance that any type of natural hazard could occur in any location throughout the United States. However, the probability of them occurring is so infinitesimally small and their impact so slight that it is not considered reasonable to develop a fully-profiled risk assessment for them. Additionally, without historical information or data to drive an analysis, it is unlikely that their conclusions would yield functional or practical strategies to mitigate them.

Earthquakes

Although central and western New Mexico experience earthquakes, these are of low magnitude and intensity, rarely reaching above 4.0 and only once reaching above 5.0 to a 5.1. Additionally, although there may be small tremors felt within the planning area, nothing above a 3.3 magnitude earthquake has been recorded within a 45-mile radius of the planning area.

Expansive Soils

Neither McKinley County nor Gallup is considered an area with expansive soils issues. Although clay soil deposits might exist in isolate places, simply the existence of clay soil deposits does not correlate to an expansive soils problem. There are no documented cases of clay soils shrinking and expanding that have directly caused property damage.

Extreme Heat

The NWS has not recorded any extreme heat events in the planning area or the surrounding counties. Although it can get very warm, the nature of the weather patterns in this area and the expectation of hot weather dictate that none of these patters can reasonably be considered extreme heat.

Volcanoes

Although there are suspected subterranean lave flows near the planning area, there is no modern recorded activity that would reasonably demand mitigation activities counter to them.

3.12 – Risk Summary

The table below outlines each participating jurisdiction'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 particular hazard, the intensity of past hazard impacts, and a joint evaluation of local experts and stakeholders.

Each participating jurisdiction was assessed against each hazard on a scale of 0 to 6, 0 meaning there is no reasonable risk, 1 being the lowest level of reasonable risk, and 6 being the highest level of risk.

Table 3.43 – Hazard Risk Summary

Jurisdiction	Dam Failure	Droughts	Floods	Geologic	Severe Storms	Severe Winter Storms	Tornadoes	Wildfires
McKinley County	2	5	4	1	4	3	1	5
Gallup	0	3	4	1	4	3	1	5
Gallup-McKinley County Schools	0	0	2	1	4	3	1	4

Section 4 – Mitigation Strategy

A mitigation strategy is a set of mitigation actions meant to prevent the potential impacts of hazards. There are several types of mitigation actions with a different method of reducing vulnerability.

McKinley County, the City of Gallup, and the Gallup-McKinley County Schools identified the sustained, proposed, and completed mitigation actions for each of the hazards identified as having the potential to affect the jurisdiction. For proposed mitigation actions, the planning team in each jurisdiction considered each type of mitigation action before identifying mitigation actions to include their final mitigation strategy. The mitigation strategy of each jurisdiction is included in this section of the plan.

McKinley County, the City of Gallup, and Gallup-McKinley County Schools have a limited ability to expand their current mitigation capabilities. Their population growth and tax base are stagnant and do not possess the ability to expand on these capabilities at this time unless otherwise noted.

4.1 – Mitigation Capabilities

Each type of stakeholder provides a set of capabilities, in some cases broad and in some cases narrow, by which they can increase the planning area's resiliency. The broadest form of mitigation capabilities come from the county and the City of Gallup. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The Gallup-McKinley County Schools has broad authority over their campuses and although budgets may be tight, they are more far reaching than some of the smaller organizations. Additionally, the necessity to protect the planning area's children grants them greater influence and political capital to institute change.

Fiscal Capability

McKinley County and Gallup are not unique in the issues felt by small governments to retain the staff and resources necessary to accomplish the strategies necessary to mitigate the hazards in their area. However, they are aware of potential diverse funding sources available to communities for, assisting in the fiscal needs required to implement local hazard mitigation plans, including both government and private programs.

While federal and state programs carry out the bulk of disaster relief programs that provide funds for mitigation, local governments are able to search for alternative funding sources to supplement the local hazard mitigation budget. The participants in the mitigation planning process are aware that before effective mitigation strategies can be applied, stable funding sources and effective incentives must be established on a per project basis to encourage participation by the private and public sectors.

McKinley County and Gallup will seek out FEMA grant funding from the Building Resilient Infrastructure and Communities Grant Program (BRIC), Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Grant Program (FMA), and the Rehabilitation of High Hazard Potential

Dam Grant Program (HHPD). Given the size of the municipalities involved in this plan and the pocketed areas of significant flood risk, municipal governments should have access to the United States Department of Housing and Urban Development's Community Development Block Grant Program (CDBG) which occasionally will award grants to assist with projects that fall under hazard mitigation.

Institutional Capability

McKinley County as a whole community is capable of implementing the strategies identified herein. In addition, they are capable of promoting the mitigation process and educating the public about the hazards prevalent to their area, as well as mitigation process necessary to mitigate those hazards.

In an emergency, the county and each municipality's response is an extraordinary extension of responsibility and action, coupled with normal day-to-day activity. Normal governmental duties will be maintained, with emergency operations carried out by those agencies assigned specific emergency functions.

In addition to the mitigation actions and projects listed later in Section 4, McKinley County, Gallup, and Gallup-McKinley County Schools will increase their institutional capabilities by forming a Local Emergency Planning Committee and holding regularly scheduled meetings tailored to their wants and needs (LEPC).

Political Capability

During the process of the development of this plan, opposition to mitigation measures was not evident in McKinley County or Gallup. The primary limiting factor is funding, which is made more difficult by the current situation in the local, state, and national economies.

The county, city, and their partnerships with the participating agencies are well-organized and responsive to community needs. Leadership is informed and remains up-to-date on the hazards that threaten the area. Citizens who did participate in the public meetings and presentations showed an interest in doing things to promote a safer community. Therefore, the county and city (the governing board, staff, and citizen population) appear willing to promote the economic efficiency and social utility of the mitigation measures contained in this plan, if appropriate funding can be identified.

General Authority & Regulations

State of New Mexico law provides the legal authority for local governments to implement regulatory measures. The basis for much of this authority is the local government power designed to protect public health, safety and welfare. This authority enables local government to enact and enforce ordinances, and to define and abate nuisances. Hazard mitigation is a form of protecting public health, safety, and welfare, and falls under the general regulatory powers of local government. This also extends to building codes and inspections, land use, acquisition, and floodplain development regulation.

Building Codes & Inspection

Building codes and inspections provide local governments with the means to maintain county structures that are resilient to natural hazards. The City of Gallup has adopted the 2015 International Building and Fire Prevention Codes. The county has not adopted these codes, however, the State of New Mexico has adopted these and thus the unincorporated, non-tribal, portions of the county are inspected by the state. These codes prescribe minimum standards for building construction, which ensures that new buildings and structures are built to standards that are seismically sound, fire resistant and developed within flood-proofing measures. These codes also require appropriate hazard code updating and compliance when certain thresholds are met for remodel and renovation of existing buildings. These codes also authorize local governments to carry out building inspections to ensure local structures adhere to the minimum state building standards.

Municipal officials have the primary role of enforcement of the International Building Code structural regulations. Fire departments also take part in the inspection process for fire and general public safety inspections. They enforce the appropriate codes both at the plan approval stage and the site inspection stage. McKinley County and Gallup are committed to the high standards of building provided through the respective codes, and requires that the same codes and the same enforcement procedures apply during routine permitting procedures as well as following a disaster.

Land Use Planning

Through land use regulatory powers granted by the state, local governments can control the location, density, type and timing of land use and development in the community. Provisions of the land use plans are implemented through regulatory tools that include zoning and subdivision ordinances, and taxation. As of now, neither McKinley County or Gallup employ strict zoning policies. McKinley County regulates its development though the use of a subdivision ordinance. Expanding the county and Gallup's ability to use land use planning as a mitigation tool is further explained later in Section 4.1

Taxation

Taxation can be a powerful mitigation tool by providing local governments with a way to guide development. Tax abatements may be used to encourage landowners and developers to integrate mitigation measures into the process of building new developments and retrofitting existing properties in the floodplain. These tools can be especially effective in encouraging the mitigation of existing structures. Additionally, school districts have the ability to levy revenue through referendums for specific projects whether it is mitigation related or not.

Technical Capability

McKinley County and Gallup have the basic technology needed to mitigate and respond to natural disasters. McKinley County OEM does not have 24/7 emergency operations center (EOC), however, it does have a cold start EOC as well as a mobile command center. They are connected to the Internet giving them access to various NWS and NOAA alerts and data, which is a valuable source of

information on approaching weather and hazards as well as providing resource coordination, but again is lacking a central information center to assist in the event of a disaster.

McKinley County OEM, GFD, and MCFD actively work with the Pueblo of Zuni and Navajo Nation to proactively prevent wildfires and extinguish them when they occur. They actively maintain buffer zones and engage in other fuel treatment methods throughout tribal lands. The map on the following page depicts their recent prescribed burns they have used to decrease the chance of wildfires and intensity of wildfires.

Further, McKinley County OEM should take steps to begin educating and training government staff through federal and state emergency management programs and federal weather programs. Specifically, working towards NWS StormReady community status and training volunteer SKYWARN storm spotters. By educating and increasing the technical capabilities of the its citizens and non-emergency related county, city, and school staff, indirect incremental changes will happen over time that will spill over into hazard resiliency.

Floodplain Programs

Floodplain management is the operation of a community program of measures for reducing flood damage. These measures take a variety of forms; and generally, include zoning plans, subdivision, or building requirements, and special-purpose floodplain ordinances. McKinley County and Gallup don't outright restrict development in identified floodplains.

McKinley County requires all new construction "protects against inadequate drainage to handle flow events equal to a 100-year flood" as a measure to deter flash flooding vulnerability, but currently does not have any specific ordinances against building in identified floodplains. The drainage construction restriction is enforced through the building permit application process. When an individual or business applies for a construction permit, its location within or outside of an identified floodplain is noted and reviewed, but not restricted. In the City of Gallup, new construction projects must be built at or above the identified BFE of the floodplain.

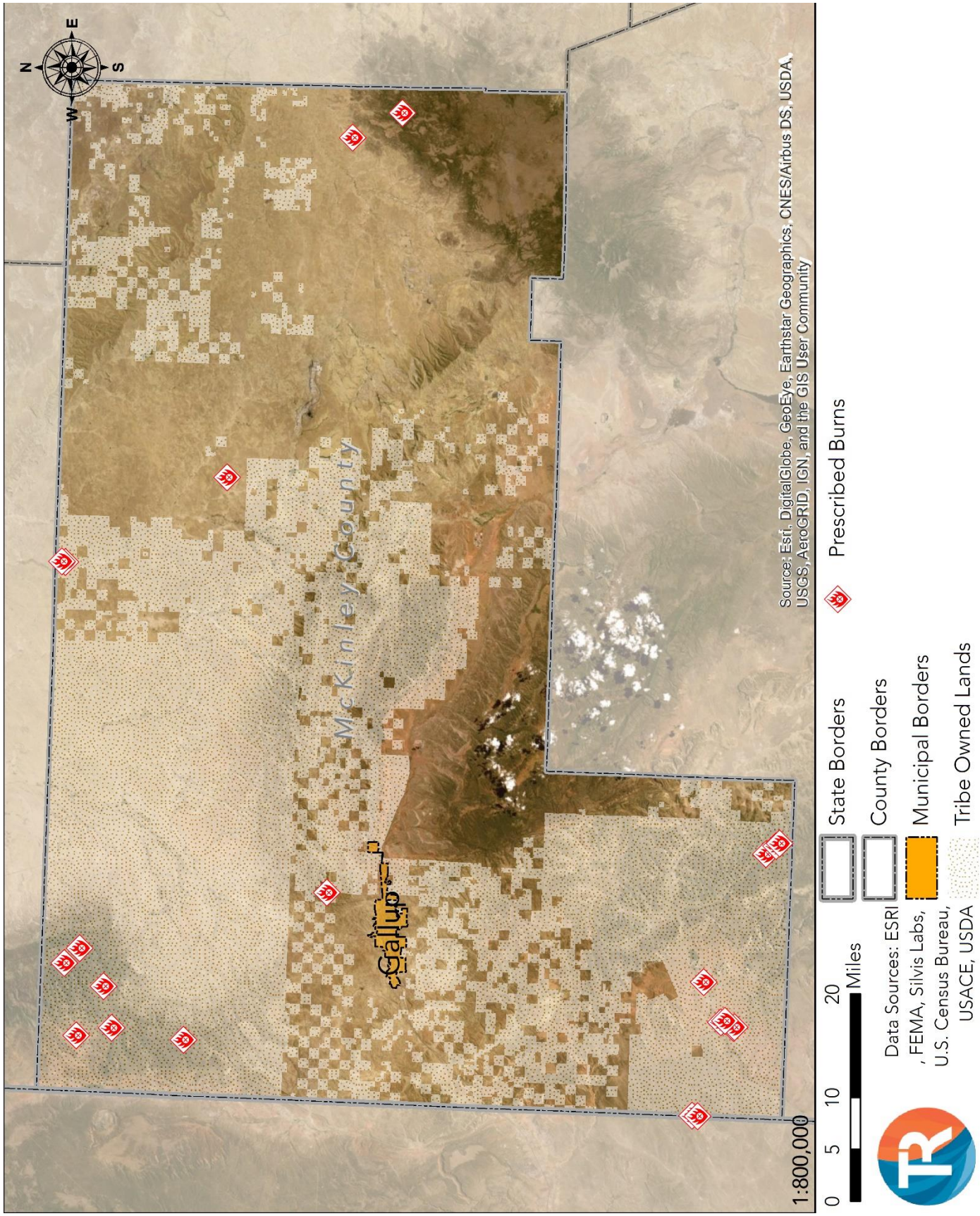
Both the county and Gallup and members of the National Flood Insurance Program (NFIP) while neither are CRS members. The Gallup-McKinley County School District is not an eligible jurisdiction under the NFIP or CRS programs since it is a school district. At present the county does not have a designated person or office to enforce NFIP regulation while the City of Gallup handles its inspections and compliance through the GFD.

Table 4.1 – NFIP & CRS Community Status

Jurisdiction	CID	CRS Rating	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Registration Entry Date
McKinley County	350039	N/A	07/04/1978	02/17/2010	02/17/2010	10/19/2010
Gallup	350042	N/A	03/01/1974	03/01/1978	08/05/2010	09/29/1978
Gallup-McKinley County Schools	N/A	N/A	N/A	N/A	N/A	N/A

McKinley County will take proactive steps to better align itself with the goals and objectives of the NFIP. At present, it lacks well-established, maintained, and enforced floodplain policies and regulations that conflict with its NFIP membership. Its current policies need to be revisited, reviewed, and revised. Additionally, it should seek out a Certified Floodplain Manager to assist in accomplishing these revisions. These actions are addressed further in Section 4.3.

Map 4.1 – Wildfire Mitigation, Prescribed Burns



4.2 – Mitigation Goals

The mitigation goals for McKinley County, Gallup, and the Gallup-McKinley County Schools were established based upon results from the local and state risk assessments, stakeholder meetings, and input from an extensive public survey. These goals represent the plan's participants' long-term vision for the continued reduction of hazard risks and the enhancement of their mitigation capabilities.

Goal 1: Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.

Goal 2: Pursue additional, complete, and accurate data in support of mitigation planning, disaster preparedness, disaster response, and disaster recovery operations.

Goal 3: Integrate the hazard mitigation plan's findings into the planning, and decision-making processes for all current and future emergency management and preparedness related activities.

Goal 4: Minimize the risk to life and property from dam failures.

Goal 5: Minimize the risk to property from droughts.

Goal 6: Minimize the risk to life and property from floods.

Goal 7: Minimize the risk to life and property from geologic hazards.

Goal 8: Minimize the risk to life and property from severe storms.

Goal 9: Minimize the risk to life and property from tornadoes.

Goal 10: Minimize the risk to life and property from wildfires.

Goal 11: Minimize the risk to life and property from winter storms.

4.3 – Mitigation Projects

This plan identifies a comprehensive range of 28 possible and unique mitigation projects and 7 possible and unique mitigation actions. The selected set carefully takes an all-hazards approach to mitigation while simultaneously addressing each of the individual eight profiled hazards.

The projects and actions were selected based upon their potential to reduce the risk to life and property with not only an emphasis on new and existing infrastructure, but rather an imperative and necessitation that all actions and projects selected must protect and increase resiliency to new and existing infrastructure. Additionally, ease of implementation, community and departmental support, consistency with other relevant plans and capabilities, available funding, vulnerability, and total risk were variable factors. For further information on evaluation criteria, please see Section 4.4. The full list of mitigation projects and their descriptions can be found in Appendix D.

Some projects and actions mitigate risk and vulnerability to multiple hazards. Some of these projects and actions list participating jurisdictions that are only at risk from one or a few of the mitigation hazards. For example, the project: "Backup Generators" mitigates against multiple hazards. All participating jurisdictions are interested in this project, but some will not be using it to mitigate against riverine flooding. Instead they will be using it to mitigate against severe storms and winter storms.

Table 4.2 – Mitigation Projects Summary

Project	Jurisdictions
Build FEMA Code 361 Safe Rooms	McKinley County, Gallup, Gallup-McKinley County Schools
Build Irrigation Wells & Solar Pumping Facilities	McKinley County, Gallup
Build Irrigation Storage Tanks	McKinley County, Gallup
Build Rainwater Retention Basins	McKinley County, Gallup
Build Snow Fences	McKinley County, Gallup, Gallup-McKinley County Schools
Build Storm Water Pump Stations	McKinley County, Gallup, Gallup-McKinley County Schools
Bury Utility Lines, Pipes, and Tanks	McKinley County, Gallup
Create Defensible Spaces & Buffer Zones	McKinley County, Gallup, Gallup-McKinley County Schools
Expand Storm Siren Network	McKinley County, Gallup
Floodproof Structures	McKinley County, Gallup, Gallup-McKinley County Schools
Elevate Structures	McKinley County, Gallup, Gallup-McKinley County Schools
Install Backup Generators	McKinley County, Gallup, Gallup-McKinley County Schools
Install Bionets	McKinley County, Gallup, Gallup-McKinley County Schools
Install Flood Level Monitoring System	McKinley County, Gallup
Install Structural Integrity Monitoring Instruments	McKinley County
Install Transportation Status & Routing Systems	McKinley County, Gallup
Insulate Water Lines	McKinley County, Gallup, Gallup-McKinley County Schools
Raise Transportation Infrastructure	McKinley County, Gallup
Reinforce & Modify Slopes	McKinley County, Gallup, Gallup-McKinley County Schools
Retrofit Dams & Reservoirs	McKinley County
Reduce Debris & Natural Fuels	McKinley County, Gallup, Gallup-McKinley County Schools
Relocate or Buyout Vulnerable Structures	McKinley County, Gallup, Gallup-McKinley County Schools
Retrofit Structures for Wildfire Resistance	McKinley County, Gallup, Gallup-McKinley County Schools
Retrofit Structures for Wind Resistance	McKinley County, Gallup, Gallup-McKinley County Schools
Upgrade Insulation & Energy Efficiency	McKinley County, Gallup, Gallup-McKinley County Schools
Upgrade to Looped Grid Power Systems	McKinley County, Gallup
Upgrade to Low Flow Utilities	McKinley County, Gallup
Upgrade Storm Water Drainage Systems	McKinley County, Gallup, Gallup-McKinley County Schools

Table 4.3 – Mitigation Actions Summary

Action	Lead Agency
Attain StormReady Accreditation	McKinley County OEM
Comprehensive Revision of Floodplain Policies	County Commissioners
Conduct Dam Failure Inundation Study	McKinley County OEM
Conduct Public Awareness & Education	McKinley County OEM
Conduct SKYWARN Storm Spotter Training	McKinley County OEM
Develop Comprehensive Land Use Plans	County Commissioners/City Planning & Development
Update Dam Failure Evacuation Plans	McKinley County OEM

Mitigation Project Updates

McKinley County's prior approved mitigation plan (2014) contained suggested projects and actions that are no longer considered qualified mitigation projects or actions, rather, they classify as response, recovery, preparedness, or mere basic emergency management functions. Examples of these items include the development of basic emergency plans, risk assessments that are already part of mitigation planning, and basic municipal functions. If a project or action that was included in McKinley County's prior plan is not listed below or listed as "carried forward" in Appendix D, it has been deleted. The table below lists the mitigation projects that have been completed or initiated since the development of their last hazard mitigation plan.

Table 4.4 – Mitigation Project Updates

Mitigation Project	Jurisdictions	Status	Notes
Build Flood Relief Trenches	Gallup-McKinley County Schools	Completed 2018/2019	Gallup High & Ramah High
Conduct Public Awareness & Education	McKinley County, Gallup	Carried Forward	Drought & Wildfire Specific
Develop Comprehensive Land Use Plans	McKinley County, Gallup	Carried Forward	Drought, Flood, & Road Specific
Retrofit Structures for Wildfire Resistance	McKinley County	Carried Forward	McGaffey & Timberlake Areas
Upgrade Storm Water Drainage Systems	Gallup	Carried Forward	Maloney Avenue
Upgrade to Low Flow Utilities	Gallup	Carried Forward	

4.4 – Project Evaluation, Implementation, & Administration

Situational changes will likely occur throughout the 5-year life cycle of a mitigation plan. This can happen due to any number of factors such as public influence, local and grant funding allotments, changing demographics, other developmental changes, and numerous more. However, since the development of McKinley County's last mitigation plan, none of the participating jurisdiction's priorities have changed due to a lack of changes in the previously mentioned categories.

These factors and many others have great influence over how activities and projects will need to be evaluated for feasibility and demand. Therefore, a flexible methodology will serve McKinley County, Gallup, and the Gallup-McKinley County Schools best when determining what, when, and where to engage an activity or project.

Project Evaluation

McKinley County and this plan's participants will utilize the STAPLE+E method of assessing mitigation actions, projects, and alternatives. Upon deciding to move forth with a mitigation project, according to decision-making process of the participating jurisdiction, the decision-making body will use the form on the following page. Preliminary evaluations, per hazard, per project, per jurisdiction are found in Appendix F and are a composite of the STAPLE+E methodology and the composite risk for from each hazard for each jurisdiction.

The evaluations were conducted according the definitions in the table below:

Table 4.4 – STAPLE+E

Category	Concept of Analysis
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.
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.

1.) Fill in the name of the mitigation action or project followed by two other viable alternatives which address the same hazards.
2.) For each consideration, indicate a plus (+) for favorable or negative (-) for less favorable. If the consideration does not apply, leave it blank.
3.) Compare the total number of pluses and negatives to the alternative actions. Some considerations may carry more weight than others, so a simple tally does not necessarily indicate a more viable or feasible action or project.

Table 4.5 – STAPLE+E Sample Form

Criteria	Considerations	Action/Project	Alternative 1	Alternative 2
Social	Community Acceptance			
	Effect on Segment of the Population			
Technical	Technical Feasibility			
	Long-Term Solution			
	Secondary Impacts			
Administrative	Staffing			
	Funding Allocated			
	Maintenance/Operations			
Political	Political Support			
	Local Champion			
	Public Support			
Legal	State Authority			
	Existing Local Authority			
	Political Legal Challenge			
Economic	Benefit of Action			
	Cost of Action			
	Contributes to Economic Goals			
Environmental	Effect on Land or Water			
	Effect on Endangered Species			
	Effect on HAZMAT Waste Sites			
	Consistent with Environmental Goals			
	Consistent with Federal Laws			
	Total =			

Project Implementation

Each municipal government participating in this plan has their own decision-making bodies that are free to implement the mitigation strategies found in this plan as they see fit. Each decision-making body will choose municipal departments to head up implementation efforts appropriate for that municipal department's area of responsibility.

The activity and project evaluation methodology described in this section serves as an aid for them to enhance their decision-making. It is highly suggested that the county coordinates with the other municipal governments as well as the non-municipal plan participants to work towards an organized and concentrated effort when implementing activities and projects. That is, it would better serve their implementation effectiveness to work as a whole community when deciding how to allocate staff and funding resources when implementing mitigation activities and projects.

The Gallup-McKinley County Schools will be in complete sole control of what, when, and where to implement mitigation activities or projects. Its decision-making bodies that are free to implement as they see fit. The activity and project evaluation methodology provide earlier in this section acts as an aid for them to best apply the prescribed mitigation strategy found in this plan.

Project Administration

McKinley County will be self-administering each project through its own government departments. The department chosen to administer a project will vary depending on the characteristics of each activity or project whereas public works would be better suited for some projects while county records and risk management would be better suited for others. For each of the participating municipalities, they have the option and flexibility to administer their own activities and projects if they so choose. However, for the purpose of efficiency and governmental scale, activities and projects will default to be administered by McKinley County OEM.

The Gallup-McKinley County Schools will administer activities and projects inhouse with individuals designated administrative responsibility on an ad-hoc, per project basis. Individual will be designated on a case-by-case basis as seen most fitting by the organization according to the specific characteristics of the project or activity as oversight and administration duties can vary wildly among these organizations.

4.5 – Planning Integration

Mitigation doesn't end at plan approval. Plan approval is only the beginning. The successful implementation of any number 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.

This plan is not only useful for implementing mitigation activities and projects, but is also critical in making development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development into identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

The planning area's previous mitigation plan was not integrated into any of the following plans or decision-making processes. It is unknown as to why this is the case, but with the outreach performed during this plan's production and the distribution of the plan following FEMA approval, it likely will do so.

Comprehensive Land Use Planning

As of now, only McKinley County has a comprehensive plan, although the plan itself lacks basic functions such as zoning regulations. The City of Gallup maintains a complex set of ordinances, but as of yet does not have a comprehensive plan. These plans typically detail building codes, ordinances, zoning, and other land use measures as they relate to hazard risk reduction. Upon future updates of the McKinley County plan and if Gallup develops one, at a minimum, this mitigation plan will be considered for serving as a base guide to updating and improving hazard risk reduction measures contained within the comprehensive land use plans for each of the participating municipalities.

Democratic Governments & Boards

All the participating jurisdictions use some form of a democratic voting process. These organizations rely on agenda proposals, deliberation and discussion, and voting to solidify their decision-making.

All participating jurisdictions engage in capital improvement, infrastructure, and other various projects on an ad hoc basis. For these stakeholders, this plan should be integrated into agenda proposal's designs and cross-referenced during deliberation and discussion of proposed activities and projects. By using this plan's risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

Emergency Management Planning

Any and all emergency management related planning will at a minimum cross reference this document during its production. In some instances, this plan or portions of it will be fully integrated depending on the circumstances and nature of the planning document.

Emergency Operations Plans

McKinley County's next EOP update will reflect the most probable and dangerous hazard event scenarios from the plan's risk assessment. Additionally, the plan will be referenced in its entirety as an appendix to the EOP. This revision is the responsibility of McKinley County OEM for all of the jurisdictions participating in this plan. Upon revision completion, all participating jurisdictions and appropriate emergency services will be notified of the revisions and sent out new copies of the EOP.

State of New Mexico Department of Homeland Security and Emergency Management

NM DHSEM has a FEMA approved mitigation plan current as of September, 2018 and is updated every 5 years. The state's mitigation plan is required by FEMA regulation to include a discussion and summary of local hazard mitigation plans. The process of integrating this plan is already an established process and is managed by NM DHSEM.

Gallup-McKinley County Schools Facilities Master Plan (2017-2022)

The Gallup-McKinley County Schools is responsible for maintaining a facilities master plan and updating it every five years. Their current plan, adopted in 2017, outlines enrollment projections and facilities needs and capabilities, and capital improvement planning. Upon FEMA approval and school district adoption, this plan needs to be integral in the updating of the facilities master plan.

Their outlined planning process entails 4 primary steps to updating their plan, the second of which is "Inventory/Analysis of Conditions." Review of this plan's risk assessment and mitigation strategy needs to be considered during this phase of their planning process as it can help guide their decision-making process to better plan their capital improvement projects to incorporate hazard mitigating measures and thus increasing their resiliency.

The McKinley County Office of Emergency Management along with Two Rivers Emergency Management is working to revise and update its hazard mitigation plan. The plan will assess natural hazards' risk and vulnerabilities to each community in McKinley County and provide recommendations to increase their resiliency. In doing so, these actions aim to protect property and those who live, work, and conduct business in McKinley County and its communities.

All residents, businesses, community neighbors, and other interested parties are invited to attend the plan's kick-off meeting on Wednesday, May 29th, at 1:00 PM MDT. The McKinley County Office of Emergency Management will be hosting the meeting on the 3rd Floor of the McKinley County Courthouse located at 207 West Hill Street in Gallup.

Published:
May 17, 2019

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Friday May 17, 2019 • Gallup Sun

The McKinley County Office of Emergency Management along with Two Rivers Emergency Management is working to revise and update its hazard mitigation plan. The plan will assess natural hazards' risk and vulnerabilities to each community in McKinley County and provide recommendations to increase their resiliency. In doing so, these actions aim to protect property and those who live, work, and conduct business in McKinley County and its communities.

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Published in the Gallup Sun:
May 17, 2019
May 24, 2019

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Friday May 24, 2019 • Gallup Sun

McKinley County Office of Emergency Management
June 10 ·

Good Morning McKinley County!

We Need Your Input.

The McKinley County Office of Emergency Management, along with Two Rivers Emergency Management, is working to revise and update the McKinley County Hazard Mitigation Plan. You are invited to participate in the plan's development as representatives of your community. ... See More

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McKinley County, NM HMP Update – McKinley County, NM Hazard Mitigation Plan Update

McKinley County, NM 2020 Hazard Mitigation Plan Update TAKE OUR SURVEY What Is Mitigation? FEMA defines mitigation as "effort to reduce loss of life and property by lessening the impact of disasters." These…

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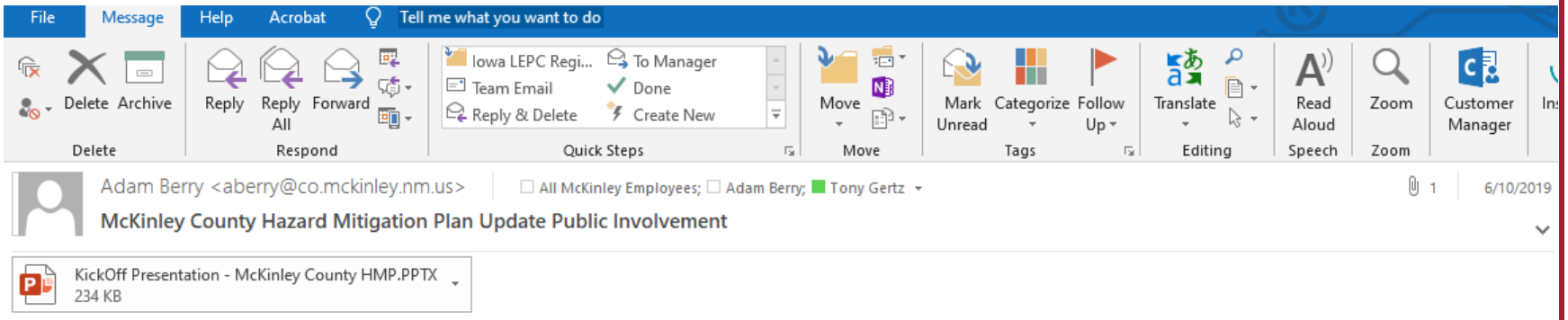

Good Morning,

The McKinley County Office of Emergency Management along with Two Rivers Emergency Management is working to revise and update the McKinley County Hazard Mitigation Plan. You are invited to participate in the plan's development as representatives of your community. On May 29th we held the plan's kick-off meeting in Gallup and the presentation delivered during that meeting has been attached to this email.

The purpose of this plan is to strategically guide actions and investments in such a way as to reduce the impacts of natural hazards on human life and property and in doing so protect McKinley County and those who live, work, and conduct business here. Through this plan, and in coordination with other relevant planning efforts, the intention is to build resiliency in the community in the face of both minor and catastrophic disaster.

Two Rivers Emergency Management has a website for the project where you will be able to monitor the plan's progress and review drafts as the plan progresses. More importantly the website has a survey which we will need a representative from each department to complete. Every county employee is encouraged to take the citizen survey. Without participation, the plan will not be as strong as it can be. We need this survey completed by July 15th, 2019.

The project's website URL is:
https://tworiversem.com/mckinleycountynm/

Thank you for your assistance in this planning process.

Adam Berry, AEM, NMCEM

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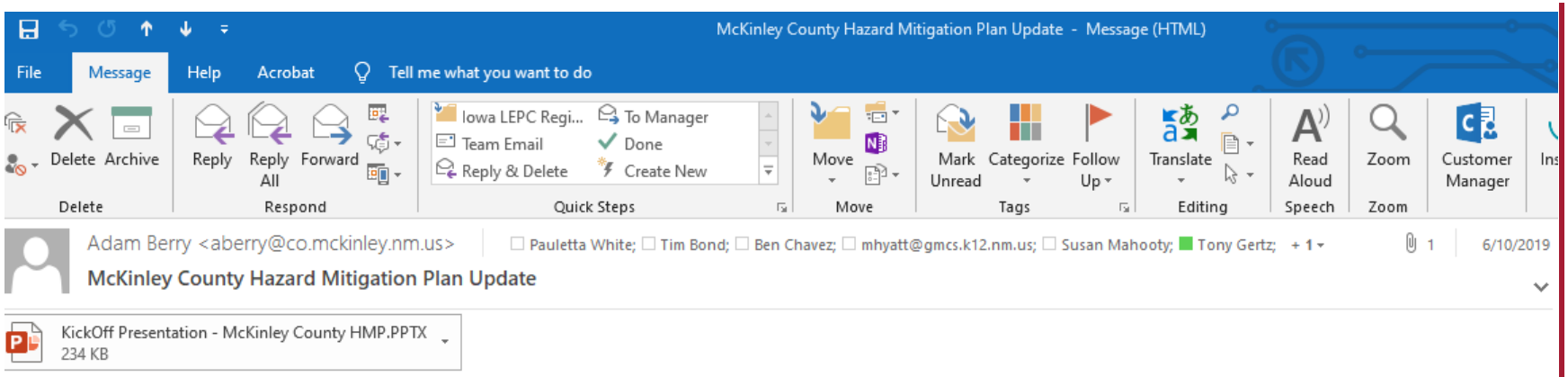


Good Morning,

The McKinley County Office of Emergency Management, along with Two Rivers Emergency Management, is working to revise and update its hazard mitigation plan. You are invited to participate in the plan's development as representatives of your community. On May 29th we held the plan's kick-off meeting in Gallup and the presentation delivered during that meeting has been attached to this email. We understand that you were not able to attend the presentation, but still need your cooperation throughout the plan's development.

The purpose of this plan is to strategically guide actions and investments in such a way as to reduce the impacts of natural hazards on human life and property and in doing so protect McKinley County and those who live, work, and conduct business here. Through this plan, and in coordination with other relevant planning efforts, the intention is to build resiliency in the community in the face of both minor and catastrophic disaster.

Two Rivers Emergency Management has a website for the project where you will be able to monitor the plan's progress and review drafts as the plan progresses. More importantly the website has a survey which we will need a representative of GMCS to complete. This step is required for your participation in the plan. Without participation, the plan will not be as strong as it can be and you will lose out on mitigation grant funding eligibility. We need this survey completed by July 15th, 2019. There is also a citizen version of the survey at the same link that all GMCS are welcome to take.

The project's website URL is:
https://tworiversem.com/mckinleycountynm/

Thank you for your help with this and we look forward to working together. Please let me know if you have any questions.

Adam Berry, AEM, NMCEM

Emergency Management Coordinator
McKinley County Office of Emergency Management
2221 Boyd Ave/PO Box 70
Gallup, NM 87301/Gallup, NM 87305
Office: 505.722.4248 ext. 1102
Cell: 806.535.6477
aberry@co.mckinley.nm.us

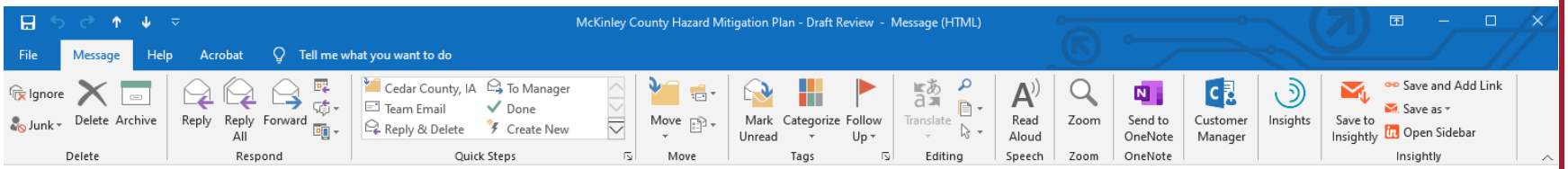
TWORIVERS EMERGENCY MANAGEMENT

Sign-In Documentation

McKinley County Multi-Jurisdictional Hazard Mitigation Plan

May 29th, 2019

Name (Printed)	Position & Organization	Phone Number	Email Address
Anthony Getz	Mitigation Manager, Two Rivers EM	(612)598-4429	tony@tworiversem.com
Sara Gerlitz	DHSEM, Mitigation Specialist	(505) 660 3808	sara.gerlitz@nmstate.us
Adam Berry	EMC, MCO EM	505 722 4248	aberry@co.mckinley.nm.us
Jason Carlisle	Fire Chief - MCFEMS	505-863-3839	jcarlisle@co.mckinley.nm.us
Chuy Morales	Deputy Fire Chief Gallup Fire	505-722-4195	jmorales@gallupnm.gov
Tim Berry	EMS Division Chief, MCFEMS	505-863-3839	tberry@co.mckinley.nm.us
Rick Austin	Deputy Fire Chief MCFEMS	505-863-3839	raustin@co.mckinley.nm.us
Paige Connelly	DPM American Red Cross	505-419-9945	paige.connelly@redcross.org
Virginia Howard	Self Advocate for DD Gov. Com	505 8790023	vhoward@yahoo.com
Rolinda Yazzie	ER Preparedness for DD	505 713 0914	vh.smith@yahoo.com
Cecilia Fried	ER " "	505 862 4271	CF@SJCI.org
Jim James	ER	505-862-4271	



Wed 3/25/2020 4:57 PM

Tony Gertz

McKinley County Hazard Mitigation Plan - Draft Review

To 'tbond@gmcs.org'; 'Jacqueline Strain'; 'jcarlisle@co.mckinley.nm.us'; 'jmorales@gallupnm.gov'; 'tberry@co.mckinley.nm.us'; 'raustin@co.mckinley.nm.us'

Cc Adam Berry

Good afternoon!

I hope everyone is staying safe right now with everything that is going on across the country. The good news here is that we've reached the final steps in completing the McKinley County Hazard Mitigation Plan.

We're ready to send the plan out to all of you and the public for the final draft review. We currently have the plan online and will be releasing statements in the Gallup Sun and on McKinley OEM's Facebook page opening up the review to the public for a period of two weeks. Your review will not be limited to a two week period if we foresee it will take that long for everyone to have a chance to review it, but I would like to stress that we want to get the plan out to the state and FEMA for their review as soon as possible.

Please take what time you have to review the draft, provide me with any input, and ask any questions you may have. Adam and I would especially like everyone's input in regards to Section 4.3 and its further breakdown in Appendix D. These sections list the proposed mitigation actions and projects that address the hazards assessed in Section 3 of the plan. We'd like you to provide any suggestions on other mitigation actions or projects that you think would be beneficial. Additionally, if you have more specific information or suggestions to the existing actions and projects listed, that would be extremely helpful.

As an example, the first project listed in Appendix D is a "Backup Generator" installation project. If you are hoping to install a backup generator at one of your facilities, provide us with the specific locations you wish to do so. Related note: Backup Generator projects under mitigation grant programs have to be fixed generators. That is, they can't be mobile, they have to permanently installed at a location.

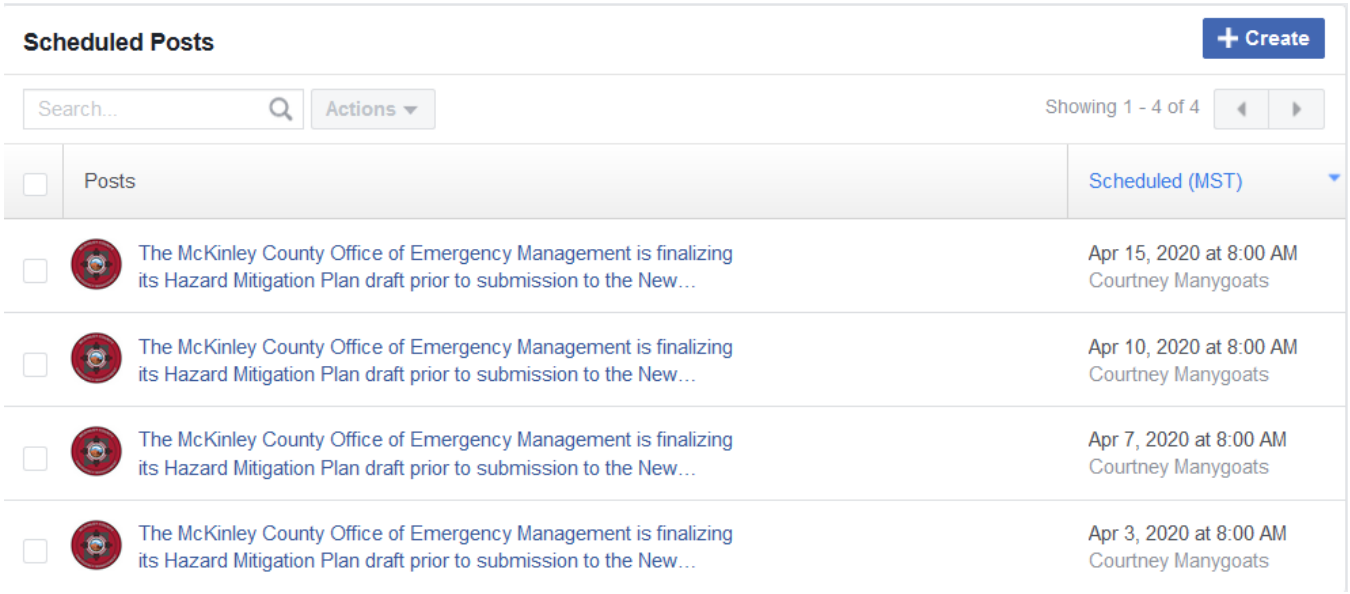
Other examples include, specific locations where structures could be elevated above a floodplain, specific facilities that could be floodproofed, bridges that could be raised, or places where drainage systems need to be upgraded or expanded.

Everyone should be able to download the plan from our website at: www.tworiversem.com/mckinleycountynm/

If you have any questions, please don't hesitate to ask.

All the best,

Tony Gertz, AEM, CBCP Mitigation Manager
Two Rivers Emergency Management
Recovery and Mitigation Division
699 Walnut Street FL 4 | Des Moines, IA 50309
Phone (866) 755-8736 | Direct (866) 755-8736 x701
Website www.TwoRiversEM.com
"National Coverage, Midwest Values"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PROOF OF PUBLICATION AFFIDAVIT

County of McKinley

Raenona Harvey being duly sworn,

testifies that he/she is Office Manager

of the Gallup Sun, a weekly newspaper circulated in the above county and that he/she is familiar with the facts and that the notice, a copy of which is attached, was published in said newspaper once each week for two consecutive weeks (two publications) prior to the time fixed for the hearing thereof, and that the publications were made on the:

3 day of April

2020

10 day of April

2020

Dated 4/10/2020

Signature of Publisher (Affiant)

State of New Mexico)
) ss
County of McKinley)

On the 10th day of April 2020,

the foregoing instrument was acknowledged

before me by Raenona Harvey.

Notary Public

OFFICIAL SEAL
RYAN KRILEY
NOTARY PUBLIC STATE OF NEW MEXICO
My Commission Expires: 6/15/2020

My Commission expires 6/15/2020

The McKinley County Office of Emergency Management is finalizing its Hazard Mitigation Plan draft prior to submission to the New Mexico Department of Homeland Security and Emergency Management and FEMA for review and approval. The plan assesses natural hazards' risks and vulnerabilities to the county, Gallup, and the Gallup-McKinley County School District. It provides recommendations to increase their hazard resiliency and reduce risk. In doing so, these actions aim to protect property and those who reside within the county.

Due to current conditions, the draft plan will not be available for viewing in person, but is instead available online in PDF format at: www.tworiversem.com/mckinleycountynm. We invite you to take the next two weeks to review the draft, provide any input you may have, or ask any related questions. Please direct all inquiries to: tony@tworiversem.com.

Published in the Gallup Sun
April 3, 2020
April 10, 2020

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Friday April 3, 2020 • Gallup Sun

The McKinley County Office of Emergency Management is finalizing its Hazard Mitigation Plan draft prior to submission to the New Mexico Department of Homeland Security and Emergency Management and FEMA for review and approval. The plan assesses natural hazards' risks and vulnerabilities to the county, Gallup, and the Gallup-McKinley County School District. It provides recommendations to increase their hazard resiliency and reduce risk. In doing so, these actions aim to protect property and those who reside within the county.

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Published in the Gallup Sun
April 3, 2020
April 10, 2020

***

Friday April 10, 2020 • Gallup Sun

Table B.1 – Gallup-McKinley County Schools Facilities

Facility	Contents Value	Structural Value	Total Value
Catherine A. Miller Elementary School			
Elementary School	$503,086	$3,027,650	$3,530,736
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$11,978	$67,461	$79,439
Portable Classroom 5	$14,156	$77,930	$92,086
Portable Classroom 6	$11,978	$67,461	$79,439
Portable Classroom 7	$11,978	$67,461	$79,439
Portable Classroom 8	$14,156	$77,930	$92,086
Portable Classroom 9	$28,313	$155,860	$184,173
Portable Classroom 10	$14,156	$77,930	$92,086
Portable Classroom 11	$14,156	$77,930	$92,086
Portable Classroom 12	$11,978	$67,461	$79,439
Portable Classroom 13	$14,156	$77,930	$92,086
Portable Classroom 14	$11,978	$67,461	$79,439
Portable Classroom 15	$11,978	$67,461	$79,439
Total =	**$638,113**	**$3,775,543**	**$4,413,656**
Central Offices			
Administration	$304,900	$1,786,582	$2,091,482
Early Child Development Portable	$20,690	$91,888	$112,578
Food Services Offices	$42,468	$264,033	$306,501
Portable Chapter I	$26,135	$155,860	$181,995
Portable Classroom	$14,156	$77,930	$92,086
Portable Health Services	$14,156	$83,746	$97,902
Portable Office 1	$26,135	$155,860	$181,995
Portable Office 1	$14,156	$83,746	$97,902
Portable Office 2	$14,156	$83,746	$97,902
Portable Office 2	$14,156	$83,746	$97,902
Portable Office 3	$14,156	$83,746	$97,902
Portable Office 3	$14,156	$83,746	$97,902
Portable Title V	$26,135	$146,555	$172,690
Warehouse	$202,540	$822,340	$1,024,880
Garage/Office	$187,295	$328,006	$515,301
Portable Classroom 6	$14,156	$77,930	$92,086
Workshop	$45,734	$66,300	$112,034
Motor Pool Garage	$94,737	$262,869	$357,606
Vehicle Storage	$326,679	$452,461	$779,140
Portable Building	$14,156	$77,930	$92,086
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Maintenance	$21,779	$65,135	$86,914
Maintenance Warehouse	$197,096	$801,403	$998,499
Storage 1	$19,601	$31,406	$51,007
Storage 2	$25,046	$36,058	$61,104
Storage 3	$15,244	$32,567	$47,811
Storage Portable	$25,046	$73,278	$98,324
Storage Portable	$21,779	$65,135	$86,914
Portable Classroom	$31,580	$175,634	$207,214
Total =	**$1,882,763**	**$7,076,538**	**$8,959,301**
Chee Dodge Elementary School			
Elementary School	$1,776,045	$9,108,539	$10,884,584
Portable Classroom 1	$11,978	$67,461	$79,439
Portable Classroom 2	$11,978	$67,461	$79,439
Portable Classroom 3	$11,978	$67,461	$79,439
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$11,978	$67,461	$79,439
Portable Classroom 6	$14,156	$77,930	$92,086
Pumphouse/Storage Tank	$25,046	$46,526	$71,572
Water Tank	$0	$47,689	$47,689
Total =	**$1,877,315**	**$9,628,458**	**$11,505,773**
Chief Manuelito Middle School			

Middle School	$1,666,062	$17,622,715	$19,288,777
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
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Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom	$31,580	$175,634	$207,214
Total =	**$2,202,922**	**$20,608,493**	**$22,811,415**
Crownpoint Elementary School			
Elementary/Multipurpose	$800,363	$4,988,701	$5,789,064
Bus Garage	$35,934	$97,704	$133,638
Portable Classroom 6	$14,156	$77,930	$92,086
Portable Classroom 7	$26,135	$146,555	$172,690
Propane Tank 1	$0	$8,144	$8,144
Propane Tank 2	$0	$6,979	$6,979
Propane Tank 3	$0	$6,979	$6,979
Propane Tank 4	$0	$6,979	$6,979
Propane Tank 5	$0	$6,979	$6,979
Propane Tank 6	$0	$8,144	$8,144
Total =	**$876,588**	**$5,355,094**	**$6,231,682**
Crownpoint Middle & High			
High School/Multipurpose	$1,449,366	$10,615,967	$12,065,333
Mid School/Multipurpose	$731,761	$7,318,470	$8,050,231
Gymnasium	$55,535	$1,089,861	$1,145,396
Home Bleachers	$0	$36,058	$36,058
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$14,156	$77,930	$92,086
Portable Classroom 6	$14,156	$77,930	$92,086
Portable Classroom 7	$14,156	$77,930	$92,086
Portable Classroom 8	$14,156	$77,930	$92,086
Portable Classroom 9	$14,156	$77,930	$92,086
Shop	$116,514	$280,317	$396,831
Special Education	$115,426	$920,043	$1,035,469
Press Box	$5,444	$298,925	$304,369
Ticket Booth	$1,089	$2,327	$3,416
Visitor Bleachers	$0	$23,262	$23,262
Storage	$20,690	$41,873	$62,563
Storage (Old Greenhouse)	$65,336	$84,910	$150,246
Storage 1	$44,646	$177,960	$222,606
Storage 2	$81,670	$197,734	$279,404
Storage 2	$2,177	$3,490	$5,667
Teacher Dwellings	$0	$269,850	$269,850
(Teacherage) Residence T012	$0	$98,867	$98,867
(Teacherage) Residence T013	$0	$129,108	$129,108
(Teacherage) Residence T014	$0	$98,867	$98,867
(Teacherage) Residence T015	$0	$129,108	$129,108
(Teacherage) Residence T016	$0	$130,273	$130,273
(Teacherage) Residence T017	$0	$129,108	$129,108
(Teacherage) Residence T018	$0	$98,867	$98,867
(Teacherage) Residence T019	$0	$98,867	$98,867

(Teacherage) Residence T020	$0	$98,867	$98,867
(Teacherage) Residence T021	$0	$98,867	$98,867
(Teacherage) Residence T022	$0	$129,108	$129,108
(Teacherage) Residence T023	$0	$98,867	$98,867
(Teacherage) Residence T024	$0	$129,108	$129,108
Teacherage Storage 1	$0	$4,652	$4,652
Teacherage Storage 2	$0	$4,652	$4,652
Teacherage Storage 3	$0	$4,652	$4,652
Teacherage Storage 4	$0	$4,652	$4,652
Teacherage Storage 5	$0	$4,652	$4,652
Teacherage Storage 6	$0	$4,652	$4,652
Teacherage Storage 7	$0	$4,652	$4,652
Teacherage Storage 8	$0	$4,652	$4,652
Teacherage Storage 9	$0	$4,652	$4,652
Teacherage Storage 10	$0	$4,652	$4,652
Teacherage Storage 11	$0	$4,652	$4,652
Teacherage Storage 12	$0	$4,652	$4,652
Teacherage Storage 13	$0	$4,652	$4,652
Teacherage Storage 14	$0	$4,652	$4,652
Teacherage Storage 15	$0	$4,652	$4,652
Teacherage Storage 16	$0	$4,652	$4,652
Teacherage Storage 17	$0	$4,652	$4,652
Teacherage Storage 18	$0	$4,652	$4,652
Teacherage Storage 19	$0	$4,652	$4,652
Teacherage Storage 20	$0	$4,652	$4,652
Teacherage Storage 21	$0	$4,652	$4,652
Teacherage Storage 22	$0	$4,652	$4,652
Teacherage Storage 23	$0	$4,652	$4,652
Teacherage Storage 24	$0	$4,652	$4,652
Teacherage Storage 25	$0	$4,652	$4,652
Teacherage Storage 26	$0	$4,652	$4,652
Teacherage Storage 27	$0	$4,652	$4,652
Teacherage Storage 28	$0	$4,652	$4,652
Teacherage Storage 29	$0	$4,652	$4,652
Teacherage T065	$0	$262,869	$262,869
Teacherage T066	$0	$264,033	$264,033
Teacherage T067	$0	$264,033	$264,033
Teacherage T068	$0	$290,786	$290,786
Teacherage T069	$0	$217,507	$217,507
Teacherage T070	$0	$252,401	$252,401
Teacherage T072	$0	$252,401	$252,401
Teacherage T072	$0	$266,357	$266,357
Teacherage T073	$0	$234,955	$234,955
Teacherage T074	$0	$252,401	$252,401
Teacherage T075	$0	$252,401	$252,401
Teacherage T076	$0	$236,117	$236,117
Teacherage T077	$0	$236,117	$236,117
Teacherage T078	$0	$252,401	$252,401
Teacherage T079	$0	$305,905	$305,905
Teacherage T080	$0	$217,507	$217,507
Teacherage T081	$0	$252,401	$252,401
Teacherage T082	$0	$252,401	$252,401
Teacherage T083	$0	$252,401	$252,401
Teacherage T084	$0	$252,401	$252,401
Teacherage T085	$0	$237,281	$237,281
Teacherage T086	$0	$252,401	$252,401
Teacherage T087	$0	$252,401	$252,401
Teacherage T088	$0	$217,507	$217,507
Teacherage T089	$0	$252,401	$252,401
Teacherage T090	$0	$236,117	$236,117
Teacherage T091	$0	$252,401	$252,401
Teacherage T092	$0	$305,905	$305,905
Teacherage T094	$0	$260,544	$260,544
Total =	**$2,873,682**	**$31,311,680**	**$34,185,362**
David Skeet Elementary			
Elementary/Multipurpose	$1,654,084	$7,073,046	$8,727,130
Portable Classroom 1	$11,978	$67,461	$79,439
Portable Classroom 2	$28,313	$159,350	$187,663

Pump Station	$46,824	$96,540	$143,364
Propane Tank	$0	$33,732	$33,732
Shelter	$1,089	$2,327	$3,416
Water Tank	$0	$39,546	$39,546
Total =	**$1,742,288**	**$7,472,002**	**$9,214,290**
Del Norte Elementary School	**$280,396**	**$22,301,987**	**$22,582,383**
Educational Development Center	**$323,412**	**$1,719,119**	**$2,042,531**
Gallup Central High School			
Classroom Building	$678,405	$5,231,797	$5,910,202
Greenhouse	$7,622	$13,958	$21,580
Portable Classroom	$28,313	$155,860	$184,173
Portable Classroom	$28,313	$155,860	$184,173
Portable Classroom	$28,313	$155,860	$184,173
Portable Classroom	$28,313	$155,860	$184,173
Portable Classroom	$28,313	$155,860	$184,173
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$28,313	$155,860	$184,173
Storage	$4,356	$5,816	$10,172
Total =	**$874,417**	**$6,264,661**	**$7,139,078**
Gallup High School			
High School	$5,702,724	$53,495,077	$59,197,801
Portable Classroom	$11,978	$67,461	$79,439
Press Box/Concessions	$15,244	$305,905	$321,149
Dugout 1	$0	$24,426	$24,426
Dugout 2	$0	$24,426	$24,426
Dugout 3	$0	$24,426	$24,426
Dugout 4	$0	$24,426	$24,426
Security Guard Booth	$2,177	$8,144	$10,321
Storage	$10,890	$30,243	$41,133
Total =	**$5,743,013**	**$54,004,534**	**$59,747,547**
Gallup Middle			
Administration/Classrooms	$566,244	$5,485,363	$6,051,607
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 13	$14,156	$77,930	$92,086
Portable Classroom 14	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$11,978	$67,461	$79,439
Portable Classroom 6	$11,978	$67,461	$79,439
Shop And Crafts	$165,517	$1,913,364	$2,078,881
Library	$644,646	$1,207,337	$1,851,983
Gymnasium	$130,672	$3,111,397	$3,242,069
Food Service/Home Economics	$309,257	$2,228,574	$2,537,831
Field Storage	$27,224	$80,257	$107,481
Press Box/Concessions	$28,313	$359,409	$387,722
Restrooms	$7,622	$376,857	$384,479
Ticket Booth	$1,089	$4,652	$5,741
Visitor Grandstand	$0	$20,937	$20,937
Total =	**$1,989,476**	**$15,390,649**	**$17,380,125**
Hiroshi Miyamura High School			
High School	$3,452,995	$27,334,924	$30,787,919
P.E. Building	$83,847	$2,386,761	$2,470,608
Portable Classroom 2	$11,978	$67,461	$79,439
Portable Classroom 3	$14,156	$77,930	$92,086
Support Services	$1,214,156	$7,667,411	$8,881,567
Total =	**$4,777,132**	**$37,534,487**	**$42,311,619**
Indian Hills Elementary	**$2,379,311**	**$7,585,992**	**$9,965,303**
Jefferson Elementary			
Elementary School	$4,560,667	$22,016,530	$26,577,197
Portable Classroom 1	$0	$77,930	$77,930
Portable Classroom 2	$0	$125,618	$125,618
Portable Classroom 3	$0	$77,930	$77,930
Portable Classroom 4	$0	$77,930	$77,930
Total =	**$4,560,667**	**$22,375,938**	**$26,936,605**
Kennedy Middle School			
Classroom Building	$1,982,940	$28,257,293	$30,240,233
Portable Classroom 6	$14,156	$77,930	$92,086

Warehouse	$51,179	$89,563	$140,742
Total =	**$2,048,275**	**$28,424,786**	**$30,473,061**
Lincoln Elementary School			
Elementary/Multipurpose	$364,328	$20,364,732	$20,729,060
Preschool	$40,290	$290,786	$331,076
Total =	**$404,618**	**$20,655,518**	**$21,060,136**
Navajo Elementary School			
Elementary School	$1,013,793	$6,877,638	$7,891,431
(Teacherage) Mobile Home 1	$0	$62,809	$62,809
(Teacherage) Mobile Home 2	$0	$66,300	$66,300
(Teacherage) Mobile Home 3	$0	$82,584	$82,584
(Teacherage) T002	$0	$258,217	$258,217
(Teacherage) T003	$0	$258,217	$258,217
(Teacherage) T004	$0	$243,095	$243,095
(Teacherage) T006	$0	$243,095	$243,095
(Teacherage) T007	$0	$243,095	$243,095
Vocational/Warehouse	$56,623	$129,108	$185,731
Total =	**$1,070,416**	**$8,464,158**	**$9,534,574**
Navajo Middle & Pine High School			
High School	$1,594,193	$13,348,180	$14,942,373
Middle School	$767,695	$9,057,361	$9,825,056
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 6	$14,156	$77,930	$92,086
Portable Classroom 7	$14,156	$77,930	$92,086
(Teacherage) Mobile Home 1	$0	$67,461	$67,461
(Teacherage) Mobile Home 10	$0	$67,461	$67,461
(Teacherage) Mobile Home 11	$0	$67,461	$67,461
(Teacherage) Mobile Home 12	$0	$55,829	$55,829
(Teacherage) Mobile Home 2	$0	$67,461	$67,461
(Teacherage) Mobile Home 4	$0	$67,461	$67,461
(Teacherage) Mobile Home 5	$0	$67,461	$67,461
(Teacherage) Mobile Home 8	$0	$90,724	$90,724
(Teacherage) Mobile Home7	$0	$67,461	$67,461
Field Concessions/Restrooms	$5,444	$267,522	$272,966
Grandstand W/Press Box	$2,177	$6,979	$9,156
Total =	**$2,426,133**	**$23,610,542**	**$26,036,675**
Ramah Elementary School			
Elementary School	$439,927	$0	$439,927
Portable Classroom 1	$14,156	$0	$14,156
Portable Classroom 1	$14,156	$0	$14,156
Portable Classroom 2	$14,156	$0	$14,156
Portable Classroom 2	$14,156	$0	$14,156
Portable Classroom 2	$14,156	$0	$14,156
Portable Classroom 2	$14,156	$0	$14,156
Portable Classroom 3	$11,978	$0	$11,978
Portable Classroom 4	$14,156	$0	$14,156
Portable Classroom 5	$11,978	$0	$11,978
Portable Classroom 6	$11,978	$0	$11,978
(Teacherage) Mobile Home 1	$0	$62,809	$62,809
(Teacherage) Mobile Home 2	$0	$62,809	$62,809
(Teacherage) Mobile Home 3	$0	$62,809	$62,809
(Teacherage) Mobile Home 4	$0	$62,809	$62,809
(Teacherage) Residence T009	$0	$130,273	$130,273
(Teacherage) Residence T010	$0	$131,434	$131,434
(Teacherage) Residence T011	$0	$131,434	$131,434
(Teacherage) Residence T012	$0	$104,683	$104,683
(Teacherage) Residence T013	$0	$318,701	$318,701
Water Tank	$0	$30,243	$30,243
Total =	**$574,953**	**$1,098,004**	**$1,672,957**
Ramah Middle/High School			
High School	$516,153	$4,000,033	$4,516,186
Middle School	$1,605,082	$16,356,056	$17,961,138
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$11,978	$67,461	$79,439
Vocational Shop	$99,092	$474,559	$573,651
Grandstands	$0	$37,221	$37,221

Press Box/Concessions/Restrooms	$5,444	$260,544	$265,988
Propane Tank	$0	$50,015	$50,015
Ticket Booth/Storage	$32,667	$132,597	$165,264
Water Tank	$0	$97,704	$97,704
(Teacherage) Residence	$0	$395,467	$395,467
Pumphouse 1	$44,646	$40,711	$85,357
Pumphouse 2	$4,356	$10,468	$14,824
Total =	**$2,347,730**	**$22,078,696**	**$24,426,426**
Red Rock Elementary School			
Elementary/Multipurpose	$856,987	$5,466,753	$6,323,740
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$14,156	$77,930	$92,086
Portable Classroom 6	$14,156	$77,930	$92,086
Portable Classroom 7	$14,156	$77,930	$92,086
Portable Classroom 8	$14,156	$77,930	$92,086
Total =	**$970,235**	**$6,090,193**	**$7,060,428**
Rocky View Elementary School			
Elementary School	$941,924	$5,253,898	$6,195,822
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom	$14,156	$77,930	$92,086
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Total =	**$1,055,172**	**$5,877,338**	**$6,932,510**
Stagecoach Elementary School			
Elementary/Multipurpose	$1,294,738	$9,176,002	$10,470,740
Portable Classroom 1	$28,313	$155,860	$184,173
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Storage	$4,356	$2,327	$6,683
Total =	**$1,355,719**	**$9,490,049**	**$10,845,768**
Thoreau Elementary School			
Elementary School	$521,598	$3,020,671	$3,542,269
Classroom Building	$178,585	$1,003,787	$1,182,372
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 2	$11,978	$67,461	$79,439
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 4	$11,978	$67,461	$79,439
Portable Classroom 5	$11,978	$67,461	$79,439
Portable Classroom 5	$14,156	$77,930	$92,086
Portable Classroom 6	$11,978	$67,461	$79,439
(Teacherage) Residence T017	$0	$469,908	$469,908
(Teacherage) Residence T019	$0	$387,326	$387,326
Equipment Room	$23,955	$8,144	$32,099
Gymnasium	$31,580	$749,061	$780,641
Laundry Room	$8,712	$11,632	$20,344
Log Building	$14,156	$45,362	$59,518
Storage	$20,690	$60,483	$81,173
Total =	**$946,280**	**$6,571,728**	**$7,518,008**
Thoreau High School			
High School/Multipurpose	$2,162,614	$15,503,477	$17,666,091
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Portable Classroom 5	$14,156	$77,930	$92,086
Portable Classroom 6	$14,156	$77,930	$92,086
(Teacherage)	$0	$296,600	$296,600

(Teacherage) Residence T002	$0	$150,045	$150,045
(Teacherage) Residence T003	$0	$138,413	$138,413
(Teacherage) Residence T004	$0	$115,151	$115,151
(Teacherage) Residence T005	$0	$115,151	$115,151
(Teacherage) Residence T006	$0	$115,151	$115,151
(Teacherage) Residence T007	$0	$115,151	$115,151
(Teacherage) Residence T008	$0	$115,151	$115,151
(Teacherage) Residence T009	$0	$115,151	$115,151
(Teacherage) Residence T010	$0	$129,108	$129,108
(Teacherage) Residence T011	$0	$129,108	$129,108
(Teacherage) Residence T012	$0	$129,108	$129,108
(Teacherage) Residence T013	$0	$129,108	$129,108
(Teacherage) Residence T014	$0	$129,108	$129,108
(Teacherage) Residence T015	$0	$129,108	$129,108
(Teacherage) Residence T016	$0	$152,371	$152,371
Teacherage Storage 1	$0	$4,652	$4,652
Teacherage Storage 2	$0	$4,652	$4,652
Teacherage Storage 3	$0	$4,652	$4,652
Teacherage Storage 4	$0	$4,652	$4,652
Teacherage Storage 5	$0	$4,652	$4,652
Teacherage Storage 6	$0	$4,652	$4,652
Teacherage Storage 7	$0	$4,652	$4,652
Teacherage Storage 8	$0	$4,652	$4,652
Teacherage Storage 9	$0	$4,652	$4,652
Teacherage Storage 10	$0	$4,652	$4,652
Teacherage Storage 11	$0	$4,652	$4,652
Teacherage Storage 12	$0	$4,652	$4,652
Teacherage Storage 13	$0	$4,652	$4,652
Teacherage Storage 14	$0	$4,652	$4,652
Teacherage Storage 15	$0	$4,652	$4,652
Teacherage Storage 16	$0	$4,652	$4,652
Teacherage Storage 17	$0	$4,652	$4,652
Teacherage Storage 18	$0	$4,652	$4,652
Teacherage Storage 19	$0	$4,652	$4,652
Teacherage Storage 20	$0	$4,652	$4,652
Teacherage Storage 21	$0	$4,652	$4,652
Teacherage Storage 22	$0	$4,652	$4,652
Teacherage T044	$0	$208,202	$208,202
Teacherage T045	$0	$204,714	$204,714
Teacherage T046	$0	$204,714	$204,714
Teacherage T047	$0	$205,875	$205,875
Teacherage T048	$0	$258,217	$258,217
Teacherage T049	$0	$258,217	$258,217
Teacherage T050	$0	$258,217	$258,217
Teacherage T051	$0	$258,217	$258,217
Teacherage T052	$0	$291,947	$291,947
Teacherage T053	$0	$265,196	$265,196
Teacherage T054	$0	$265,196	$265,196
Teacherage T055	$0	$291,947	$291,947
Teacherage T056	$0	$222,161	$222,161
Teacherage T057	$0	$272,175	$272,175
Teacherage T058	$0	$222,161	$222,161
Teacherage T059	$0	$258,217	$258,217
Teacherage T060	$0	$222,161	$222,161
Teacherage T061	$0	$265,196	$265,196
Teacherage T062	$0	$291,947	$291,947
Teacherage T063	$0	$205,875	$205,875
Teacherage T064	$0	$208,202	$208,202
Teacherage T065	$0	$266,357	$266,357
Bus Garage	$35,934	$88,398	$124,332
Pumphouse 1	$32,667	$39,546	$72,213
Pumphouse 2	$90,382	$100,030	$190,412
Water Tank 1	$0	$56,994	$56,994
Water Tank 2	$0	$167,491	$167,491
Total =	**$2,406,533**	**$24,133,954**	**$26,540,487**
Thoreau Middle School			
Middle School/Multipurpose	$728,495	$7,674,390	$8,402,885
Classroom Building	$16,334	$162,839	$179,173

Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 10	$14,156	$77,930	$92,086
Portable Classroom 11	$14,156	$77,930	$92,086
Portable Classroom 13	$11,978	$67,461	$79,439
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$26,135	$146,555	$172,690
Portable Classroom 4	$22,867	$125,618	$148,485
Portable Classroom 6	$14,156	$77,930	$92,086
Portable Classroom 7	$14,156	$77,930	$92,086
Portable Classroom 8	$14,156	$77,930	$92,086
Portable Classroom 9	$11,978	$67,461	$79,439
Announcer's Booth/Concession	$19,601	$234,955	$254,556
Ticket Booth	$1,089	$4,652	$5,741
Grandstands 1	$0	$36,058	$36,058
Grandstands 2	$0	$20,937	$20,937
Storage	$20,690	$45,362	$66,052
Maintenance 1	$51,179	$212,853	$264,032
Maintenance 2	$103,448	$258,217	$361,665
Total =	**$1,112,886**	**$9,602,868**	**$10,715,754**
Tobe Turpen Elementary School			
Elementary School	$945,191	$5,869,199	$6,814,390
Portable Classroom	$31,580	$175,634	$207,214
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$31,580	$175,634	$207,214
Total =	**$1,036,663**	**$6,376,327**	**$7,412,990**
Tohatchi Elementary School			
Elementary School	$1,070,417	$8,571,169	$9,641,586
(Teacherage) T030	$0	$272,175	$272,175
(Teacherage) T031	$0	$272,175	$272,175
Teacherage T011	$0	$236,117	$236,117
Teacherage T012	$0	$236,117	$236,117
Teacherage T013	$0	$236,117	$236,117
Teacherage T014	$0	$236,117	$236,117
Teacherage T015	$0	$236,117	$236,117
Teacherage T016	$0	$236,117	$236,117
Teacherage Storage 1	$0	$4,652	$4,652
Teacherage Storage 2	$0	$4,652	$4,652
Teacherage Storage 3	$0	$4,652	$4,652
Teacherage Storage 4	$0	$4,652	$4,652
Teacherage Storage 5	$0	$4,652	$4,652
Teacherage Storage 6	$0	$4,652	$4,652
Bus Garage	$34,845	$95,378	$130,223
Total =	**$1,105,262**	**$10,655,511**	**$11,760,773**
Tohatchi High School			
High School	$721,961	$5,630,755	$6,352,716
Classroom Building	$50,091	$191,918	$242,009
Portable Classroom 1	$14,156	$77,930	$92,086
Portable Classroom 2	$14,156	$77,930	$92,086
Portable Classroom 3	$14,156	$77,930	$92,086
Portable Classroom 4	$14,156	$77,930	$92,086
Metal Shop	$81,670	$244,259	$325,929
Vocational/Classrooms	$1,060,618	$7,506,897	$8,567,515
Gymnasium	$150,272	$4,122,163	$4,272,435
Kitchen/Cafeteria	$229,764	$1,905,220	$2,134,984
(Teacherage) Residence T014	$0	$222,161	$222,161
(Teacherage) Residence T015	$0	$272,175	$272,175
(Teacherage) Residence T016	$0	$302,416	$302,416
(Teacherage) Residence T017	$0	$240,770	$240,770
(Teacherage) Residence T018	$0	$280,317	$280,317
(Teacherage) Residence T019	$0	$268,685	$268,685
(Teacherage) Residence T020	$0	$337,311	$337,311
(Teacherage) Residence T021	$0	$287,296	$287,296
(Teacherage) Residence T022	$0	$215,180	$215,180
Teacherage Storage 1	$0	$4,652	$4,652
Teacherage Storage 2	$0	$4,652	$4,652
Teacherage Storage 3	$0	$4,652	$4,652
Teacherage Storage 4	$0	$4,652	$4,652

Teacherage Storage 5	$0	$4,652	$4,652
Teacherage Storage 6	$0	$4,652	$4,652
Teacherage Storage 7	$0	$4,652	$4,652
Teacherage Storage 8	$0	$4,652	$4,652
Teacherage Storage 9	$0	$4,652	$4,652
Teacherage T025	$0	$232,629	$232,629
Teacherage T026	$0	$264,033	$264,033
Teacherage T027	$0	$266,357	$266,357
Teacherage T028	$0	$264,033	$264,033
Teacherage T029	$0	$288,458	$288,458
Teacherage T030	$0	$275,664	$275,664
Teacherage T031	$0	$216,344	$216,344
Teacherage T032	$0	$209,366	$209,366
Pumphouse/Water Tank	$126,315	$160,512	$286,827
Storage	$17,423	$29,079	$46,502
Storage	$1,089	$3,490	$4,579
Water Tank	$0	$237,281	$237,281
Total =	**$2,495,827**	**$24,828,357**	**$27,324,184**
Tohatchi Middle School			
New Middle School	$646,825	$6,518,230	$7,165,055
Ticket Booth	$0	$3,490	$3,490
Ballfield Storage 1	$5,444	$6,979	$12,423
Ballfield Storage 2	$5,444	$6,979	$12,423
Fieldhouse/Restrooms	$5,444	$218,670	$224,114
Football Bleachers 1	$0	$16,284	$16,284
Football Bleachers 2	$0	$11,632	$11,632
Football Bleachers 3	$0	$17,447	$17,447
Football Bleachers 4	$0	$17,447	$17,447
Football Bleachers 5	$0	$11,632	$11,632
Quonset	$20,690	$37,221	$57,911
(Teacherage) Residence T011	$0	$132,597	$132,597
(Teacherage) Residence T012	$0	$186,103	$186,103
(Teacherage) Residence T013	$0	$95,378	$95,378
(Teacherage) Residence T014	$0	$130,273	$130,273
(Teacherage) Residence T015	$0	$95,378	$95,378
(Teacherage) Residence T016	$0	$130,273	$130,273
(Teacherage) Residence T017	$0	$101,194	$101,194
(Teacherage) Residence T018	$0	$101,194	$101,194
(Teacherage) Residence T019	$0	$101,194	$101,194
(Teacherage) Residence T020	$0	$101,194	$101,194
(Teacherage) Residence T021	$0	$130,273	$130,273
(Teacherage) Residence T022	$0	$95,378	$95,378
(Teacherage) Residence T023	$0	$130,273	$130,273
(Teacherage) Residence T024	$0	$95,378	$95,378
Total =	**$683,847**	**$8,492,091**	**$9,175,938**
Tse' Yi' Gai' High School			
High School	$1,423,230	$11,933,804	$13,357,034
Bus Barn	$66,424	$316,374	$382,798
Propane Tank 1	$0	$50,015	$50,015
Propane Tank 2	$0	$50,015	$50,015
Pumphouse	$43,557	$68,625	$112,182
Teacherage T007	$0	$275,664	$275,664
Teacherage T008	$0	$275,664	$275,664
Teacherage T009	$0	$275,664	$275,664
Teacherage T010	$0	$275,664	$275,664
Teacherage T011	$0	$275,664	$275,664
Teacherage T012	$0	$275,664	$275,664
Teacherage T013	$0	$275,664	$275,664
Teacherage T014	$0	$275,664	$275,664
Teacherage T015	$0	$275,664	$275,664
Teacherage T016	$0	$275,664	$275,664
Teacherage Storage 1	$0	$5,816	$5,816
Teacherage Storage 10	$0	$5,816	$5,816
Teacherage Storage 2	$0	$5,816	$5,816
Teacherage Storage 3	$0	$5,816	$5,816
Teacherage Storage 4	$0	$5,816	$5,816
Teacherage Storage 5	$0	$5,816	$5,816
Teacherage Storage 6	$0	$5,816	$5,816

Teacherage Storage 7	$0	$5,816	$5,816
Teacherage Storage 8	$0	$5,816	$5,816
Teacherage Storage 9	$0	$5,816	$5,816
Water Tank	$0	$97,704	$97,704
Total =	**$1,533,211**	**$15,331,337**	**$16,864,548**
Twin Lakes Elementary School			
New Elementary School	$866,788	$6,008,774	$6,875,562
Portable Classroom	$28,313	$155,860	$184,173
(Teacherage)	$0	$294,273	$294,273
(Teacherage) Mobile Home 2	$0	$67,461	$67,461
Total =	**$895,101**	**$6,526,368**	**$7,421,469**
Grand Total =	**$57,926,528**	**$490,791,402**	**$548,717,930**

Appendix C – Hazard Records

Table C.1 – Drought Records

Date	D0	D1	D2	D3	D4	DSCI
1/11/2000	100	0	0	0	0	100
1/18/2000	100	0	0	0	0	100
1/25/2000	100	0	0	0	0	100
2/1/2000	100	0	0	0	0	100
2/8/2000	100	0	0	0	0	100
2/15/2000	100	0	0	0	0	100
2/22/2000	100	0	0	0	0	100
2/29/2000	100	0	0	0	0	100
3/7/2000	100	0	0	0	0	100
3/14/2000	100	0	0	0	0	100
3/21/2000	100	0	0	0	0	100
5/16/2000	0	100	0	0	0	200
5/23/2000	0	100	0	0	0	200
5/30/2000	0	100	0	0	0	200
6/6/2000	4.58	95.42	0	0	0	195
6/13/2000	0	100	0	0	0	200
6/20/2000	0	100	0	0	0	200
6/27/2000	0	100	0	0	0	200
7/4/2000	67.21	32.79	0	0	0	133
7/11/2000	71.89	28.11	0	0	0	128
7/18/2000	74.68	25.32	0	0	0	125
7/25/2000	74.68	25.32	0	0	0	125
8/1/2000	74.68	25.32	0	0	0	125
8/8/2000	95.13	4.87	0	0	0	105
8/15/2000	96.47	3.53	0	0	0	104
8/22/2000	100	0	0	0	0	100
8/29/2000	100	0	0	0	0	100
9/5/2000	100	0	0	0	0	100
9/12/2000	100	0	0	0	0	100
9/19/2000	100	0	0	0	0	100
9/26/2000	100	0	0	0	0	100
10/3/2000	13.87	86.13	0	0	0	186
10/10/2000	12.45	87.55	0	0	0	188
10/17/2000	56.84	0	0	0	0	57
10/24/2000	54	16.63	0	0	0	87
10/31/2000	53.22	0	0	0	0	53
11/6/2001	65.22	0	0	0	0	65
11/13/2001	65.22	0	0	0	0	65
11/20/2001	56.33	0	0	0	0	56
11/27/2001	56.33	0	0	0	0	56
1/1/2002	54.91	0	0	0	0	55
1/8/2002	51.93	0	0	0	0	52
2/5/2002	95.3	0	0	0	0	95
2/12/2002	8.12	91.88	0	0	0	192
2/19/2002	8.23	91.77	0	0	0	192
2/26/2002	8.55	91.45	0	0	0	191
3/5/2002	9	91	0	0	0	191
3/12/2002	0	100	0	0	0	200
3/19/2002	0	100	0	0	0	200

3/26/2002	0	39.16	60.84	0	0	261
4/2/2002	0	0	100	0	0	300
4/9/2002	0	0	100	0	0	300
4/16/2002	0	0	100	0	0	300
4/23/2002	0	0	3.03	96.97	0	397
4/30/2002	0	0	3.06	96.94	0	397
5/7/2002	0	0	1.23	98.77	0	399
5/14/2002	0	0	0	100	0	400
5/21/2002	0	0	0	100	0	400
5/28/2002	0	0	0	99.33	0.67	401
6/4/2002	0	0	0	99.03	0.97	401
6/11/2002	0	0	0	99.66	0.34	400
6/18/2002	0	0	0	98.95	1.05	401
6/25/2002	0	0	0	74.79	25.21	425
7/2/2002	0	0	0	62.2	37.8	438
7/9/2002	0	0	0	61.41	38.59	439
7/16/2002	0	0	0	61.04	38.96	439
7/23/2002	0	0	0	56.41	43.59	444
7/30/2002	0	0	0.27	65.39	34.34	434
8/6/2002	0	0	2.43	96.43	1.14	399
8/13/2002	0	0	1.83	96.68	1.5	400
8/20/2002	0	0	2.35	96.13	1.51	399
8/27/2002	0	0	0.56	96.45	3	402
9/3/2002	0	0	1.88	96.78	1.34	399
9/10/2002	0	0	14.59	84.99	0.42	386
9/17/2002	0	0	21.01	78.99	0	379
9/24/2002	0	0	60.07	39.93	0	340
10/1/2002	0	0	58.69	41.31	0	341
10/8/2002	0	0	65.25	34.75	0	335
10/15/2002	0	0	62.7	37.3	0	337
10/22/2002	0	0	59	41	0	341
10/29/2002	0	0.38	79.48	20.14	0	320
11/5/2002	0	0	84.12	15.88	0	316
11/12/2002	0	3.45	96.55	0	0	297
11/19/2002	0	3.18	96.82	0	0	297
11/26/2002	0	4.53	95.47	0	0	295
12/3/2002	0	5.64	94.36	0	0	294
12/10/2002	0	2.28	97.72	0	0	298
12/17/2002	0	1.73	98.27	0	0	298
12/24/2002	0	2.98	97.02	0	0	297
12/31/2002	0	71.1	28.9	0	0	229
1/7/2003	0	77.54	22.46	0	0	222
1/14/2003	0	32.92	67.08	0	0	267
1/21/2003	0	35.32	64.68	0	0	265
1/28/2003	0	30.73	69.27	0	0	269
2/4/2003	0	36.27	63.73	0	0	264
2/11/2003	0	30.63	69.37	0	0	269
2/18/2003	0	2.82	97.18	0	0	297
2/25/2003	0	40.93	59.07	0	0	259
3/4/2003	0	35.64	64.36	0	0	264
3/11/2003	0	40.96	59.04	0	0	259
3/18/2003	0	40.96	59.04	0	0	259
3/25/2003	0	38.93	61.07	0	0	261

4/1/2003	0	32.9	67.1	0	0	267
4/8/2003	0	44.43	55.57	0	0	256
4/15/2003	0	43.81	56.19	0	0	256
4/22/2003	0	33.72	66.28	0	0	266
4/29/2003	0	26.2	73.8	0	0	274
5/6/2003	0.62	16.66	82.71	0	0	282
5/13/2003	0	12.41	49.22	38.37	0	326
5/20/2003	0	4.02	52.48	43.5	0	339
5/27/2003	0	5.55	51.32	43.13	0	338
6/3/2003	0	6.87	46.86	46.27	0	339
6/10/2003	0	4.48	54.51	41	0	336
6/17/2003	0	6.52	60.39	33.09	0	327
6/24/2003	0	5.27	56.6	38.13	0	333
7/1/2003	0	5.97	63.14	30.9	0	325
7/8/2003	0	5.73	60.85	33.42	0	328
7/15/2003	0	0	52.34	47.66	0	348
7/22/2003	0	0	53.59	46.41	0	346
7/29/2003	0	0	67.43	32.57	0	333
8/5/2003	0	0	62.21	37.79	0	338
8/12/2003	0	0	59.29	40.71	0	341
8/19/2003	0	0	62.76	37.24	0	337
8/26/2003	0	0	56.93	43.07	0	343
9/2/2003	0	0	53.91	46.09	0	346
9/9/2003	0	0	47.48	52.52	0	353
9/16/2003	0	0	10.16	89.84	0	390
9/23/2003	0	0	9.65	90.35	0	390
9/30/2003	0	0	16.02	83.98	0	384
10/7/2003	0	0	66.71	33.29	0	333
10/14/2003	0	0	66.97	33.03	0	333
10/21/2003	0	0	83.38	16.62	0	317
10/28/2003	0	0	72.83	27.17	0	327
11/4/2003	0	0	68.7	31.3	0	331
11/11/2003	0	0	63.67	36.33	0	336
11/18/2003	0	0	68.37	31.63	0	332
11/25/2003	0	0	70.44	29.56	0	330
12/2/2003	0	0	74.63	25.29	0.08	325
12/9/2003	0	0	73.55	26.45	0	326
12/16/2003	0	0	70.65	29.35	0	329
12/23/2003	0	0	74.41	25.59	0	326
12/30/2003	0	0	0	100	0	400
1/6/2004	0	0	0	100	0	400
1/13/2004	0	0	0	100	0	400
1/20/2004	0	0	0	100	0	400
1/27/2004	0	0	0	100	0	400
2/3/2004	0	0	0	100	0	400
2/10/2004	0	0	0	100	0	400
2/17/2004	0	0	0	100	0	400
2/24/2004	0	0	0	100	0	400
3/2/2004	0	0	4.41	95.59	0	396
3/9/2004	0	0	4.41	95.59	0	396
3/16/2004	0	0	4.41	95.59	0	396
3/23/2004	0	0	9.74	90.26	0	390
3/30/2004	0	0	9.74	90.26	0	390

4/6/2004	0	40.69	57.51	1.8	0	261
4/13/2004	0	34.61	59.53	5.86	0	271
4/20/2004	0	34.61	59.53	5.86	0	271
4/27/2004	0.03	38.44	55.67	5.86	0	267
5/4/2004	0.03	38.44	55.67	5.86	0	267
5/11/2004	0.03	38.44	55.67	5.86	0	267
5/18/2004	0.03	38.44	55.67	5.86	0	267
5/25/2004	0.03	38.44	55.67	5.86	0	267
6/1/2004	9.33	25.85	58.96	5.86	0	261
6/8/2004	6.93	43.06	44.03	5.97	0	249
6/15/2004	6.93	42.76	44.33	5.97	0	249
6/22/2004	7.07	45.37	41.59	5.97	0	246
6/29/2004	7.32	45.12	41.59	5.97	0	246
7/6/2004	7.09	46.67	40.27	5.97	0	245
7/13/2004	0	0	73.95	26.05	0	326
7/20/2004	0	0	73.95	26.05	0	326
7/27/2004	0	0	73.96	26.04	0	326
8/3/2004	0	0	73.96	26.04	0	326
8/10/2004	0	0	73.96	26.04	0	326
8/17/2004	0	0	73.93	26.07	0	326
8/24/2004	0	0	73.93	26.07	0	326
8/31/2004	0	0	73.93	26.07	0	326
9/7/2004	0	0	71.24	28.76	0	329
9/14/2004	0	0	71.24	28.76	0	329
9/21/2004	0	0	71.24	28.76	0	329
9/28/2004	0	0	71.24	28.76	0	329
10/5/2004	0	0	71.24	28.76	0	329
10/12/2004	0	0	0.27	99.73	0	400
10/19/2004	0	0	0.27	99.73	0	400
10/26/2004	0	0	0.27	99.73	0	400
11/2/2004	0	0	0.27	99.73	0	400
11/9/2004	0	0	0.27	99.73	0	400
11/16/2004	0	0	0.27	99.73	0	400
11/23/2004	0	0	0.27	99.73	0	400
11/30/2004	0	0	0.27	99.73	0	400
12/7/2004	0	0	0.27	99.73	0	400
12/14/2004	0	0	0.27	99.73	0	400
12/21/2004	0	0	0.27	99.73	0	400
12/28/2004	0	0	0.27	99.73	0	400
1/4/2005	0	0	0.27	99.73	0	400
1/11/2005	0	0	0.27	99.73	0	400
1/18/2005	0	0	1.64	98.36	0	398
1/25/2005	0	0	1.64	98.36	0	398
2/1/2005	0	0	1.64	98.36	0	398
2/8/2005	0	0	2.07	97.93	0	398
2/15/2005	0	0.89	11.47	87.64	0	387
2/22/2005	0	0.89	11.47	87.64	0	387
3/1/2005	0	11.27	88.73	0	0	289
3/8/2005	0	11.27	88.73	0	0	289
3/15/2005	0	11.27	88.73	0	0	289
3/22/2005	0	11.27	88.73	0	0	289
3/29/2005	0	12.56	87.44	0	0	287
4/5/2005	0	13.67	86.33	0	0	286

4/12/2005	26.21	73.79	0	0	0	174
4/19/2005	26.21	73.79	0	0	0	174
4/26/2005	10.91	89.09	0	0	0	189
5/3/2005	10.91	89.09	0	0	0	189
5/10/2005	10.91	89.09	0	0	0	189
5/17/2005	10.92	89.08	0	0	0	189
5/24/2005	10.92	89.08	0	0	0	189
5/31/2005	10.92	89.08	0	0	0	189
6/7/2005	10.92	89.08	0	0	0	189
6/14/2005	10.92	89.08	0	0	0	189
6/21/2005	10.92	89.08	0	0	0	189
6/28/2005	10.92	89.08	0	0	0	189
7/5/2005	10.92	89.08	0	0	0	189
7/12/2005	10.92	89.08	0	0	0	189
7/19/2005	10.92	89.08	0	0	0	189
7/26/2005	10.92	89.08	0	0	0	189
8/2/2005	10.92	89.08	0	0	0	189
8/9/2005	10.92	89.08	0	0	0	189
8/16/2005	31.64	68.36	0	0	0	168
8/23/2005	34.48	65.52	0	0	0	166
8/30/2005	34.48	65.52	0	0	0	166
9/6/2005	34.48	65.52	0	0	0	166
9/13/2005	34.48	65.52	0	0	0	166
9/20/2005	34.48	65.52	0	0	0	166
9/27/2005	34.48	65.52	0	0	0	166
10/4/2005	34.48	65.52	0	0	0	166
10/11/2005	34.48	65.52	0	0	0	166
10/18/2005	32.47	67.53	0	0	0	168
10/25/2005	32.47	67.53	0	0	0	168
11/1/2005	32.47	67.53	0	0	0	168
11/8/2005	32.47	67.53	0	0	0	168
11/15/2005	32.47	67.53	0	0	0	168
11/22/2005	32.47	67.53	0	0	0	168
11/29/2005	32.47	67.53	0	0	0	168
12/6/2005	32.47	67.53	0	0	0	168
12/13/2005	32.47	67.53	0	0	0	168
12/20/2005	32.47	67.53	0	0	0	168
12/27/2005	32.47	67.53	0	0	0	168
1/3/2006	22.21	77.79	0	0	0	178
1/10/2006	21.79	78.21	0	0	0	178
1/17/2006	0	100	0	0	0	200
1/24/2006	0	61.07	38.93	0	0	239
1/31/2006	0	37.93	62.07	0	0	262
2/7/2006	0	0.22	99.78	0.01	0	300
2/14/2006	0	0.22	99.78	0.01	0	300
2/21/2006	0	0	99.99	0.01	0	300
2/28/2006	0	0	99.99	0.01	0	300
3/7/2006	0	0	34.47	65.53	0	366
3/14/2006	0	0	34.57	65.43	0	365
3/21/2006	0	0	34.57	65.43	0	365
3/28/2006	0	0	34.57	65.43	0	365
4/4/2006	0	0	34.57	65.43	0	365
4/11/2006	0	0	34.57	65.43	0	365

4/18/2006	0	0	34.57	65.43	0	365
4/25/2006	0	0	34.57	65.43	0	365
5/2/2006	0	0	34.57	65.43	0	365
5/9/2006	0	0	29.43	70.57	0	371
5/16/2006	0	0	29.43	70.57	0	371
5/23/2006	0	0	11.11	88.89	0	389
5/30/2006	0	0	11.11	88.89	0	389
6/6/2006	0	0	11.11	88.89	0	389
6/13/2006	0	0	11.11	88.89	0	389
6/20/2006	0	0	11.11	88.89	0	389
6/27/2006	0	0	11.11	88.89	0	389
7/4/2006	0	0	11.11	88.89	0	389
7/11/2006	0	5.6	94.29	0.12	0	295
7/18/2006	0	5.6	94.29	0.12	0	295
7/25/2006	0	5.6	94.29	0.12	0	295
8/1/2006	36.77	32.95	30.28	0	0	194
8/8/2006	46.13	25.28	28.59	0	0	182
8/15/2006	47.15	25.87	26.98	0	0	180
8/22/2006	44.67	26.86	28.47	0	0	184
8/29/2006	43.74	27.79	28.47	0	0	185
9/5/2006	43.74	27.79	28.47	0	0	185
9/12/2006	43.68	27.79	28.47	0	0	185
9/19/2006	42.64	29.36	27.95	0	0	185
9/26/2006	42.58	29.36	27.95	0	0	185
10/3/2006	42.63	29.36	27.95	0	0	185
10/10/2006	22.85	50.77	6.54	0	0	144
10/17/2006	22.85	50.77	6.54	0	0	144
10/24/2006	22.85	50.77	6.54	0	0	144
10/31/2006	22.85	50.77	6.54	0	0	144
11/7/2006	22.85	50.77	6.54	0	0	144
11/14/2006	22.85	50.77	6.54	0	0	144
11/21/2006	23.16	50.77	6.54	0	0	144
11/28/2006	23.59	50.77	6.54	0	0	145
12/5/2006	26.95	50.89	6.54	0	0	148
12/12/2006	42.57	50.89	6.54	0	0	164
12/19/2006	42.57	50.89	6.54	0	0	164
12/26/2006	42.57	50.89	6.54	0	0	164
1/2/2007	42.57	50.89	6.54	0	0	164
1/9/2007	42.57	50.89	6.54	0	0	164
1/16/2007	42.57	50.89	6.54	0	0	164
1/23/2007	42.57	50.89	6.54	0	0	164
1/30/2007	41.56	51.91	6.54	0	0	165
2/6/2007	41.19	51.85	6.6	0	0	165
2/13/2007	41.19	51.85	6.6	0	0	165
2/20/2007	41.19	51.85	6.6	0	0	165
2/27/2007	43.21	49.51	6.6	0	0	162
3/6/2007	43.21	49.51	6.6	0	0	162
3/13/2007	42.93	44.71	11.68	0	0	167
3/20/2007	42.93	44.71	11.68	0	0	167
3/27/2007	22.57	25.63	51.12	0	0	227
4/3/2007	25.11	22.07	51.12	0	0	223
4/10/2007	24.48	22.07	51.12	0	0	222
4/17/2007	24.48	22.07	51.12	0	0	222

4/24/2007	24.48	22.07	51.12	0	0	222
5/1/2007	22.73	23.82	51.12	0	0	224
5/8/2007	22.73	23.82	51.12	0	0	224
5/15/2007	22.73	23.82	51.12	0	0	224
5/22/2007	22.73	23.82	51.12	0	0	224
5/29/2007	25.09	21.46	51.12	0	0	221
6/5/2007	25.09	21.46	51.12	0	0	221
6/12/2007	25.09	21.46	51.12	0	0	221
6/19/2007	25.09	21.46	51.12	0	0	221
6/26/2007	25.09	21.46	51.12	0	0	221
7/3/2007	25.09	21.46	51.12	0	0	221
7/10/2007	25.09	21.46	51.12	0	0	221
7/17/2007	25.09	21.46	51.12	0	0	221
7/24/2007	25.09	21.46	51.12	0	0	221
7/31/2007	25.09	21.46	51.12	0	0	221
8/7/2007	21.06	68.04	0	0	0	157
8/14/2007	30.78	58.32	0	0	0	147
8/21/2007	62.44	0	0	0	0	62
8/28/2007	58.39	0	0	0	0	58
9/4/2007	58.39	0	0	0	0	58
9/11/2007	58.39	0	0	0	0	58
9/18/2007	58.39	0	0	0	0	58
11/13/2007	72.84	0	0	0	0	73
11/20/2007	72.84	0	0	0	0	73
11/27/2007	63.38	9.46	0	0	0	82
12/4/2007	46.09	6.24	0	0	0	59
11/18/2008	100	0	0	0	0	100
11/25/2008	100	0	0	0	0	100
12/2/2008	100	0	0	0	0	100
12/9/2008	100	0	0	0	0	100
12/16/2008	100	0	0	0	0	100
12/23/2008	100	0	0	0	0	100
12/30/2008	90.59	0	0	0	0	91
9/1/2009	52.84	5.78	0	0	0	64
9/8/2009	49.47	11.82	0	0	0	73
9/15/2009	49.47	11.82	0	0	0	73
10/13/2009	29.49	16.8	5.83	0	0	81
10/20/2009	29.49	16.8	5.83	0	0	81
10/27/2009	29.49	16.8	5.83	0	0	81
11/3/2009	29.49	16.8	5.83	0	0	81
11/10/2009	30.21	16.08	5.83	0	0	80
11/17/2009	33.34	16.08	5.83	0	0	83
11/24/2009	34.27	20.07	9.18	0	0	102
12/1/2009	32.34	21.27	9.91	0	0	105
12/8/2009	32.34	21.27	9.91	0	0	105
12/15/2009	32.34	21.27	9.91	0	0	105
12/22/2009	32.34	21.27	9.91	0	0	105
12/29/2009	32.34	21.27	9.91	0	0	105
1/5/2010	32.34	21.27	9.91	0	0	105
1/12/2010	50.02	40.07	9.91	0	0	160
1/19/2010	50.02	40.07	9.91	0	0	160
1/26/2010	89.95	10.05	0	0	0	110
2/2/2010	93.29	6.71	0	0	0	107

2/9/2010	100	0	0	0	0	100
2/16/2010	100	0	0	0	0	100
2/23/2010	100	0	0	0	0	100
3/2/2010	100	0	0	0	0	100
3/9/2010	99.39	0	0	0	0	99
3/16/2010	99.39	0	0	0	0	99
3/23/2010	99.12	0	0	0	0	99
3/30/2010	98.75	0.38	0	0	0	100
4/6/2010	98.75	0.38	0	0	0	100
4/13/2010	98.75	0.38	0	0	0	100
4/20/2010	99.01	0.38	0	0	0	100
4/27/2010	99.01	0.38	0	0	0	100
5/4/2010	99.01	0.38	0	0	0	100
5/11/2010	98.95	0.38	0	0	0	100
5/18/2010	88.5	0.38	0	0	0	89
5/25/2010	88.5	0.38	0	0	0	89
6/1/2010	88.5	0.38	0	0	0	89
6/8/2010	90.67	0.38	0	0	0	91
6/15/2010	12.43	87.57	0	0	0	188
6/22/2010	12.43	87.57	0	0	0	188
6/29/2010	12.43	87.57	0	0	0	188
7/6/2010	12.43	87.57	0	0	0	188
7/13/2010	12.43	87.57	0	0	0	188
7/20/2010	2.47	97.53	0	0	0	198
7/27/2010	4.06	95.94	0	0	0	196
8/3/2010	99.96	0	0	0	0	100
8/10/2010	99.96	0	0	0	0	100
8/17/2010	99.96	0	0	0	0	100
8/24/2010	99.96	0	0	0	0	100
8/31/2010	99.96	0	0	0	0	100
9/7/2010	99.96	0	0	0	0	100
9/14/2010	99.96	0	0	0	0	100
9/21/2010	99.96	0	0	0	0	100
9/28/2010	99.96	0	0	0	0	100
10/5/2010	99.96	0	0	0	0	100
10/12/2010	99.96	0	0	0	0	100
10/19/2010	99.96	0	0	0	0	100
10/26/2010	99.94	0	0	0	0	100
11/2/2010	99.94	0	0	0	0	100
11/9/2010	99.94	0	0	0	0	100
11/16/2010	99.94	0	0	0	0	100
11/23/2010	99.94	0	0	0	0	100
11/30/2010	99.94	0	0	0	0	100
12/7/2010	99.94	0	0	0	0	100
12/14/2010	100	0	0	0	0	100
12/21/2010	100	0	0	0	0	100
12/28/2010	100	0	0	0	0	100
1/4/2011	100	0	0	0	0	100
1/11/2011	100	0	0	0	0	100
1/18/2011	100	0	0	0	0	100
1/25/2011	100	0	0	0	0	100
2/1/2011	100	0	0	0	0	100
2/8/2011	94.08	0.02	0	0	0	94

2/15/2011	94.08	0.02	0	0	0	94
2/22/2011	94.08	0.02	0	0	0	94
3/1/2011	94.08	0.02	0	0	0	94
3/8/2011	94.08	0.02	0	0	0	94
3/15/2011	92.58	1.52	0	0	0	96
3/22/2011	48.24	46.04	0	0	0	140
3/29/2011	34.68	33.39	31.8	0	0	197
4/5/2011	1.91	61.37	36.72	0	0	235
4/12/2011	1.91	60.27	37.81	0	0	236
4/19/2011	1.91	60.27	37.81	0	0	236
4/26/2011	0	62.19	37.81	0	0	238
5/3/2011	0	62.07	37.93	0	0	238
5/10/2011	0	62.07	37.93	0	0	238
5/17/2011	0	62.07	37.93	0	0	238
5/24/2011	6.73	55.34	37.93	0	0	231
5/31/2011	6.73	55.34	37.93	0	0	231
6/7/2011	6.73	55.34	37.93	0	0	231
6/14/2011	6.73	55.34	37.93	0	0	231
6/21/2011	6.73	55.34	37.93	0	0	231
6/28/2011	0	6.79	93.21	0	0	293
7/5/2011	0	6.79	93.21	0	0	293
7/12/2011	0	6.79	93.21	0	0	293
7/19/2011	0	30.82	69.18	0	0	269
7/26/2011	0	30.82	69.18	0	0	269
8/2/2011	0	30.82	69.18	0	0	269
8/9/2011	0	30.82	69.18	0	0	269
8/16/2011	0	41.86	58.14	0	0	258
8/23/2011	0	43.5	56.5	0	0	257
8/30/2011	0	63.53	36.47	0	0	236
9/6/2011	0	64.18	35.82	0	0	236
9/13/2011	0	64.18	35.82	0	0	236
9/20/2011	18.98	45.2	35.82	0	0	217
9/27/2011	18.98	45.2	35.82	0	0	217
10/4/2011	18.98	45.2	35.82	0	0	217
10/11/2011	15.61	35.37	30.1	0	0	177
10/18/2011	9.98	21.61	28.99	0	0	140
10/25/2011	9.98	21.61	28.99	0	0	140
11/1/2011	10.21	21.66	28.97	0	0	140
11/8/2011	10.21	21.66	28.97	0	0	140
11/15/2011	9.96	21.96	28.97	0	0	141
11/22/2011	9.96	21.96	28.97	0	0	141
11/29/2011	9.96	21.96	28.97	0	0	141
12/6/2011	22.22	20.97	8.01	0	0	88
12/13/2011	22.22	20.97	8.01	0	0	88
12/20/2011	22.22	20.97	8.01	0	0	88
12/27/2011	22.22	20.97	8.01	0	0	88
1/3/2012	22.22	20.97	8.01	0	0	88
1/10/2012	22.22	20.97	8.01	0	0	88
1/17/2012	22.67	26.08	2.45	0	0	82
1/24/2012	22.67	26.08	2.45	0	0	82
1/31/2012	22.67	26.08	2.45	0	0	82
2/7/2012	22.67	26.08	2.45	0	0	82
4/3/2012	98.09	1.91	0	0	0	102

4/10/2012	99.8	0.2	0	0	0	100
4/17/2012	35.1	64.9	0	0	0	165
4/24/2012	35.1	44.21	20.21	0.48	0	186
5/1/2012	35.1	44.21	20.21	0.48	0	186
5/8/2012	13.56	65.75	20.21	0.48	0	208
5/15/2012	13.56	65.75	20.21	0.48	0	208
5/22/2012	0	33.71	65.81	0.48	0	267
5/29/2012	0	33.71	65.81	0.48	0	267
6/5/2012	0	33.71	65.81	0.48	0	267
6/12/2012	0	24.4	75.12	0.48	0	276
6/19/2012	0	0	78.88	21.12	0	321
6/26/2012	0	0	78.88	21.12	0	321
7/3/2012	0	0	78.88	21.12	0	321
7/10/2012	0	27.1	51.78	21.12	0	294
7/17/2012	0	27.1	51.78	21.12	0	294
7/24/2012	0	27.1	51.78	21.12	0	294
7/31/2012	0	27.1	51.79	21.11	0	294
8/7/2012	0	53.02	39.21	7.77	0	255
8/14/2012	0	53.02	39.6	7.38	0	254
8/21/2012	0	52.57	47.43	0	0	247
8/28/2012	0	51.99	48.01	0	0	248
9/4/2012	0	44.69	55.31	0	0	255
9/11/2012	0	40.92	59.08	0	0	259
9/18/2012	0	41.68	58.32	0	0	258
9/25/2012	0	41.68	58.32	0	0	258
10/2/2012	0	49.68	50.32	0	0	250
10/9/2012	0	49.68	50.32	0	0	250
10/16/2012	0	49.78	50.22	0	0	250
10/23/2012	0	49.78	50.22	0	0	250
10/30/2012	0	49.78	50.22	0	0	250
11/6/2012	0	49.78	50.22	0	0	250
11/13/2012	0	49.78	50.22	0	0	250
11/20/2012	0	49.78	50.22	0	0	250
11/27/2012	0	0	100	0	0	300
12/4/2012	0	0	100	0	0	300
12/11/2012	0	0	100	0	0	300
12/18/2012	0	0	100	0	0	300
12/25/2012	0	0	100	0	0	300
10/30/2012	0	0	30.61	69.39	0	369
11/6/2012	0	0	30.61	69.39	0	369
11/13/2012	0	0	29.94	70.06	0	370
11/20/2012	0	0	29.94	70.06	0	370
11/27/2012	0	0	100	0	0	300
12/4/2012	0	0	100	0	0	300
12/11/2012	0	0	100	0	0	300
12/18/2012	0	0	97.32	2.68	0	303
12/25/2012	0	0	97.32	2.68	0	303
1/1/2013	0	0	97.32	2.68	0	303
1/8/2013	0	0	97.58	2.42	0	302
1/15/2013	0	0	97.58	2.42	0	302
1/22/2013	0	0	97.58	2.42	0	302
1/29/2013	0	0	97.58	2.42	0	302
2/5/2013	0	0	65.76	34.24	0	334

2/12/2013	0	0	65.76	34.24	0	334
2/19/2013	0	0	41.61	58.39	0	358
2/26/2013	0	0	13.3	86.7	0	387
3/5/2013	0	0	13.3	86.7	0	387
3/12/2013	0	0	12.3	87.7	0	388
3/19/2013	0	0	12.3	87.7	0	388
3/26/2013	0	0	12.3	87.7	0	388
4/2/2013	0	0	11.75	88.25	0	388
4/9/2013	0	0	11.75	88.25	0	388
4/16/2013	0	0	0	100	0	400
4/23/2013	0	0	0	99.83	0.17	400
4/30/2013	0	0	0	99.83	0.17	400
5/7/2013	0	0	0	99.83	0.17	400
5/14/2013	0	0	0	100	0	400
5/21/2013	0	0	0	100	0	400
5/28/2013	0	0	0	100	0	400
6/4/2013	0	0	0	100	0	400
6/11/2013	0	0	0	100	0	400
6/18/2013	0	0	80.34	19.66	0	320
6/25/2013	0	0	80.34	19.66	0	320
7/2/2013	0	0	80.5	19.5	0	320
7/9/2013	0	0	80.5	19.5	0	320
7/16/2013	0	18.47	81.53	0	0	282
7/23/2013	0	36.62	63.38	0	0	263
7/30/2013	0	36.62	63.38	0	0	263
8/6/2013	0	36.62	63.38	0	0	263
8/13/2013	0	36.62	63.38	0	0	263
8/20/2013	0	36.62	63.38	0	0	263
8/27/2013	0	36.62	63.38	0	0	263
9/3/2013	0	36.62	63.38	0	0	263
9/10/2013	0	36.62	63.38	0	0	263
9/17/2013	0	36.62	63.38	0	0	263
9/24/2013	9.44	27.18	63.38	0	0	254
10/1/2013	9.44	27.18	63.38	0	0	254
10/8/2013	9.44	27.18	63.38	0	0	254
10/15/2013	9.44	27.18	63.38	0	0	254
10/22/2013	9.44	58.7	31.86	0	0	222
10/29/2013	9.44	58.7	31.86	0	0	222
11/5/2013	9.4	58.73	31.86	0	0	222
11/12/2013	10	58.14	31.86	0	0	222
11/19/2013	10	58.14	31.86	0	0	222
11/26/2013	0	62.59	37.41	0	0	237
12/3/2013	0	62.59	37.41	0	0	237
12/10/2013	0	62.59	37.41	0	0	237
12/17/2013	0	55.72	44.28	0	0	244
12/24/2013	0	55.72	44.28	0	0	244
12/31/2013	0	31.15	68.85	0	0	269
1/7/2014	0	31.15	68.85	0	0	269
1/14/2014	0	31.15	68.85	0	0	269
1/21/2014	0	31.15	68.85	0	0	269
1/28/2014	0	31.15	68.85	0	0	269
2/4/2014	0	23.3	76.7	0	0	277
2/11/2014	0	23.3	76.7	0	0	277

2/18/2014	0	23.3	76.7	0	0	277
2/25/2014	0	1.35	66.37	32.28	0	331
3/4/2014	0	1.74	65.98	32.28	0	331
3/11/2014	0	1.74	65.98	32.28	0	331
3/18/2014	0	1.74	34.19	64.07	0	362
3/25/2014	0	1.74	34.19	64.07	0	362
4/1/2014	0	1.74	34.19	64.07	0	362
4/8/2014	0	1.74	34.19	64.07	0	362
4/15/2014	0	2.25	33.69	64.07	0	362
4/22/2014	0	2.25	33.69	64.07	0	362
4/29/2014	0	2.25	30.82	66.93	0	365
5/6/2014	0	2.25	29.88	67.87	0	366
5/13/2014	0	9.35	26.21	64.44	0	355
5/20/2014	0	9.35	25.73	64.91	0	356
5/27/2014	0	19.74	62.46	17.8	0	298
6/3/2014	0	21.9	60.29	17.8	0	296
6/10/2014	0	21.9	60.29	17.8	0	296
6/17/2014	0	21.9	60.29	17.8	0	296
6/24/2014	0	21.9	60.29	17.8	0	296
7/1/2014	0	21.9	60.29	17.8	0	296
7/8/2014	0	21.9	60.29	17.8	0	296
7/15/2014	0	21.9	60.29	17.8	0	296
7/22/2014	0	9.12	38.52	52.35	0	343
7/29/2014	0	9.12	38.52	52.35	0	343
8/5/2014	0	9.12	38.52	52.35	0	343
8/12/2014	0	9.12	38.52	52.35	0	343
8/19/2014	0	9.12	74.55	16.33	0	307
8/26/2014	0	9.12	74.55	16.33	0	307
9/2/2014	0	9.12	74.55	16.33	0	307
9/9/2014	0	9.12	74.55	16.33	0	307
9/16/2014	0	9.12	74.55	16.33	0	307
9/23/2014	0	9.12	74.55	16.33	0	307
9/30/2014	0	9.12	52.93	37.95	0	329
10/7/2014	0	9.12	52.93	37.95	0	329
10/14/2014	0	9.12	52.93	37.95	0	329
10/21/2014	0	9.12	52.93	37.95	0	329
10/28/2014	0	9.12	52.93	37.95	0	329
11/4/2014	0	9.12	52.93	37.95	0	329
11/11/2014	0	9.12	52.93	37.95	0	329
11/18/2014	0	9.12	52.93	37.95	0	329
11/25/2014	0	9.12	52.93	37.95	0	329
12/2/2014	0	9.12	52.93	37.95	0	329
12/9/2014	0	9.12	52.93	37.95	0	329
12/16/2014	0	9.12	52.93	37.95	0	329
12/23/2014	0	9.12	52.93	37.95	0	329
12/30/2014	0	9.12	90.88	0	0	291
1/6/2015	0	9.12	90.88	0	0	291
1/13/2015	0	9.12	90.88	0	0	291
1/20/2015	0	12.82	87.18	0	0	287
1/27/2015	0	12.82	87.18	0	0	287
2/3/2015	0	12.82	87.18	0	0	287
2/10/2015	0	12.82	87.18	0	0	287
2/17/2015	0	12.82	87.18	0	0	287

2/24/2015	0	12.82	87.18	0	0	287
3/3/2015	0	12.82	87.18	0	0	287
3/10/2015	0	12.82	87.18	0	0	287
3/17/2015	0	12.82	87.18	0	0	287
3/24/2015	0	12.82	87.18	0	0	287
3/31/2015	0	12.82	87.18	0	0	287
4/7/2015	0	16.94	83.06	0	0	283
4/14/2015	0	38.53	61.47	0	0	261
4/21/2015	23.88	36.52	39.6	0	0	216
4/28/2015	23.88	36.52	39.6	0	0	216
5/5/2015	23.88	36.52	39.6	0	0	216
5/12/2015	23.88	36.52	39.6	0	0	216
5/19/2015	23.88	76.12	0	0	0	176
5/26/2015	23.88	76.12	0	0	0	176
6/2/2015	23.88	76.12	0	0	0	176
6/9/2015	23.88	76.12	0	0	0	176
6/16/2015	23.88	76.12	0	0	0	176
6/23/2015	23.88	76.12	0	0	0	176
6/30/2015	23.88	76.12	0	0	0	176
7/7/2015	23.88	76.12	0	0	0	176
7/14/2015	24.44	75.56	0	0	0	176
7/21/2015	24.44	75.56	0	0	0	176
7/28/2015	24.44	75.56	0	0	0	176
8/4/2015	24.44	75.56	0	0	0	176
8/11/2015	24.44	75.56	0	0	0	176
8/18/2015	24.44	75.56	0	0	0	176
8/25/2015	24.44	75.56	0	0	0	176
9/1/2015	35.17	64.83	0	0	0	165
9/8/2015	35.17	64.83	0	0	0	165
9/15/2015	67.4	32.6	0	0	0	133
9/22/2015	67.4	32.6	0	0	0	133
9/29/2015	100	0	0	0	0	100
10/6/2015	100	0	0	0	0	100
10/13/2015	100	0	0	0	0	100
10/20/2015	100	0	0	0	0	100
10/27/2015	100	0	0	0	0	100
11/3/2015	95.38	0	0	0	0	95
11/10/2015	61.48	0	0	0	0	61
11/17/2015	61.48	0	0	0	0	61
11/24/2015	61.48	0	0	0	0	61
12/1/2015	61.48	0	0	0	0	61
12/8/2015	61.48	0	0	0	0	61
12/15/2015	61.48	0	0	0	0	61
12/22/2015	61.48	0	0	0	0	61
12/29/2015	61.48	0	0	0	0	61
1/5/2016	79.81	0	0	0	0	80
1/12/2016	87.21	0	0	0	0	87
1/19/2016	60.79	39.21	0	0	0	139
1/26/2016	60.79	39.21	0	0	0	139
2/2/2016	20.01	79.99	0	0	0	180
2/9/2016	20.01	79.99	0	0	0	180
2/16/2016	20.01	79.99	0	0	0	180
2/23/2016	20.01	79.99	0	0	0	180

3/1/2016	20.01	79.99	0	0	0	180
3/8/2016	20.01	79.99	0	0	0	180
3/15/2016	20.01	79.99	0	0	0	180
3/22/2016	73.58	26.42	0	0	0	126
3/29/2016	73.58	26.42	0	0	0	126
4/5/2016	73.58	26.42	0	0	0	126
4/12/2016	74.13	25.87	0	0	0	126
4/19/2016	74.13	25.87	0	0	0	126
4/26/2016	74.13	25.87	0	0	0	126
5/3/2016	74.13	25.87	0	0	0	126
5/10/2016	74.13	25.87	0	0	0	126
5/17/2016	74.13	25.87	0	0	0	126
5/24/2016	67.42	32.58	0	0	0	133
5/31/2016	67.42	32.58	0	0	0	133
6/7/2016	67.42	32.58	0	0	0	133
6/14/2016	67.42	32.58	0	0	0	133
6/21/2016	67.42	32.58	0	0	0	133
6/28/2016	67.42	32.58	0	0	0	133
7/5/2016	67.42	32.58	0	0	0	133
7/12/2016	88.06	11.94	0	0	0	112
7/19/2016	88.06	11.94	0	0	0	112
7/26/2016	88.06	11.94	0	0	0	112
8/2/2016	88.06	11.94	0	0	0	112
8/9/2016	88.06	11.94	0	0	0	112
8/16/2016	88.06	11.94	0	0	0	112
8/23/2016	88.06	11.94	0	0	0	112
8/30/2016	88.06	11.94	0	0	0	112
9/6/2016	88.06	11.94	0	0	0	112
9/13/2016	88.06	11.94	0	0	0	112
9/20/2016	88.06	11.94	0	0	0	112
9/27/2016	88.06	11.94	0	0	0	112
10/4/2016	88.06	11.94	0	0	0	112
10/11/2016	88.06	11.94	0	0	0	112
10/18/2016	88.06	11.94	0	0	0	112
10/25/2016	60.74	0	0	0	0	61
11/1/2016	60.74	0	0	0	0	61
11/8/2016	50.59	3.67	0	0	0	58
11/15/2016	50.59	3.67	0	0	0	58
11/22/2016	50.59	3.67	0	0	0	58
11/29/2016	46.43	53.57	0	0	0	154
12/6/2016	46.43	53.57	0	0	0	154
12/13/2016	46.43	53.57	0	0	0	154
12/20/2016	46.43	53.57	0	0	0	154
9/26/2017	0	100	0	0	0	200
10/3/2017	0	78.98	21.02	0	0	221
11/7/2017	0	78.98	21.02	0	0	221
11/14/2017	0	78.98	21.02	0	0	221
11/21/2017	0	0	100	0	0	300
11/28/2017	0	0	100	0	0	300
12/5/2017	0	0	100	0	0	300
12/12/2017	0	0	100	0	0	300
12/19/2017	0	0	100	0	0	300
12/26/2017	0	0	100	0	0	300

1/2/2018	0	0	95.03	4.97	0	305
1/9/2018	0	0	95.03	4.97	0	305
1/16/2018	0	0	95.03	4.97	0	305
1/23/2018	0	0	10.09	89.91	0	390
1/30/2018	0	0	0.67	99.33	0	399
2/6/2018	0	0	0.67	99.33	0	399
2/13/2018	0	0	0.67	99.33	0	399
2/20/2018	0	0	0.67	98.43	0.89	400
2/27/2018	0	0	0.67	98.43	0.89	400
3/6/2018	0	0	0	99.11	0.89	401
3/13/2018	0	0	0	49.97	50.03	450
3/20/2018	0	0	0	49.97	50.03	450
3/27/2018	0	0	0	49.97	50.03	450
4/3/2018	0	0	0	49.97	50.03	450
4/10/2018	0	0	0	49.97	50.03	450
4/17/2018	0	0	0	49.97	50.03	450
4/24/2018	0	0	0	49.97	50.03	450
5/1/2018	0	0	0	49.97	50.03	450
5/8/2018	0	0	0	49.97	50.03	450
5/15/2018	0	0	0	49.97	50.03	450
5/22/2018	0	0	0	49.97	50.03	450
5/29/2018	0	0	0	49.97	50.03	450
6/5/2018	0	0	0	49.97	50.03	450
6/12/2018	0	0	0	49.97	50.03	450
6/19/2018	0	0	0	49.97	50.03	450
6/26/2018	0	0	0	49.97	50.03	450
7/3/2018	0	0	0	49.97	50.03	450
7/10/2018	0	0	0	49.97	50.03	450
7/17/2018	0	0	0	49.97	50.03	450
7/24/2018	0	0	0	49.97	50.03	450
7/31/2018	0	0	0	49.97	50.03	450
8/7/2018	0	0	0.02	49.94	50.03	450
8/14/2018	0	0	0.06	49.91	50.03	450
8/21/2018	0	0	0.06	49.91	50.03	450
8/28/2018	0	0	0.91	49.05	50.03	449
9/4/2018	0	0	0.91	49.05	50.03	449
9/11/2018	0	0	0.91	48.91	50.18	449
9/18/2018	0	0	0.91	48.91	50.18	449
9/25/2018	0	0	0.91	48.91	50.18	449
10/2/2018	0	0	0.91	48.91	50.18	449
10/9/2018	0	0	0.91	48.93	50.16	449
10/16/2018	0	0	0.91	48.93	50.16	449
10/23/2018	0	0	0.91	48.93	50.16	449
10/30/2018	0	0	1.4	48.52	50.08	449
11/6/2018	0	0	1.4	48.52	50.08	449
11/13/2018	0	0	1.4	48.52	50.08	449
11/20/2018	0	0	49.81	50.19	0	350
11/27/2018	0	0	49.81	50.19	0	350
12/4/2018	0	0	49.8	50.2	0	350
12/11/2018	0	0	49.8	50.2	0	350
12/18/2018	0	0	49.8	50.2	0	350
12/25/2018	0	0	65.51	34.49	0	334
1/1/2019	0	0	65.51	34.49	0	334

1/8/2019	0	0	65.51	34.49	0	334
1/15/2019	0	7.98	57.54	34.49	0	327
1/22/2019	0	34.29	65.71	0	0	266
1/29/2019	0	34.29	65.71	0	0	266
2/5/2019	0	34.29	65.71	0	0	266
2/12/2019	0	34.29	65.71	0	0	266
2/19/2019	1.35	54.02	44.63	0	0	243
2/26/2019	1.35	54.02	44.63	0	0	243
3/5/2019	1.35	98.65	0	0	0	199
3/12/2019	1.35	98.65	0	0	0	199
3/19/2019	0	100	0	0	0	200
3/26/2019	0	100	0	0	0	200
4/2/2019	0	100	0	0	0	200
4/9/2019	30.71	69.29	0	0	0	169
4/16/2019	30.71	69.29	0	0	0	169
4/23/2019	38.67	61.33	0	0	0	161
4/30/2019	38.67	61.33	0	0	0	161
5/7/2019	38.67	61.33	0	0	0	161
5/14/2019	38.67	61.33	0	0	0	161
5/21/2019	38.67	61.33	0	0	0	161
5/28/2019	38.67	61.33	0	0	0	161
6/4/2019	8.26	91.74	0	0	0	192
6/11/2019	8.26	91.74	0	0	0	192
6/18/2019	8.26	91.74	0	0	0	192
6/25/2019	1.61	86.16	12.22	0	0	211
7/2/2019	1.61	86.16	12.22	0	0	211
7/9/2019	1.61	43.19	55.2	0	0	254
7/16/2019	1.61	42.61	55.77	0	0	254
7/23/2019	1.61	42.61	55.77	0	0	254
7/30/2019	1.61	42.61	55.77	0	0	254
8/6/2019	1.61	42.61	55.77	0	0	254
8/13/2019	1.61	42.61	55.77	0	0	254
8/20/2019	100	0	0	0	0	100
8/27/2019	100	0	0	0	0	100
9/3/2019	100	0	0	0	0	100
9/10/2019	100	0	0	0	0	100
9/17/2019	100	0	0	0	0	100
9/24/2019	100	0	0	0	0	100
10/1/2019	100	0	0	0	0	100
10/8/2019	100	0	0	0	0	100
10/15/2019	100	0	0	0	0	100

**The data are from the National Drought Mitigation Center.*

Table C.2 – Flash Flood Records

Location	Event Date	Injuries	Deaths	Property Damage
Gallup	9/13/1997	0	1	$0
Thoreau	9/20/1997	0	0	$0
Gallup	9/21/1997	1	1	$0
Gallup	7/22/2002	0	0	$100,000
Tohatchi	9/9/2003	0	0	$0
Church Rock	9/8/2005	0	0	$0
Church Rock	8/24/2006	0	2	$0
Tohatchi	9/2/2006	0	0	$0

Gamerco	7/11/2008	0	3	$40,000
Ramah	8/6/2008	0	0	$500
Mexican Spgs	8/6/2008	0	0	$5,000
Pinedale	9/5/2009	0	0	$5,000
Ramah	9/5/2009	0	0	$0
Ramah	9/5/2009	0	0	$5,000
Upper Nutria	9/5/2009	0	0	$25,000
(Gup)Gallup Airport	9/5/2009	0	0	$0
Iyanbito	7/31/2010	0	0	$20,000
Church Rock	7/31/2010	0	0	$120,000
South Chaves	7/31/2010	0	0	$50,000
Manuelito	8/1/2010	0	0	$87,000
Prewitt	8/1/2010	0	0	$8,000
South Chaves	8/2/2010	0	0	$50,000
Iyanbito	8/2/2010	0	0	$20,000
Rehoboth	8/2/2010	0	0	$120,000
Mentmore	8/23/2010	0	0	$40,000
Gallup	8/13/2011	0	0	$5,000
Thoreau	8/5/2012	0	0	$150,000
Gallup	8/22/2013	0	0	$50,000
Rehoboth	8/22/2013	0	0	$50,000
Rehoboth	8/22/2013	0	0	$0
Gallup	9/10/2013	0	0	$5,000
Crownpoint Bia Arpt	9/13/2013	0	0	$50,000
Thoreau	9/13/2013	0	0	$0
Twin Lakes	9/13/2013	0	0	$0
Church Rock	8/3/2014	0	0	$100,000
Rehoboth	7/4/2015	0	1	$300,000
Springstead	7/13/2015	0	1	$15,000
Hospah	8/4/2016	0	0	$0
Gallup	8/5/2016	0	0	$0
Tohatchi	9/2/2016	0	2	$0
Gallup Airport	7/20/2017	0	0	$0
Church Rock	7/29/2017	0	0	$0
Wingate	7/30/2017	0	0	$0
Mariano Lake	7/31/2017	0	0	$0
Springstead	7/13/2018	0	0	$5,000
Church Rock	7/15/2018	0	0	$0
GMCS	1/1/2019	0	0	$843,304
Ramah	6/1/2019	0	0	$1,906,793
	Totals =	1	11	$4,180,597

**The data are from the NOAA NCDC Storm Events Database*

Table C.3 – Hail Records

Location	Event Date	Size (Inches)	Injuries	Deaths	Property Damage	Crop Damage
Gallup	9/21/1997	1	0	0	$0	$0
Van Der Wagen	9/29/1998	0.75	0	0	$0	$0
Crownpoint	6/17/1999	0.75	0	0	$0	$0
Pinehaven Church	9/5/2009	0.88	0	0	$0	$0
Gallup	10/20/2010	0.88	0	0	$0	$0
		Totals =	0	0	$0	$0

**The data are from the NOAA NCDC Storm Events Database.*

Table C.4 – High Wind Records

Location	Event Date	Wind Speed (MpH)	Injuries	Deaths	Property Damage
Countywide	9/30/2009	50	0	0	$0
Countywide	4/5/2010	50	0	0	$0
Countywide	4/28/2010	50	0	0	$0
Countywide	4/29/2010	50	0	0	$0
Countywide	5/11/2010	53	0	0	$0
Countywide	3/21/2011	58	0	0	$0
Countywide	4/1/2011	35	0	0	$0
Countywide	4/26/2011	52	0	0	$15,000
Countywide	4/29/2011	52	0	0	$1,000
Countywide	5/8/2011	50	0	0	$0
Countywide	6/19/2011	45	0	0	$2,500
Countywide	12/1/2011	65	0	0	$400,000
Countywide	4/26/2012	50	0	0	$0
Countywide	4/26/2012	52	0	0	$0
Countywide	4/26/2012	52	0	0	$0
Countywide	5/18/2012	50	0	0	$0
Countywide	5/23/2012	52	0	0	$0
Countywide	5/23/2012	53	0	0	$0
Countywide	4/8/2013	53	0	0	$0
Countywide	10/10/2013	61	0	0	$48,000
Countywide	12/4/2013	51	0	0	$0
Countywide	2/19/2014	51	0	0	$0
Countywide	2/27/2014	53	0	0	$0
Countywide	3/26/2014	51	0	0	$0
Countywide	3/30/2014	53	0	0	$0
Countywide	4/1/2014	37	0	0	$0
Countywide	6/14/2014	50	0	0	$0
Countywide	6/16/2014	50	0	0	$0
Countywide	10/12/2014	50	0	0	$0
Countywide	3/22/2016	57	0	0	$0
Countywide	3/29/2016	55	0	0	$0
Countywide	4/23/2016	52	0	0	$0
Countywide	4/25/2016	56	0	0	$0
Countywide	11/27/2016	55	0	0	$0
Countywide	2/22/2017	50	0	0	$0
Countywide	2/19/2018	37	0	0	$0
Countywide	2/19/2018	51	0	0	$0
Countywide	4/12/2018	41	0	0	$0
Countywide	4/12/2018	59	0	0	$0
Countywide	4/12/2018	50	0	0	$0
Countywide	4/12/2018	56	0	0	$0
Countywide	4/17/2018	52	0	0	$5,000
Countywide	4/17/2018	50	0	0	$0
Countywide	5/11/2018	51	0	0	$0
Countywide	5/11/2018	54	0	0	$0
Countywide	12/13/2018	50	0	0	$0
Countywide	3/13/2019	45	0	0	$0
Countywide	3/13/2019	56	0	0	$0
Countywide	4/10/2019	43	0	0	$0

Countywide	4/10/2019	56	0	0	$207,993
		Totals =	0	0	$679,493

The data are from the NOAA NCDC Storm Events Database

Table C.5 – Lightning Records

Location	Event Date	Injuries	Deaths	Property Damage
Whitewater	8/23/1997	2	0	$0
	Totals =	2	0	$0

The data are from the NOAA NCDC Storm Events Database

Table C.6 – Riverine Flood Records

Location	Event Date	Injuries	Deaths	Property Damage
Standing Rock	9/13/2013	0	0	$100,000
	Totals =	0	0	$100,000

The data are from the NOAA NCDC Storm Events Database

Table C.7 – Severe Winter Storm Records

Location	Event Date	Storm Type	Injuries	Deaths	Property Damage
Countywide	12/30/2009	Winter Weather	0	0	$0
Countywide	1/27/2010	Winter Weather	0	0	$0
Countywide	2/4/2010	Winter Weather	0	0	$0
Countywide	2/7/2010	Winter Weather	0	0	$0
Countywide	3/14/2010	Winter Weather	0	0	$0
Countywide	2/23/2015	Winter Weather	0	0	$0
Countywide	11/4/2015	Winter Weather	0	0	$0
Countywide	1/14/2017	Winter Storm	0	0	$0
Countywide	2/10/2018	Winter Weather	0	0	$0
Countywide	2/10/2018	Winter Weather	0	0	$0
		Totals =	0	0	$0

The data are from the NOAA NCDC Storm Events Database.

Table C.8 – Thunderstorm Records

Location	Event Date	Wind Speed (MpH)	Injuries	Deaths	Property Damage
Gallup	6/7/1998	50	0	0	$1,000
Gallup	7/19/1998	50	0	0	$25,000
Gallup Airport	7/12/2003	56	0	0	$15,000
Gallup Airport	6/23/2008	54	0	0	$0
Gallup Airport	4/13/2014	58	0	0	$0
Allison	6/23/2015	61	0	0	$0
Allison	7/29/2016	50	0	0	$0
Allison	8/9/2018	65	0	0	$0
		Totals =	0	0	$41,000

The data are from the NOAA NCDC Storm Events Database

Table C.9 – Tornado Records

Location	Event Date	Fujita Class	Injuries	Deaths	Property Damage
Hospah	8/13/2016	EF0	0	0	$0
Hospah	2/17/2019	EF0	0	0	$0
Hospah	5/30/2019	EF0	0	0	$0
		Totals =	0	0	$0

**The data are from the NOAA NCDC Storm Events Database*

Table C.10 – Wildfire Records

Reporting Office	Fire ID	Date	Cause	Acres Burned
Albuquerque District	86534	8/18/1981	Natural	1
Navajo Regional Office	393328	7/6/1985	Human	115
Cibola National Forest	202620	5/3/1986	Human	4
Cibola National Forest	202636	8/18/1986	Natural	4
Zuni Agency	347983	1/21/1986	Human	200
Zuni Agency	347986	1/23/1986	Human	1
Zuni Agency	347988	2/3/1986	Human	3
Zuni Agency	347991	3/1/1986	Human	1.2
Zuni Agency	347992	3/6/1986	Human	15
Zuni Agency	347993	3/9/1986	Human	20
Cibola National Forest	202677	6/16/1987	Natural	1.5
Cibola National Forest	202684	7/3/1987	Natural	2
Navajo Regional Office	393520	7/14/1987	Human	4
Cibola National Forest	202736	6/4/1988	Natural	2.2
Cibola National Forest	202735	5/19/1988	Natural	1
Navajo Regional Office	393559	5/5/1988	Human	4.8
Zuni Agency	348001	2/24/1988	Human	25
Zuni Agency	348002	2/25/1988	Human	90
Zuni Agency	348003	3/6/1988	Human	9
Zuni Agency	348006	3/9/1988	Human	115
Zuni Agency	348007	3/9/1988	Human	10
Zuni Agency	348013	3/17/1988	Human	5.5
Zuni Agency	348014	3/18/1988	Human	3
Zuni Agency	348015	3/18/1988	Human	3
Zuni Agency	348016	3/20/1988	Human	4
Zuni Agency	348017	3/20/1988	Human	2
Zuni Agency	348018	3/21/1988	Human	4
Zuni Agency	348019	3/23/1988	Human	15
Zuni Agency	348021	3/26/1988	Human	2.5
Zuni Agency	348022	3/27/1988	Human	25
Zuni Agency	348026	4/6/1988	Human	4
Zuni Agency	348027	4/6/1988	Human	370
Zuni Agency	348028	4/7/1988	Human	10
Zuni Agency	348029	4/7/1988	Human	15
Zuni Agency	348030	4/7/1988	Human	1
Zuni Agency	348031	4/7/1988	Human	2
Zuni Agency	348033	4/7/1988	Human	5
Zuni Agency	348034	4/7/1988	Human	80
Zuni Agency	348035	4/8/1988	Human	30
Zuni Agency	348036	4/10/1988	Human	55
Zuni Agency	348037	4/10/1988	Human	7

Zuni Agency	348038	4/10/1988	Human	2
Zuni Agency	348039	4/12/1988	Human	15
Zuni Agency	348040	4/12/1988	Human	2
Zuni Agency	348041	4/12/1988	Human	8
Zuni Agency	348060	4/15/1988	Human	20
Zuni Agency	348069	5/3/1988	Human	9
Zuni Agency	348070	4/29/1988	Human	6
Zuni Agency	348071	5/1/1988	Human	1
Zuni Agency	348072	5/3/1988	Human	2
Zuni Agency	348076	5/4/1988	Human	1
Zuni Agency	348077	5/8/1988	Human	2
Zuni Agency	348097	6/19/1988	Human	2
Zuni Agency	348127	8/23/1988	Human	2
Zuni Agency	348140	10/11/1988	Human	7
Zuni Agency	348141	10/14/1988	Human	33
Cibola National Forest	202782	5/7/1989	Human	6.5
Navajo Regional Office	393711	7/3/1989	Human	15
Navajo Regional Office	393714	7/4/1989	Human	5
Navajo Regional Office	393732	7/16/1989	Natural	1
Zuni Agency	348157	3/20/1989	Human	3.5
Zuni Agency	348158	3/21/1989	Human	17
Zuni Agency	348162	3/22/1989	Human	8
Zuni Agency	348163	3/22/1989	Human	5
Zuni Agency	348164	3/22/1989	Human	2
Zuni Agency	348165	3/22/1989	Human	10
Zuni Agency	348167	3/23/1989	Human	200
Zuni Agency	348168	3/24/1989	Human	1
Zuni Agency	348169	3/23/1989	Human	1
Zuni Agency	348177	3/31/1989	Human	150
Zuni Agency	348179	4/3/1989	Human	1.5
Zuni Agency	348184	4/6/1989	Human	1
Zuni Agency	348185	4/8/1989	Human	1
Zuni Agency	348189	4/8/1989	Human	8
Zuni Agency	348193	4/10/1989	Human	3
Zuni Agency	348194	4/11/1989	Human	10
Zuni Agency	348198	4/13/1989	Human	45
Zuni Agency	348199	4/12/1989	Human	5
Zuni Agency	348200	3/9/1989	Human	2
Zuni Agency	348201	3/9/1989	Human	10
Zuni Agency	348202	4/16/1989	Human	200
Zuni Agency	348216	4/22/1989	Human	18
Zuni Agency	348219	4/26/1989	Human	125
Zuni Agency	348223	4/28/1989	Human	1
Zuni Agency	348230	5/6/1989	Human	285
Zuni Agency	348240	5/16/1989	Human	10
Zuni Agency	348244	5/23/1989	Human	10
Zuni Agency	348246	5/23/1989	Human	2
Zuni Agency	348247	5/23/1989	Human	20
Zuni Agency	348249	5/20/1989	Human	1.5
Zuni Agency	348259	5/25/1989	Human	7
Zuni Agency	348261	5/30/1989	Human	1
Zuni Agency	348263	5/31/1989	Human	21
Zuni Agency	348265	6/1/1989	Human	1

Zuni Agency	348266	6/4/1989	Human	3
Zuni Agency	348269	6/7/1989	Human	1.5
Zuni Agency	348272	6/8/1989	Human	1.3
Zuni Agency	348273	6/8/1989	Human	1.5
Zuni Agency	348278	6/9/1989	Human	2
Zuni Agency	348279	6/9/1989	Human	5
Zuni Agency	348280	6/10/1989	Human	1
Zuni Agency	348285	6/11/1989	Human	45
Zuni Agency	348286	6/11/1989	Human	1
Zuni Agency	348287	6/11/1989	Human	60
Zuni Agency	348288	6/12/1989	Human	60
Zuni Agency	348289	6/14/1989	Human	1
Zuni Agency	348299	6/17/1989	Human	1
Zuni Agency	348305	6/22/1989	Human	1
Zuni Agency	348312	6/24/1989	Human	2
Zuni Agency	348315	6/24/1989	Human	5
Zuni Agency	348319	6/24/1989	Human	2
Zuni Agency	348320	6/24/1989	Human	8
Zuni Agency	348321	6/24/1989	Human	1
Zuni Agency	348322	6/24/1989	Human	8
Zuni Agency	348323	6/24/1989	Human	2
Zuni Agency	348324	6/24/1989	Human	5
Zuni Agency	348325	6/24/1989	Human	2
Zuni Agency	348326	6/24/1989	Human	25
Zuni Agency	348327	6/24/1989	Human	2
Zuni Agency	348328	6/24/1989	Human	37
Zuni Agency	348331	6/28/1989	Human	2
Zuni Agency	348334	7/2/1989	Human	55
Zuni Agency	348335	7/2/1989	Human	3
Zuni Agency	348344	7/3/1989	Human	2
Zuni Agency	348347	7/4/1989	Human	5
Zuni Agency	348355	7/7/1989	Natural	1
Zuni Agency	348358	7/8/1989	Human	2
Zuni Agency	348359	7/8/1989	Natural	1
Zuni Agency	348400	9/13/1989	Human	1.5
Zuni Agency	348402	9/19/1989	Human	1.5
Zuni Agency	348403	9/26/1989	Human	5
Zuni Agency	348405	9/27/1989	Human	5
Zuni Agency	348410	10/9/1989	Human	10
Zuni Agency	348425	11/13/1989	Human	5
Cibola National Forest	202852	6/26/1990	Natural	4
Cibola National Forest	202857	6/27/1990	Natural	4
Cibola National Forest	202856	6/27/1990	Natural	1.3
Cibola National Forest	202840	5/15/1990	Natural	2
Cibola National Forest	202849	6/18/1990	Natural	3
Cibola National Forest	202851	6/25/1990	Natural	1
Navajo Regional Office	393836	6/20/1990	Human	1
Navajo Regional Office	393850	6/29/1990	Human	5.2
Navajo Regional Office	393927	8/22/1990	Natural	10
Zuni Agency	348435	1/30/1990	Human	20
Zuni Agency	348444	2/25/1990	Human	1
Zuni Agency	348445	2/25/1990	Human	1
Zuni Agency	348462	3/17/1990	Human	1

Zuni Agency	348464	3/18/1990	Human	10
Zuni Agency	348473	3/21/1990	Human	1
Zuni Agency	348474	3/21/1990	Human	3.5
Zuni Agency	348478	4/3/1990	Human	2
Zuni Agency	348479	4/3/1990	Human	36.2
Zuni Agency	348486	4/8/1990	Human	1
Zuni Agency	348487	4/8/1990	Human	3
Zuni Agency	348488	4/8/1990	Human	1
Zuni Agency	348493	4/14/1990	Human	120
Zuni Agency	348523	5/6/1990	Human	6
Zuni Agency	348540	5/17/1990	Human	3
Zuni Agency	348545	5/20/1990	Human	1
Zuni Agency	348546	5/20/1990	Human	16
Zuni Agency	348550	5/22/1990	Human	1.5
Zuni Agency	348554	5/26/1990	Human	1.6
Zuni Agency	348556	5/26/1990	Human	3.2
Zuni Agency	348558	5/26/1990	Human	6
Zuni Agency	348559	5/26/1990	Human	1
Zuni Agency	348579	6/9/1990	Human	1
Zuni Agency	348585	6/16/1990	Human	10
Zuni Agency	348664	12/1/1990	Human	2
Zuni Agency	348665	12/5/1990	Human	2
Zuni Agency	348666	12/7/1990	Human	1.2
Zuni Agency	348670	12/11/1990	Human	15
Zuni Agency	348671	12/11/1990	Human	1
Zuni Agency	348681	2/21/1991	Human	1
Zuni Agency	348720	4/29/1991	Human	1
Zuni Agency	348724	5/1/1991	Human	2
Zuni Agency	348725	5/5/1991	Human	5
Zuni Agency	348741	5/18/1991	Human	1
Zuni Agency	348742	5/18/1991	Human	5
Zuni Agency	348745	5/19/1991	Human	1
Zuni Agency	348746	5/19/1991	Human	1.5
Zuni Agency	348757	5/29/1991	Human	1.5
Zuni Agency	348763	6/6/1991	Human	1
Zuni Agency	348793	7/11/1991	Human	3
Zuni Agency	348796	7/26/1991	Human	1
Zuni Agency	348799	7/26/1991	Human	1
Zuni Agency	348807	8/8/1991	Human	1
Zuni Agency	348829	10/9/1991	Human	2.5
Zuni Agency	348830	10/16/1991	Human	3.5
Zuni Agency	348837	10/19/1991	Human	5
Zuni Agency	348841	5/19/1991	Human	1
Cibola National Forest	259424	8/10/1992	Natural	1
Zuni Agency	348856	2/24/1992	Human	3.5
Zuni Agency	348858	2/27/1992	Human	10
Zuni Agency	348859	2/28/1992	Human	16.5
Zuni Agency	348860	2/28/1992	Human	8
Zuni Agency	348869	2/6/1992	Human	1.3
Zuni Agency	348873	3/2/1992	Human	25
Zuni Agency	348876	3/11/1992	Human	5
Zuni Agency	348877	3/11/1992	Human	6
Zuni Agency	348878	3/14/1992	Human	15

Zuni Agency	348879	3/15/1992	Human	1.5
Zuni Agency	348885	3/20/1992	Human	35
Zuni Agency	348890	3/25/1992	Human	2
Zuni Agency	348891	3/25/1992	Human	5
Zuni Agency	348894	4/6/1992	Human	3
Zuni Agency	348901	4/10/1992	Human	1
Zuni Agency	348902	4/10/1992	Human	10
Zuni Agency	348905	4/12/1992	Human	3
Zuni Agency	348907	4/13/1992	Human	1
Zuni Agency	348910	4/21/1992	Human	5
Zuni Agency	348916	4/22/1992	Human	1.3
Zuni Agency	348917	4/23/1992	Human	2.9
Zuni Agency	348921	4/24/1992	Human	1.4
Zuni Agency	348924	4/24/1992	Human	1.5
Zuni Agency	348927	4/25/1992	Human	5.5
Zuni Agency	348930	4/26/1992	Human	10
Zuni Agency	348932	4/27/1992	Human	3
Zuni Agency	348933	4/27/1992	Human	1.5
Zuni Agency	348936	4/29/1992	Human	2.5
Zuni Agency	348938	5/3/1992	Human	1
Zuni Agency	348947	5/16/1992	Human	1
Zuni Agency	348956	6/11/1992	Human	2
Zuni Agency	348963	6/23/1992	Human	4
Zuni Agency	348972	7/21/1992	Human	1
Zuni Agency	348978	7/27/1992	Human	1.5
Zuni Agency	349005	9/27/1992	Human	7
Zuni Agency	349008	10/18/1992	Human	6
Cibola National Forest	279462	5/16/1993	Natural	1
Cibola National Forest	279460	4/28/1993	Natural	1.5
Cibola National Forest	279463	5/20/1993	Natural	1.5
Cibola National Forest	279468	6/15/1993	Natural	4
Navajo Regional Office	394173	3/12/1993	Human	32
Navajo Regional Office	394237	6/30/1993	Natural	3
Navajo Regional Office	394246	7/5/1993	Human	1.4
Ramah Navajo Agency	351270	6/19/1993	Human	2
Zuni Agency	349023	2/5/1993	Human	1
Zuni Agency	349028	2/26/1993	Human	2.5
Zuni Agency	349035	3/8/1993	Human	6
Zuni Agency	349036	3/8/1993	Human	2
Zuni Agency	349040	3/9/1993	Human	5
Zuni Agency	349041	3/6/1993	Human	1.2
Zuni Agency	349042	3/11/1993	Human	1.5
Zuni Agency	349043	3/11/1993	Human	2
Zuni Agency	349044	3/13/1993	Human	6
Zuni Agency	349046	3/13/1993	Human	10
Zuni Agency	349051	3/18/1993	Human	1.5
Zuni Agency	349052	3/18/1993	Human	10.2
Zuni Agency	349054	3/22/1993	Human	1.2
Zuni Agency	349057	3/24/1993	Human	13
Zuni Agency	349059	3/25/1993	Human	10
Zuni Agency	349063	3/26/1993	Human	1.7
Zuni Agency	349067	4/5/1993	Human	16
Zuni Agency	349068	4/4/1993	Human	10

Zuni Agency	349074	4/9/1993	Human	4.5
Zuni Agency	349075	4/10/1993	Human	15
Zuni Agency	349076	4/12/1993	Human	1.5
Zuni Agency	349078	4/13/1993	Human	2.5
Zuni Agency	349080	4/13/1993	Human	2
Zuni Agency	349083	4/14/1993	Human	1.5
Zuni Agency	349084	4/15/1993	Human	3
Zuni Agency	349087	4/18/1993	Human	1
Zuni Agency	349088	4/18/1993	Human	2
Zuni Agency	349089	4/18/1993	Human	1
Zuni Agency	349090	4/18/1993	Human	5
Zuni Agency	349091	4/19/1993	Human	8
Zuni Agency	349093	4/20/1993	Human	8.5
Zuni Agency	349095	4/21/1993	Human	1
Zuni Agency	349097	4/22/1993	Human	1
Zuni Agency	349098	4/23/1993	Human	5
Zuni Agency	349099	4/24/1993	Human	1.5
Zuni Agency	349103	4/25/1993	Human	2.5
Zuni Agency	349106	4/28/1993	Human	1
Zuni Agency	349107	4/30/1993	Human	1
Zuni Agency	349108	4/30/1993	Human	1.5
Zuni Agency	349109	5/2/1993	Human	1.2
Zuni Agency	349113	5/10/1993	Human	2.4
Zuni Agency	349118	5/14/1993	Human	1.2
Zuni Agency	349120	5/16/1993	Human	6.6
Zuni Agency	349121	5/16/1993	Human	1.5
Zuni Agency	349124	5/22/1993	Human	1
Zuni Agency	349126	5/23/1993	Human	11
Zuni Agency	349128	5/24/1993	Human	1
Zuni Agency	349139	6/10/1993	Human	2
Zuni Agency	349140	6/11/1993	Human	1
Zuni Agency	349149	6/18/1993	Human	5.5
Zuni Agency	349150	6/19/1993	Human	22.4
Zuni Agency	349154	6/23/1993	Human	5
Zuni Agency	349160	7/6/1993	Human	1
Zuni Agency	349165	7/15/1993	Human	1
Cibola National Forest	290346	8/14/1994	Natural	3.5
Cibola National Forest	290319	7/25/1994	Natural	3.5
Cibola National Forest	290306	7/22/1994	Natural	3.5
Cibola National Forest	290342	7/29/1994	Natural	1
Navajo Regional Office	394399	7/10/1994	Natural	1.4
Navajo Regional Office	394406	7/16/1994	Human	25
Navajo Regional Office	394461	8/5/1994	Human	4.8
Ramah Navajo Agency	351281	3/16/1994	Human	2.5
Zuni Agency	349194	3/14/1994	Human	21
Zuni Agency	349195	3/16/1994	Human	2
Zuni Agency	349196	3/17/1994	Human	1.5
Zuni Agency	349197	3/28/1994	Human	3.2
Zuni Agency	349203	3/30/1994	Human	1
Zuni Agency	349204	3/31/1994	Human	2
Zuni Agency	349205	3/31/1994	Human	1.5
Zuni Agency	349210	4/19/1994	Human	3
Zuni Agency	349211	4/19/1994	Human	2

Zuni Agency	349226	5/5/1994	Human	1
Zuni Agency	349227	5/19/1994	Human	4
Zuni Agency	349242	6/8/1994	Human	5
Zuni Agency	349243	6/4/1994	Human	21
Zuni Agency	349257	6/15/1994	Human	2
Zuni Agency	349278	7/15/1994	Human	1
Cibola National Forest	302590	8/4/1995	Natural	2.3
Cibola National Forest	302588	7/31/1995	Natural	1.5
Cibola National Forest	302554	6/14/1995	Natural	5
Cibola National Forest	302571	6/27/1995	Natural	12
Navajo Regional Office	394601	7/8/1995	Human	30
Zuni Agency	349331	2/21/1995	Human	2.5
Zuni Agency	349332	2/22/1995	Human	10
Zuni Agency	349333	2/23/1995	Human	12
Zuni Agency	349339	3/27/1995	Human	1
Zuni Agency	349342	3/29/1995	Human	1
Zuni Agency	349344	3/30/1995	Human	1.5
Zuni Agency	349353	4/2/1995	Human	1
Zuni Agency	349354	4/3/1995	Human	2.5
Zuni Agency	349357	4/4/1995	Human	10.5
Zuni Agency	349358	4/4/1995	Human	3
Zuni Agency	349359	4/5/1995	Human	2
Zuni Agency	349366	4/8/1995	Human	3
Zuni Agency	349376	4/28/1995	Human	2.5
Zuni Agency	349381	5/10/1995	Human	1
Zuni Agency	349395	6/3/1995	Human	3
Zuni Agency	349396	6/4/1995	Human	4
Zuni Agency	349418	6/20/1995	Human	20
Zuni Agency	349424	6/25/1995	Human	1
Zuni Agency	349425	6/25/1995	Human	1.5
Zuni Agency	349429	6/29/1995	Human	1.5
Zuni Agency	349430	6/29/1995	Human	1
Zuni Agency	349432	6/30/1995	Human	2
Zuni Agency	349482	9/2/1995	Human	1
Zuni Agency	349496	10/9/1995	Human	4.5
Zuni Agency	349497	10/14/1995	Human	1.5
Zuni Agency	349503	10/18/1995	Human	120
Zuni Agency	349509	10/28/1995	Human	10.2
Zuni Agency	349513	11/13/1995	Human	2
Zuni Agency	349518	11/30/1995	Human	2
Zuni Agency	349520	12/4/1995	Human	389
Albuquerque District	24321	6/1/1995	Natural	5
Cibola National Forest	310936	5/12/1996	Human	25
Cibola National Forest	310961	6/15/1996	Natural	1
Navajo Regional Office	394721	2/10/1996	Human	3
Navajo Regional Office	394726	3/11/1996	Human	2
Navajo Regional Office	394728	3/17/1996	Human	7
Navajo Regional Office	394729	3/24/1996	Human	1.4
Navajo Regional Office	394743	4/24/1996	Human	14
Navajo Regional Office	394771	5/16/1996	Human	6
Navajo Regional Office	394789	5/30/1996	Human	3.4
Navajo Regional Office	394855	6/22/1996	Natural	2
Navajo Regional Office	394958	8/31/1996	Natural	3.5

Navajo Regional Office	394979	11/14/1996	Human	2.5
Ramah Navajo Agency	351359	5/23/1996	Human	3
Zuni Agency	349526	1/16/1996	Human	8
Zuni Agency	349531	2/12/1996	Human	110
Zuni Agency	349537	2/17/1996	Human	3
Zuni Agency	349538	2/21/1996	Human	2.5
Zuni Agency	349550	3/3/1996	Human	1
Zuni Agency	349551	3/4/1996	Human	1
Zuni Agency	349557	3/11/1996	Human	1.5
Zuni Agency	349564	3/18/1996	Human	2
Zuni Agency	349567	3/19/1996	Human	1.5
Zuni Agency	349576	3/26/1996	Human	1
Zuni Agency	349578	3/28/1996	Human	1.5
Zuni Agency	349583	3/31/1996	Human	1.2
Zuni Agency	349585	4/2/1996	Human	2
Zuni Agency	349587	4/4/1996	Human	4
Zuni Agency	349593	4/9/1996	Human	6
Zuni Agency	349594	4/9/1996	Human	2
Zuni Agency	349604	4/15/1996	Human	6.5
Zuni Agency	349609	4/19/1996	Human	1
Zuni Agency	349613	4/21/1996	Human	3
Zuni Agency	349619	4/22/1996	Human	1
Zuni Agency	349638	4/27/1996	Human	412
Zuni Agency	349659	5/13/1996	Human	1
Zuni Agency	349661	5/16/1996	Human	1
Zuni Agency	349676	6/2/1996	Human	6.7
Zuni Agency	349695	6/11/1996	Human	8
Zuni Agency	349700	6/15/1996	Human	2
Zuni Agency	349701	6/16/1996	Human	30
Zuni Agency	349779	9/7/1996	Human	1.5
Albuquerque District	18675	6/5/1996	Human	5
Cibola National Forest	322982	6/15/1997	Natural	1
Cibola National Forest	323869	7/11/1997	Natural	1.5
Navajo Regional Office	395048	6/7/1997	Human	17.1
Navajo Regional Office	395066	7/14/1997	Human	1.6
Navajo Regional Office	395068	7/15/1997	Human	1
Zuni Agency	349803	2/10/1997	Human	1.5
Zuni Agency	349805	2/10/1997	Human	1
Zuni Agency	349806	2/11/1997	Human	1
Zuni Agency	349807	2/12/1997	Human	1.5
Zuni Agency	349809	2/14/1997	Human	1.5
Zuni Agency	349812	2/15/1997	Human	1
Zuni Agency	349813	2/16/1997	Human	1
Zuni Agency	349818	2/18/1997	Human	4
Zuni Agency	349819	2/18/1997	Human	11
Zuni Agency	349820	2/20/1997	Human	6
Zuni Agency	349822	2/23/1997	Human	2
Zuni Agency	349823	2/23/1997	Human	15
Zuni Agency	349832	3/19/1997	Human	15
Zuni Agency	349845	4/20/1997	Human	1
Zuni Agency	349848	4/27/1997	Human	1.5
Zuni Agency	349849	5/3/1997	Human	1
Zuni Agency	349850	5/5/1997	Human	1

Zuni Agency	349870	7/3/1997	Human	4
Zuni Agency	349900	10/20/1997	Human	2
Navajo Regional Office	395126	5/24/1998	Human	3
Navajo Regional Office	395135	6/8/1998	Human	5
Navajo Regional Office	395151	6/20/1998	Human	1
Navajo Regional Office	395157	6/22/1998	Human	1.8
Navajo Regional Office	395162	6/24/1998	Human	1
Navajo Regional Office	395166	6/25/1998	Human	7
Navajo Regional Office	395173	6/28/1998	Human	1.4
Navajo Regional Office	395191	7/4/1998	Human	1
Navajo Regional Office	395200	7/14/1998	Human	2.5
Zuni Agency	349919	3/2/1998	Human	1.5
Zuni Agency	349931	4/4/1998	Human	1.5
Zuni Agency	349935	4/9/1998	Human	2
Zuni Agency	349940	4/20/1998	Human	1
Zuni Agency	349942	4/22/1998	Human	4
Cibola National Forest	349315	5/23/1999	Natural	10
Cibola National Forest	351013	5/9/1999	Human	4
Cibola National Forest	349320	6/12/1999	Natural	3
Cibola National Forest	349330	5/29/1999	Natural	5
Cibola National Forest	349322	6/14/1999	Natural	5
Cibola National Forest	349313	5/24/1999	Natural	1
Cibola National Forest	349331	6/23/1999	Natural	5
Navajo Regional Office	395290	3/24/1999	Human	5
Zuni Agency	350051	2/24/1999	Human	1.5
Zuni Agency	350060	3/10/1999	Human	1
Zuni Agency	350067	3/16/1999	Human	3
Zuni Agency	350073	3/29/1999	Human	3.5
Zuni Agency	350085	4/18/1999	Human	4
Zuni Agency	350089	4/23/1999	Human	5
Zuni Agency	350092	4/29/1999	Human	1
Zuni Agency	350097	5/10/1999	Human	1.5
Zuni Agency	350098	5/12/1999	Human	1.2
Zuni Agency	350132	6/3/1999	Human	1
Albuquerque District	310	5/30/1999	Natural	1
Cibola National Forest	352798	7/24/2000	Natural	40
Cibola National Forest	352816	7/31/2000	Natural	2
Cibola National Forest	352795	7/25/2000	Natural	6
Cibola National Forest	352840	8/28/2000	Natural	1.5
Cibola National Forest	352813	7/29/2000	Natural	1
Cibola National Forest	352767	4/16/2000	Human	1
Cibola National Forest	352780	7/11/2000	Natural	1
Cibola National Forest	352843	9/4/2000	Natural	1
Cibola National Forest	352785	7/20/2000	Natural	3
Cibola National Forest	352789	7/23/2000	Natural	8
Cibola National Forest	352788	7/23/2000	Natural	15
Navajo Regional Office	395485	2/8/2000	Human	1.5
Navajo Regional Office	395494	3/17/2000	Human	1
Navajo Regional Office	395526	5/4/2000	Human	10
Navajo Regional Office	395545	5/21/2000	Human	7
Navajo Regional Office	395563	5/29/2000	Human	1.5
Navajo Regional Office	395572	6/6/2000	Human	6.5
Navajo Regional Office	395678	7/28/2000	Human	1.5

Navajo Regional Office	395680	7/29/2000	Natural	720
Navajo Regional Office	395733	8/6/2000	Natural	2
Navajo Regional Office	395816	9/19/2000	Natural	1
Navajo Regional Office	395820	9/22/2000	Natural	5
Navajo Regional Office	395836	10/17/2000	Human	1
Zuni Agency	350211	1/19/2000	Human	1
Zuni Agency	350215	1/24/2000	Human	200
Zuni Agency	350229	3/3/2000	Human	1
Zuni Agency	350241	3/26/2000	Human	3.5
Zuni Agency	350242	3/26/2000	Human	5
Zuni Agency	350264	4/24/2000	Human	10
Zuni Agency	350269	4/30/2000	Human	3.5
Zuni Agency	350330	6/7/2000	Natural	2.5
Zuni Agency	350334	6/13/2000	Human	2
Zuni Agency	350424	9/22/2000	Natural	2.5
Zuni Agency	350426	9/25/2000	Human	2
Cibola National Forest	367320	7/9/2001	Natural	17
Cibola National Forest	367306	5/30/2001	Natural	5
Navajo Regional Office	395968	7/15/2001	Human	1.3
Zuni Agency	350464	2/22/2001	Human	1
Zuni Agency	350469	3/6/2001	Human	1
Zuni Agency	350498	4/3/2001	Human	1
Zuni Agency	350505	4/16/2001	Human	1.5
Zuni Agency	350507	4/17/2001	Human	4
Zuni Agency	350519	4/29/2001	Human	6.2
Zuni Agency	350542	5/31/2001	Natural	1
Zuni Agency	350564	6/29/2001	Natural	5
Cibola National Forest	377651	8/1/2002	Natural	1.5
Cibola National Forest	377641	7/17/2002	Natural	2.5
Cibola National Forest	377598	6/4/2002	Natural	2
Cibola National Forest	377653	8/18/2002	Natural	1
Cibola National Forest	377663	8/28/2002	Natural	2
Cibola National Forest	377643	6/22/2002	Natural	1.4
Navajo Regional Office	396101	4/14/2002	Human	4
Navajo Regional Office	396134	5/4/2002	Human	1
Navajo Regional Office	396182	6/4/2002	Natural	3
Navajo Regional Office	396205	6/9/2002	Human	1.1
Navajo Regional Office	396209	6/21/2002	Human	1
Navajo Regional Office	396237	7/4/2002	Natural	1
Navajo Regional Office	396242	7/5/2002	Natural	4
Navajo Regional Office	396250	7/7/2002	Human	1.5
Navajo Regional Office	396332	8/25/2002	Human	3
Navajo Regional Office	396344	8/30/2002	Natural	7.5
Navajo Regional Office	396346	8/31/2002	Natural	1
Zuni Agency	350675	1/22/2002	Human	1.5
Zuni Agency	350711	3/23/2002	Human	20
Zuni Agency	350715	3/31/2002	Human	6
Zuni Agency	350728	4/15/2002	Human	2.4
Zuni Agency	350778	6/6/2002	Human	1.5
Zuni Agency	350812	7/1/2002	Human	50
Zuni Agency	350820	7/4/2002	Natural	2
Zuni Agency	350844	7/23/2002	Human	1.5
Zuni Agency	350848	7/28/2002	Natural	1.8

Cibola National Forest	390514	6/4/2003	Natural	3
Cibola National Forest	390546	7/22/2003	Natural	5
Cibola National Forest	390562	7/26/2003	Natural	1.39
Navajo Regional Office	396379	5/29/2003	Natural	2
Ramah Navajo Agency	351777	7/26/2003	Natural	1
Zuni Agency	350928	5/16/2003	Human	1
Zuni Agency	350949	6/22/2003	Human	7
Zuni Agency	351037	12/5/2003	Human	4
Zuni Agency	351043	12/30/2003	Human	1
Rio Puerco Field Office	120130	6/17/2003	Natural	2
Cibola National Forest	398872	9/27/2004	Natural	1
Cibola National Forest	402815	7/10/2004	Natural	1.15
Navajo Regional Office	396580	5/16/2004	Human	10.3
Navajo Regional Office	396621	6/13/2004	Human	9.3
Navajo Regional Office	396677	7/2/2004	Natural	1.5
Navajo Regional Office	396770	8/8/2004	Natural	33.6
Navajo Regional Office	396796	8/27/2004	Natural	3.6
Zuni Agency	351049	3/19/2004	Human	1
Zuni Agency	351050	3/19/2004	Human	1
Zuni Agency	351062	5/3/2004	Human	1.7
Zuni Agency	351080	7/19/2004	Natural	1
Cibola National Forest	1427603	7/8/2005	Natural	1
Cibola National Forest	1427664	7/13/2005	Natural	1
Cibola National Forest	1427338	7/4/2005	Human	12.3
Cibola National Forest	1427127	6/26/2005	Natural	22
Navajo Regional Office	509834	7/18/2005	Natural	54.5
Navajo Regional Office	505588	7/19/2005	Natural	1.5
Navajo Regional Office	511668	7/26/2005	Natural	1
Navajo Regional Office	506041	8/10/2005	Natural	1
Zuni Agency	500563	6/13/2005	Natural	1.3
Zuni Agency	502788	7/14/2005	Human	2.4
Cibola National Forest	1446610	7/24/2006	Natural	1
Cibola National Forest	1445355	7/5/2006	Natural	1
Navajo Regional Office	518215	2/13/2006	Human	1.5
Navajo Regional Office	520545	5/22/2006	Natural	2
Navajo Regional Office	522801	6/9/2006	Natural	1.5
Navajo Regional Office	524300	6/29/2006	Natural	1
Zuni Agency	518552	4/8/2006	Human	2
Zuni Agency	518577	4/10/2006	Human	3.8
Cibola National Forest	1452864	7/22/2007	Natural	4.25
Cibola National Forest	1452856	7/20/2007	Natural	16
Navajo Regional Office	540306	3/27/2007	Human	1
Navajo Regional Office	545238	7/17/2007	Natural	5
Navajo Regional Office	548403	7/21/2007	Natural	1
Navajo Regional Office	553278	10/12/2007	Natural	1
Zuni Agency	539506	3/7/2007	Human	5
Zuni Agency	539507	3/12/2007	Human	5
Zuni Agency	540163	5/1/2007	Human	1
Zuni Agency	544943	7/8/2007	Human	2
Navajo Regional Office	575162	7/3/2008	Natural	1.2
Ramah Navajo Agency	581146	6/1/2008	Human	5.5
Zuni Agency	558160	3/10/2008	Human	1.3
Zuni Agency	556666	3/24/2008	Human	1.3

Zuni Agency	556669	3/24/2008	Human	9.3
Zuni Agency	558235	5/18/2008	Human	1
Zuni Agency	573797	6/28/2008	Human	8.3
Zuni Agency	573806	6/28/2008	Human	4.3
Zuni Agency	574315	6/28/2008	Human	3.6
Zuni Agency	574320	6/28/2008	Human	2.8
Zuni Agency	574324	6/28/2008	Human	3.4
Zuni Agency	574852	6/28/2008	Human	4.4
Zuni Agency	574854	6/28/2008	Human	1.2
Zuni Agency	574857	6/28/2008	Human	12.1
Zuni Agency	574858	6/28/2008	Human	8.2
Zuni Agency	574861	6/28/2008	Human	4.1
Zuni Agency	584962	12/6/2008	Human	1
Rio Puerco Field Office	575487	6/26/2008	Natural	5
Cibola National Forest	1476278	5/18/2009	Natural	3.1
Navajo Regional Office	586253	5/7/2009	Human	1
Navajo Regional Office	589684	6/29/2009	Human	3
Navajo Regional Office	589679	7/9/2009	Human	1
Navajo Regional Office	592097	7/18/2009	Human	3
Navajo Regional Office	595102	9/6/2009	Natural	5.7
Zuni Agency	585520	2/27/2009	Human	1
Zuni Agency	585531	2/27/2009	Human	2.5
Zuni Agency	589340	7/10/2009	Natural	4.1
Zuni Agency	593778	9/8/2009	Natural	4
Rio Puerco Field Office	594445	7/28/2009	Natural	511
Cibola National Forest	1486445	6/23/2010	Human	1.8
Cibola National Forest	1486410	6/6/2010	Natural	10.5
Navajo Regional Office	603313	4/28/2010	Human	23
Zuni Agency	600987	4/16/2010	Natural	1.5
Zuni Agency	604710	6/28/2010	Human	10
Zuni Agency	603972	7/12/2010	Human	1.5
Zuni Agency	615656	11/18/2010	Human	1
Cibola National Forest	1500179	7/23/2011	Natural	2
Cibola National Forest	1496579	7/9/2011	Natural	16
Navajo Regional Office	619033	4/17/2011	Human	1.5
Navajo Regional Office	631442	5/29/2011	Human	1
Navajo Regional Office	621631	6/26/2011	Human	1
Navajo Regional Office	623757	7/23/2011	Natural	2.5
Zuni Agency	618517	3/21/2011	Natural	1.3
Zuni Agency	618989	4/20/2011	Human	3
Zuni Agency	619876	5/26/2011	Human	3.3
Zuni Agency	623463	7/24/2011	Natural	2.8
Zuni Agency	623745	7/25/2011	Natural	1.5
Zuni Agency	630520	10/28/2011	Human	1.2
Rio Puerco Field Office	622151	7/8/2011	Natural	6
Rio Puerco Field Office	623746	7/28/2011	Natural	1,276
Cibola National Forest	1504246	6/19/2012	Human	1.3
Navajo Regional Office	636808	4/28/2012	Human	1
Navajo Regional Office	636842	5/20/2012	Human	1.5
Navajo Regional Office	639208	6/27/2012	Natural	2
Navajo Regional Office	639220	6/30/2012	Natural	7
Navajo Regional Office	639948	7/10/2012	Natural	3.5
Zuni Agency	638954	7/1/2012	Natural	16.3

Cibola National Forest	1508956	9/26/2012	Natural	12
Zuni Agency	647660	10/14/2012	Human	1701
Cibola National Forest	1516397	7/17/2013	Natural	3
Navajo Regional Office	652867	4/12/2013	Human	1
Navajo Regional Office	653036	4/22/2013	Human	2.5
Navajo Regional Office	653016	4/27/2013	Human	2
Navajo Regional Office	653568	5/14/2013	Natural	10
Navajo Regional Office	654149	6/3/2013	Human	3
Zuni Agency	653283	4/8/2013	Human	2
Zuni Agency	663466	10/20/2013	Human	1
Cibola National Forest	335578	7/6/2014	Natural	1
Navajo Regional Office	673956	6/13/2014	Human	14,712
Cibola National Forest	6320178	7/4/2015	Natural	5.5
Navajo Regional Office	677532	3/20/2015	Human	1.5
Navajo Regional Office	677558	3/20/2015	Human	1.9
Navajo Regional Office	680023	6/16/2015	Natural	1
Cibola National Forest	6764471	6/8/2016	Human	3.69
Navajo Regional Office	690920	4/13/2016	Human	80.2
Navajo Regional Office	693855	6/29/2016	Natural	1.5
Navajo Regional Office	698610	7/6/2016	Human	3.5
Navajo Regional Office	693822	7/11/2016	Human	10
Navajo Regional Office	694077	7/15/2016	Human	1
Navajo Regional Office	694084	7/17/2016	Human	17
Navajo Regional Office	697811	8/15/2016	Human	40
Zuni Agency	689572	2/26/2016	Human	206
Zuni Agency	689575	2/28/2016	Human	2
Zuni Agency	690010	3/28/2016	Human	7
Zuni Agency	690315	4/4/2016	Human	3
Zuni Agency	690912	4/19/2016	Human	5
Rio Puerco Field Office	699199	4/13/2016	Human	80
Rio Puerco Field Office	694658	6/20/2016	Natural	2.5
			Totals =	25,920.28 (26,294.22)**

**The data are from the USGS Geosciences and Environmental Change Science Center.*
***The greater number includes all recorded wildfires smaller than 1.0 acre.*

Attain StormReady Accreditation

The NWS' StormReady helps arm communities with the communication and safety skills needed to save lives and property before, during, and after an event. Communities who have achieved this accreditation are better prepared to save lives from severe weather through advanced planning, education, and awareness.	
Hazard/s Addressed	Floods, Severe Storms, Tornadoes, Winter Storms
Effectiveness	Low
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup-McKinley County Schools Facilities/Planning
Funding Sources	Local Budgets

Build FEMA Code 361 Safe Rooms

FEMA Code 361 regulations ensure a structure is capable of withstanding wind speeds greater than 200 miles per hour. Additionally, these anti-tornado regulations also ensure the structure is protected against hail, lightning, high and strong winds. This project can be implemented as a retrofit of a current structure or the construction of a new facility. Any critical facility is a potential target for this, but realistically location will be determined by which participating jurisdictions have the want and resources to accomplish this project.	
Hazard/s Addressed	Severe Storms, Tornadoes
Effectiveness	High
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Build Irrigation Wells & Solar Pumping Stations

Wells & Solar Pumping Stations can significantly increase the water supply available to rural communities. They are instrumental in providing relief to agricultural sectors in places without sizable water delivery infrastructure during drought events. Further, they help enhance and maintain the ability of local responders to fight wildfires during drought periods.	
Hazard/s Addressed	Droughts, Wildfires
Effectiveness	High
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Build Irrigation Storage Tanks

Storage tanks can significantly increase the water supply available to rural communities. They are instrumental in providing relief to agricultural sectors in places without sizable water delivery infrastructure during drought events. Further, they help enhance and maintain the ability of local responders to fight wildfires during drought periods.	
Hazard/s Addressed	Droughts, Wildfires
Effectiveness	High
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Build Storm Water Pump Stations

Storm water pump stations help protect areas by pumping away large volumes of water therefore preventing or decreasing the level of a flood. Pump stations can vary in size and design, allowing them to be tailored to the needs of a specific floodplain, region, or site-specific facility.	
Hazard/s Addressed	Floods
Effectiveness	Medium
Timeframe	1 – 4 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Build Rainwater Retention Basins

Rainwater retention basins are artificial basins built in strategic locations to protect against floods and droughts by collecting and holding rainwater for an extended period of time. The participating jurisdictions should implement these installations in areas where the water can be used during a drought, for agricultural or urban use, or in areas where poor functioning, outdated, or old stormwater drainage systems are in place. Construction of these basins will occur in conjunction with local and regional irrigation districts to multiply their effectiveness and benefit.	
Hazard/s Addressed	Droughts, Floods
Effectiveness	Low
Timeframe	1 – 4 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Build Snow Fences

Snow fences force drifting snow to accumulate in a desired place minimizing the amount of snowdrift on roads and railways. Controlling snow accumulation decreases the danger to a jurisdiction's citizens traveling during and after a winter storm. This project should be implemented along major transportation routes throughout the planning area.	
Hazard/s Addressed	Winter Storms
Effectiveness	Low
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Bury Utility Lines, Pipes, and Tanks

Transferring existing utilities lines, pipes, and chemical storage tanks from above ground to below ground will significantly reduce the amount of property damage incurred from wind, ice, and snow related events.	
Hazard/s Addressed	Severe Storms, Tornadoes, Winter Storms
Effectiveness	Medium
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Comprehensive Revision of Floodplain Policies

McKinley County's lacks a comprehensive and effective floodplain program. Before the development of their next hazard mitigation plan, they should revisit, review, and revise their current policies and regulations. This includes, but is not limited to, hiring or training a certified floodplain manager, implementing an enforcement mechanism for new construction, assessing the currently identified FEMA floodplain maps and establishing a BFE for new construction, and codifying NFIP compliance into their local ordinances.

Hazard/s Addressed	Floods
Effectiveness	High
Timeframe	1 – 5 Years
Lead Organization	McKinley County Commissioners, McKinley County OEM
Funding Sources	Local Budgets

Conduct Dam Failure Inundation Study

McKinley County will partner with the USACE to develop comprehensive dam failure inundation maps and effects studies for the Ramah Dam. Without a comprehensive hydrological study and scientifically derived impacts of a dam failure, selecting appropriate mitigation actions and projects is difficult at best.

Hazard/s Addressed	Dam Failures
Effectiveness	Low
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM
Funding Sources	Local Budgets

Conduct Public Awareness & Education Campaigns

A campaign will inform and educate the public on hazard risks, allowing them to better protect their property through preparation and their lives through appropriate evacuation and survival procedures.

Hazard/s Addressed	Dam Failure, Droughts, Floods, Geologic, Severe Storms, Tornadoes, Wildfires, Winter Storms
Effectiveness	Low
Timeframe	1 Year
Lead Organization	McKinley County OEM, Gallup-McKinley County Schools Administration
Funding Sources	Local Budgets

Conduct SKYWARN Storm Spotter Training

The NWS' SKYWARN Storm Spotter training program educates and delivers basic weather identification, spotting, and reporting information to any concerned citizens. Educating citizens in this program helps increase specific awareness and creates a skillset that helps the NWS create more accurate and timely warnings for tornadoes, severe storms, flash flooding, and other severe weather.

Hazard/s Addressed	Floods, Severe Storms, Tornadoes, Winter Storms
Effectiveness	Low
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, GFD, Gallup-McKinley County Schools Facilities/Planning, MCFD, Municipal Public Works
Funding Sources	Local Budgets

Create Defensible Spaces & Buffer Zones

Creating defensible spaces and buffer zones void of vegetative fuel and covered with gravel or rock helps prevent the spread of wildfire as well as creating an area in which local emergency response serviced can safely operate. This 2-pronged approach directly mitigates damage to property and protects lives, but also indirectly mitigates the threat to life and property in the area at large. This project will be implemented in high risk areas as identified in this plan's WUI maps and well-known to burn areas as determined by the participating jurisdictions and appropriate local agencies.	
Hazard/s Addressed	Wildfires
Effectiveness	Medium
Timeframe	1 Year
Lead Organization	McKinley County OEM, GFD, Gallup-McKinley County Schools Facilities/Planning, MCFD, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Expand Storm Siren Network

The jurisdiction will continue to improve their alert, broadcast, and warning systems to give information and instructions in the face of an impending hazard impact to prevent injury and property damage. These systems will allow citizens to better protect themselves in the event of an impending or potentially impending hazard. Additionally, hazard or weather specific information can be delivered to assist in achieving the previously stated goal.	
Hazard/s Addressed	Dam Failure, Floods, Severe Storms, Tornadoes, Winter Storms, Wildfires
Effectiveness	Medium
Timeframe	1 – 4 Years
Lead Organization	McKinley County OEM
Funding Sources	HMGP, PDM, Local Budgets

Develop Comprehensive Land Use Plans

The jurisdiction will work with its available resources or pool its resources with its neighbors to develop comprehensive land use planning in order to bolster its ordinances, zoning, and floodplain regulations in order to increase its resiliency and detour future development from risky construction practices.	
Hazard/s Addressed	Dam Failures, Droughts, Floods, Severe Storms, Tornadoes, Wildfires, Winter Storms
Effectiveness	Medium
Timeframe	1 – 2 Years
Lead Organization	McKinley County Commissioners, Gallup Planning & Development
Funding Sources	Local Budgets

Elevate Structures

Structures located within identified flood zones can be elevated above base flood elevation or predicted other predicted flood inundation levels.	
Hazard/s Addressed	Dam Failure, Floods
Effectiveness	High
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Install Backup Generators

Backup generators provide critical facilities with electricity in the event a community's electrical transmission grid is either damaged by a disaster or overloaded by excessive use during an event.	
Hazard/s Addressed	Dam Failures, Floods, Severe Storms, Tornadoes, Wildfires, Winter Storms
Effectiveness	Medium
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, GFD, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, MCFD, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Install Bionets

Bionets installed in strategic locations will prevent the erosion of slopes subject to surface wash. The containment reinforcement of the exposed ground reduces the impact of heavy rain and mud.	
Hazard/s Addressed	Geologic
Effectiveness	High
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Floodproof Structures

This technique is often used when relocation or buying out is not an option as is the case with a historic building or it would require astronomical funding that is not available. Floodproofing projects constitute any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage. Wet floodproofing reduces property damage counteracting hydrostatic pressure on walls or other support structures by equalizing the pressure between the interior and exterior of a structure.	
Hazard/s Addressed	Dam Failure, Floods
Effectiveness	Medium
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Retrofit Dams & Reservoirs

The owners and operators of the Ramah Dam are seeking a number of upgrades to the Ramah Dam. Two of these upgrades would retrofit the dam to make it more resistant to failure, integrity degradation, and increase the water supply of the area. Specifically, they are looking to expand the depth of the reservoir, drill wells, rock face the dam to prevent erosion.	
Hazard/s Addressed	Dam Failures, Droughts
Effectiveness	Medium
Timeframe	1 – 4 Years
Lead Organization	McKinley County OEM
Funding Sources	FMA, HMGP, Local Budgets, PDM

Update Dam Failure Evacuation Plans

Following comprehensive hydrological dam failure studies and the production of inundation studies, McKinley County OEM will work with the USACE and the Escalante Generating Station to update their existing emergency evacuation plans for the Escalante Generating Station Evaporation Pond 5, McGaffey Lake Dam, and the Ramah Dam.	
Hazard/s Addressed	Dam Failures
Effectiveness	Medium
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM
Funding Sources	Local Budgets

Reduce Debris & Natural Fuels

Reducing the amount of debris and natural fuels in a community will deprive wildfires of the material it requires to spread and prevent high winds from launching deadly and damaging debris around during a severe storm or tornado. This project will be implemented in high risk areas as identified in this plan's WUI maps and well-known to burn areas as determined by the participating jurisdictions and appropriate local agencies.	
Hazard/s Addressed	Severe Storms, Tornadoes, Wildfires
Effectiveness	Medium
Timeframe	1 Year
Lead Organization	McKinley County OEM, GFD, Gallup-McKinley County Schools Facilities/Planning, MCFD, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Install Flood Level Monitoring Systems

Strategically installing water monitoring stations will assist in measuring the severity of an existing or impending drought, the real-time and historical levels of flooding, as well as dam failures. Accurately measuring water levels will allow the community to take the necessary conservation and regulatory measures to mitigate the droughts, flood, and dam failure effects. This project should be implemented in all major basins and water retention, rivers and streams prone to flooding, natural and man-made, areas throughout the planning area. Additionally, having precise historical data from past floods will enhance the planning area's ability to develop future mitigation planning actions and projects.	
Hazard/s Addressed	Dam Failure, Droughts, Floods
Effectiveness	Low
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Install Structural Integrity Monitoring Instruments

Dam failure is often preventable, but due to the structural nature of their construction and limited inspection resources, inspections happen too infrequently. Installing a series of seismic monitoring instruments at strategic locations along a dam can detect small, often unnoticed or detected, shifts in the dam's substructure that are the primary cause in premature collapse or failure. These instruments serve not only as early warning devices, but as the means to ensuring a dam's maintenance and repair schedule is kept.	
Hazard/s Addressed	Dam Failures
Effectiveness	Medium
Timeframe	1 Year
Lead Organization	McKinley County OEM
Funding Sources	HMGP, Local Budgets, PDM

Install Transportation Status & Routing System

Installing a transportation status and routing system will allow a community to effectively mitigate the effects of multiple hazards on its travelling population. Using smart grid and intelligent transit control systems, a jurisdiction can effectively route its transportation systems according to situational need whether it is to avoid severe weather, flooding, dam failure, wildfires or any number of hazards. By having a better control of its transportation network, and thus the location of its citizens, a community detour its citizens from entering into the harm of a hazard. This project should be a planning area wide implementation of all major and heavily used transportation networks.	
Hazard/s Addressed	Dam Failure, Floods, Severe Storms, Tornadoes, Wildfires, Winter Storms
Effectiveness	Medium
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Insulate Water Lines

Insulating a facility's water pipes helps prevent them from freezing and bursting due to sudden and prolonged low temperatures during winter storms. The planning area should implement this project in conjunction with their school districts and critical facilities standard maintenance cycles.	
Hazard/s Addressed	Winter Storms
Effectiveness	Low
Timeframe	1 Year
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Raise Transportation Infrastructure

To combat uncontrollable waters emanating from a dam or levee failure, flash flood, or riverine flood, transportation infrastructure may be raised to allow its continued use in a disaster as well as a partial earthen berm to protect a neighboring lower elevation area. Additionally, the increased elevation of road or railway bridges can prevent the buildup of debris during incidents of high floodwaters and preventing further water buildup.	
Hazard/s Addressed	Dam Failure, Floods
Effectiveness	High
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Reinforce & Modify Slopes

Identified hazard areas considered to be high risk will be the subject of slop modification measures. These measures will vary depending on location specifics, but could include slop modification, earth removal, or retaining wall installation.	
Hazard/s Addressed	Geologic
Effectiveness	High
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, PDM, Local Budgets

Relocate or Buyout Vulnerable Structures	
Some structures may be able to be relocated from identified floodplains or dam inundation zones. Removing them from identified hazard area will eliminate their risk.	
Hazard/s Addressed	Dam Failure, Floods, Geologic
Effectiveness	High
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning
Funding Sources	FMA, HMGP, Local Budgets, PDM

Retrofit Structures for Wildfire Resistance	
Retrofitting structures with screened vent enclosures, double paned glass, and spark arrestors will reduce the chances of a structure igniting from a wildfire as well as a wildfire's chance of spreading.	
Hazard/s Addressed	Wildfires
Effectiveness	Medium
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Retrofit Structures for Wind Resistances	
Enhancing a structure's wind resistance according to FEH bronze, silver, or gold specifications will significantly reduce probability of a structure incurring damage and potentially hurting its occupants during a wind related event. Efforts to do so are, but not limited to, strengthening gable anchorages, soffits, roof sheathing, anchoring attached structures such as porches or carports, replacing thing windows, enhancing the integrity of building openings, and developing continuous load paths throughout a structure.	
Hazard/s Addressed	Severe Storms, Tornadoes
Effectiveness	Medium
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Upgrade Insulation & Energy Efficiency	
Upgrading a facility's windows, windows frames, roofing, and insulation will allow it to better maintain a desired warm or cool temperature during prolonged extreme heat or winter storms. Additionally, it decreases the energy load necessary to do so, decreasing the burden on the local energy grid.	
Hazard/s Addressed	Winter Storms
Effectiveness	Low
Timeframe	1 – 3 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Upgrade Storm Water Drainage Systems	
Significant flood damage in developed communities can be prevented by upgrading their storm water drainage system. This mitigation measure will allow flood waters to drain quicker and prevent excess accumulation. This project should be implemented in older drainage systems and any expanding areas throughout the planning area.	
Hazard/s Addressed	Floods
Effectiveness	Medium
Timeframe	1 – 4 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Gallup-McKinley County Schools Facilities/Planning, Municipal Public Works
Funding Sources	FMA, HMGP, Local Budgets, PDM

Upgrade to Looped Grid Power Systems	
Linear power grids have single points of failure that are vulnerable to a number of hazards. Looped power grids operate in parallel and are thus significantly more resistant to damage allowing the utilities to maintain power after an event.	
Hazard/s Addressed	Dam Failure, Floods, Severe Storms, Tornadoes, Wildfires, Winter Storms
Effectiveness	Medium
Timeframe	1 – 5 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Upgrade to Low Flow Utilities	
To decrease water usage before, during, and after a drought, communities can install low water flow utilities throughout its critical facilities and infrastructure. This will not only decrease water usage, but also decrease water demands. The planning area should implement this project in conjunction with their school districts and critical facilities standard maintenance cycles.	
Hazard/s Addressed	Droughts
Effectiveness	Low
Timeframe	1 – 2 Years
Lead Organization	McKinley County OEM, Gallup Planning & Development, Municipal Public Works
Funding Sources	HMGP, Local Budgets, PDM

Appendix E – Action & Project Prioritization

Table E.1 – Action & Project Prioritization, McKinley County

Project/Action	Dam Failure	Droughts	Floods	Geologic	Severe Storms	Tornadoes	Wildfires	Winter Storms
Backup Generators	Low		Medium		Medium	Low	High	Medium
Bionets				Low				
Bury Utility Lines, Pipes, and Tanks					Medium	Low		Medium
Comprehensive Floodplain Policy Revisions			High					
Comprehensive Land Use Planning	Low	High	Medium		Medium	Low	High	Medium
Dam & Reservoir Retrofit	Low	High						
Dam Failure Evacuation Planning Update	Low							
Dam Failure Inundation Study	Low							
Debris & Natural Fuels Reduction					Medium	Low	High	
Defensible Spaces & Buffer Zones							High	
Elevate Structures	Low		Medium					
FEMA Code 361 Safe Rooms					Medium	Low		
Floodproofing	Low		Medium					
Flood Level Monitoring System	Low	High	Medium					
Insulation & Energy Efficiency								Medium
Irrigation Wells & Solar Pumping Stations		High					High	
Irrigation Storage Tanks		High					High	
Looped Grid Power Systems	Low		Medium		Medium	Low	High	Medium
Low Flow Utilities		High						
Public Awareness & Education	Low	High	Medium	Low	Medium	Low	High	Medium
Rainwater Retention Basins		High	Medium					
Raise Transportation Infrastructure	Low		Medium					
Relocate or Buyout Vulnerable Structures	Low		Medium	Low				
SKYWARN Storm Spotter Training			Medium		Medium	Low		Medium
Slope Reinforcement & Modification				Low				
Snow Fences								Medium
Storm Water Drainage System Upgrade			Medium					
Storm Water Pump Stations			Medium					
Storm Siren Network			Medium					
StormReady Accreditation			Medium		Medium	Low	High	Medium
Structural Integrity Monitoring Instruments	Low							
Transportation Status & Routing Systems	Low		Medium		Medium	Low	High	Medium
Water Line Insulation								Medium
Wildfire Structural Retrofit							High	
Wind Resistance Structural Retrofit					Medium	Low		

= Hazard or Project Not Applicable to this Plan Participant

= Mitigation Project or Action Not Applicable to this Hazard

Table E.2 – Action & Project Prioritization, Gallup

Project/Action	Dam Failure	Droughts	Floods	Geologic	Severe Storms	Tornadoes	Wildfires	Winter Storms
Backup Generators			Medium		Medium	Low	High	Medium
Bionets				Low				
Bury Utility Lines, Pipes, and Tanks					Medium	Low		Medium
Comprehensive Floodplain Policy Revision								
Comprehensive Land Use Planning		Medium	Medium		Medium	Low	High	Medium
Dam & Reservoir Retrofit		Medium						
Dam Failure Evacuation Planning Update								
Dam Failure Inundation Study								
Debris & Natural Fuels Reduction					Medium	Low	High	
Defensible Spaces & Buffer Zones							High	
Elevate Structures			Medium					
FEMA Code 361 Safe Rooms					Medium	Low		
Floodproofing			Medium					
Flood Level Monitoring System		Medium	Medium					
Insulation & Energy Efficiency								Medium
Irrigation Wells & Solar Pumping Stations		Medium					High	
Irrigation Storage Tanks		Medium					High	
Looped Grid Power Systems			Medium		Medium	Low	High	Medium
Low Flow Utilities		Medium						
Public Awareness & Education		Medium	Medium	Low	Medium	Low	High	Medium
Rainwater Retention Basins		Medium	Medium					
Raise Transportation Infrastructure			Medium					
Relocate or Buyout Vulnerable Structures			Medium	Low				
SKYWARN Storm Spotter Training			Medium		Medium	Low		Medium
Slope Reinforcement & Modification				Low				
Snow Fences								Medium
Storm Water Drainage System Upgrade			Medium					
Storm Water Pump Stations			Medium					
Storm Siren Network			Medium					
StormReady Accreditation			Medium		Medium	Low	High	Medium
Structural Integrity Monitoring Instruments								
Transportation Status & Routing Systems			Medium		Medium	Low	High	Medium
Water Line Insulation								Medium
Wildfire Structural Retrofit							High	
Wind Resistance Structural Retrofit					Medium	Low		

= Hazard or Project Not Applicable to this Plan Participant

= Mitigation Project or Action Not Applicable to this Hazard

Table E.3 – Action & Project Prioritization, Gallup-McKinley County Schools

Project/Action	Dam Failure	Droughts	Floods	Geologic	Severe Storms	Tornadoes	Wildfires	Winter Storms
Backup Generators			Low		Medium	Low	Medium	Medium
Bionets				Low				
Bury Utility Lines, Pipes, and Tanks					Medium	Low		Medium
Comprehensive Floodplain Policy Revision								
Comprehensive Land Use Planning			Low		Medium	Low	Medium	Medium
Dam & Reservoir Retrofit								
Dam Failure Evacuation Planning Update								
Dam Failure Inundation Study								
Debris & Natural Fuels Reduction					Medium	Low	Medium	
Defensible Spaces & Buffer Zones							Medium	
Elevate Structures			Low					
FEMA Code 361 Safe Rooms					Medium	Low		
Floodproofing			Low					
Flood Level Monitoring System			Low					
Insulation & Energy Efficiency								Medium
Irrigation Wells & Solar Pumping Stations							Medium	
Irrigation Storage Tanks							Medium	
Looped Grid Power Systems			Low		Medium	Low	Medium	Medium
Low Flow Utilities								
Public Awareness & Education			Low	Low	Medium	Low	Medium	Medium
Rainwater Retention Basins			Low					
Raise Transportation Infrastructure			Low					
Relocate or Buyout Vulnerable Structures			Low	Low				
SKYWARN Storm Spotter Training			Low		Medium	Low		Medium
Slope Reinforcement & Modification				Low				
Snow Fences								Medium
Storm Water Drainage System Upgrade			Low					
Storm Water Pump Stations			Low					
Storm Siren Network			Low					
StormReady Accreditation			Low		Medium	Low	Medium	Medium
Structural Integrity Monitoring Instruments								
Transportation Status & Routing Systems			Low		Medium	Low	Medium	Medium
Water Line Insulation								Medium
Wildfire Structural Retrofit							Medium	
Wind Resistance Structural Retrofit					Medium	Low		

= Hazard or Project Not Applicable to this Plan Participant

= Mitigation Project or Action Not Applicable to this Hazard

Resolution Adopting the Finalized McKinley County Hazard Mitigation Plan (HMP). Providing an Effective Date; and For Other Purposes

RESOLUTION NO. JAN-21-004

WHEREAS, The participating jurisdictions in McKinley County have worked together to develop a strategy known as the McKinley County HMP to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) the regulations at 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities (stakeholders like McKinley County) to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating stakeholder has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the McKinley County HMP by the passing of this resolution.

Therefore, be it resolved by the McKinley County Board of County Commissioners that:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to abide by the HMP attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the plan.

Section 3: The participating stakeholder will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress to all appropriate agencies (FEMA, the State of New Mexico, Department of Homeland Security and Emergency Management and the MPC).

DONE AT McKinley County, Gallup, New Mexico, in Open Meeting by motion and second this 5th day of January 2021.

McKINLEY COUNTY BOARD OF COMMISSIONERS

Billy Moore, Chairperson

Robert Baca, Commissioner

, Commissioner

ATTEST:

Jacqueline K. Sloan, County Clerk

DOC# 394961
01/19/2021 10:46 AM Page: 1 of 1
RES R:$0.00 J. K. Sloan, Mckinley County

RESOLUTION NO. R2021-3

A RESOLUTION ADOPTING THE FINALIZED MCKINLEY COUNTY HAZARD MITIGATION PLAN

WHEREAS, the participating jurisdictions of McKinley County have worked together to develop a strategy known as the McKinley County Hazard Mitigation Plan (HMP) to improve disaster resistance in the planning area; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant to 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; and

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); and

WHEREAS, the MPC recommends the formal adoption of the McKinley County HMP by the passing of this resolution.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF GALLUP THAT:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; and agree to be governed by the HMP attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; and will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the plan.

Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the State of New Mexico, Department of Homeland Security and Emergency Management and the MPC.

PASSED, APPROVED AND ADOPTED this 9th day of February, 2021

CITY OF GALLUP, NEW MEXICO

By: _____
Louie Bonaguidi, Mayor

ATTEST:

_____
Alfred Abeita II, City Clerk

GALLUP-McKINLEY COUNTY SCHOOLS
EMPOWERING OUR FUTURE

Mike Hyatt, Superintendent
mhyatt@gmcs.org

Assistant Superintendent
Tim Bond
Jvanna Hanks
Gerald Horacek
Pauletta White, Ed. D

RESOLUTION

At a meeting of the Gallup-McKinley County School District School Board, held 02-01-2021
Executive Session

Resolution of the School Board adopting the finalized McKinley County Hazard Mitigation Plan (HMP); providing and effective date; and for other purposes:

WHEREAS, the participating jurisdictions of McKinley County have worked together to develop a strategy known as the McKinley County HMP to improve disaster resistance in the planning area; AND

WHEREAS, the Federal Disaster Mitigation Act of 2000 (DMA2000) pursuant 44 CFR Part 201 and the Federal Emergency Management Agency (FEMA) require communities to adopt an approved hazard mitigation plan in order to be eligible to receive pre-disaster and post disaster federal funding for mitigation purposes; AND

WHEREAS, the participating jurisdiction has participated in the hazard mitigation plan by the formation of a Mitigation Planning Committee (MPC); AND

WHEREAS, the MPC recommends the formal adoption of the McKinley County HMP by the passing of this resolution.

Therefore, be it resolved by the Gallup-McKinley County School Board that:

Section 1: The participating stakeholder hereby approves and adopts the hazard mitigation plan in its entirety with projects as adopted by the MPC; AND agree to be governed by the HMP attached hereto and incorporated.

Section 2: The participating stakeholder authorizes the appropriate participating officials to pursue funding opportunities for implementation of proposals designated therein; AND will upon receipt of such funding or other necessary resources, seek to implement the actions contained in the plan.

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Section 3: The participating jurisdiction will continue to cooperate and participate in the hazard mitigation planning process, holding regular meetings, including reporting of progress as required by FEMA, the State of New Mexico, Department of Homeland Security and Emergency Management and the MPC.

The motion to adopt was agreed upon by the GMCS School Board

And upon being put to a successful vote; the Gallup-McKinley County Schools Superintendent Mike Hyatt Verifies.

Signature

2/10/24
Date

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

February 24, 2021

Chelsea Morganti, State Hazard Mitigation Officer
New Mexico DHS and Emergency Management, Preparedness Bureau
Office of Emergency Management
P.O. Box 27111
Santa Fe, NM 87502-1628

RE: Approval of the McKinley County, New Mexico Multi-Jurisdiction Hazard Mitigation Plan
Funding Source: PDM; PDMC-PL-06-NM-2017; #6

Dear Ms. Morganti:

This office has concluded its review of the referenced plan and we are pleased to provide our approval of this plan in meeting the criteria set forth by 44 CFR § 201.6. By receiving this approval, eligibility for the Hazard Mitigation Assistance Grants will be ensured for five years from the date of this letter, expiring on February 23, 2026.

This approval does not demonstrate approval of projects contained in the plan. This office has provided the enclosed Local Hazard Mitigation Planning Tool with reviewer's comments, to further assist the community in refining the plan going forward. Please advise the referenced community of this approval.

If you have any questions, please contact Shanene Thomas, HM Community Planner, at (940) 898-5492.

Sincerely,

Ronald C. Wanhanen
Chief, Risk Analysis Branch

Enclosure

cc: Christy King, R6-MT-HM

Enclosure A

Attached is the list of approved participating governments included in the February 24, 2021 review of the referenced Hazard Mitigation plan.

	Community Name
1)	Gallup city
2)	Gallup-McKinley County School District
3)	McKinley County