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Cooperating Technical Partners (CTP)

New Mexico Zone D Analysis and Prioritization

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New Mexico Zone D Overview

FEMA's flood hazard mapping program, Risk Mapping, Assessment and Planning (MAP), identifies flood hazards. Flood hazard mapping is an important part of the National Flood Insurance Program (NFIP), as it is the basis of the NFIP regulations and flood insurance requirements. Twenty-three of New Mexico's thirty-three counties have 87,483 square miles of mapped flood hazard areas; approximately 34% of this mapped area is designated as Zone D (Figure 1). Specifically, the Zone D designation is used to indicate areas where there are possible but undetermined flood hazards and analysis of flood hazards has not been conducted. These unstudied Zone D areas comprise portions of sixteen counties and eighteen Tribal Reservations.

This Zone D designation adversely impacts residents and local communities' economy. Due to this zone designation, communities are unable to determine the actual risk to their residents, and businesses as well as economic opportunities have been lost. Flood insurance is available in Zone D and property owners are encouraged to purchase it, although flood insurance is not federally required by lenders for loans on properties in Zone D. It should be noted that flood insurance rates for properties in Zone D are commensurate with the uncertainty of the flood risk. Consequently, the Zone D premiums could be higher than a standard low-risk Zone X premium and substantially higher than the Preferred Risk Policy (PRP) premiums.

In New Mexico, there are eight Zone D NFIP policies out of 12,849 NFIP policies (numbers current as of 7/31/2018). Table 1 shows the location of these policies. The two policies in Abiquiu, Rio Arriba County are within the boundaries of the Rio Chama watershed, which is scheduled for a Base Level Engineering project in 2018. The Base Level Engineering production approach combines high-resolution ground elevation data, and modeling technology advancements to create engineering models and flood hazard data. These analyses are produced at a large scale, like a watershed, as opposed to targeting individual stream reaches. The flood hazard information prepared is based off engineering models that determine flood elevations along each stream reach studied. The data prepared provides flood hazard information to community officials and allows them to interact with analysis results and review areas identified as prone to flooding.

Table 1 – Location of Zone D NFIP Policies.

City	Community Name	CID	Zipcode	County
Bernalillo	Bernalillo, Town of	350056	87004	Sandoval
Cedar Crest	Bernalillo County	350001	87008	Bernalillo
Tijeras	Bernalillo County	350001	87059	Bernalillo

Jal	Jal, City of	350030	88252	Lea
Abiquiu	Rio Arriba County	350049	87510	Rio Arriba
Abiquiu	Rio Arriba County	350049	87510	Rio Arriba
San Acacia	Socorro County	350075	87831	Socorro
Socorro	Socorro County	350075	87801	Socorro

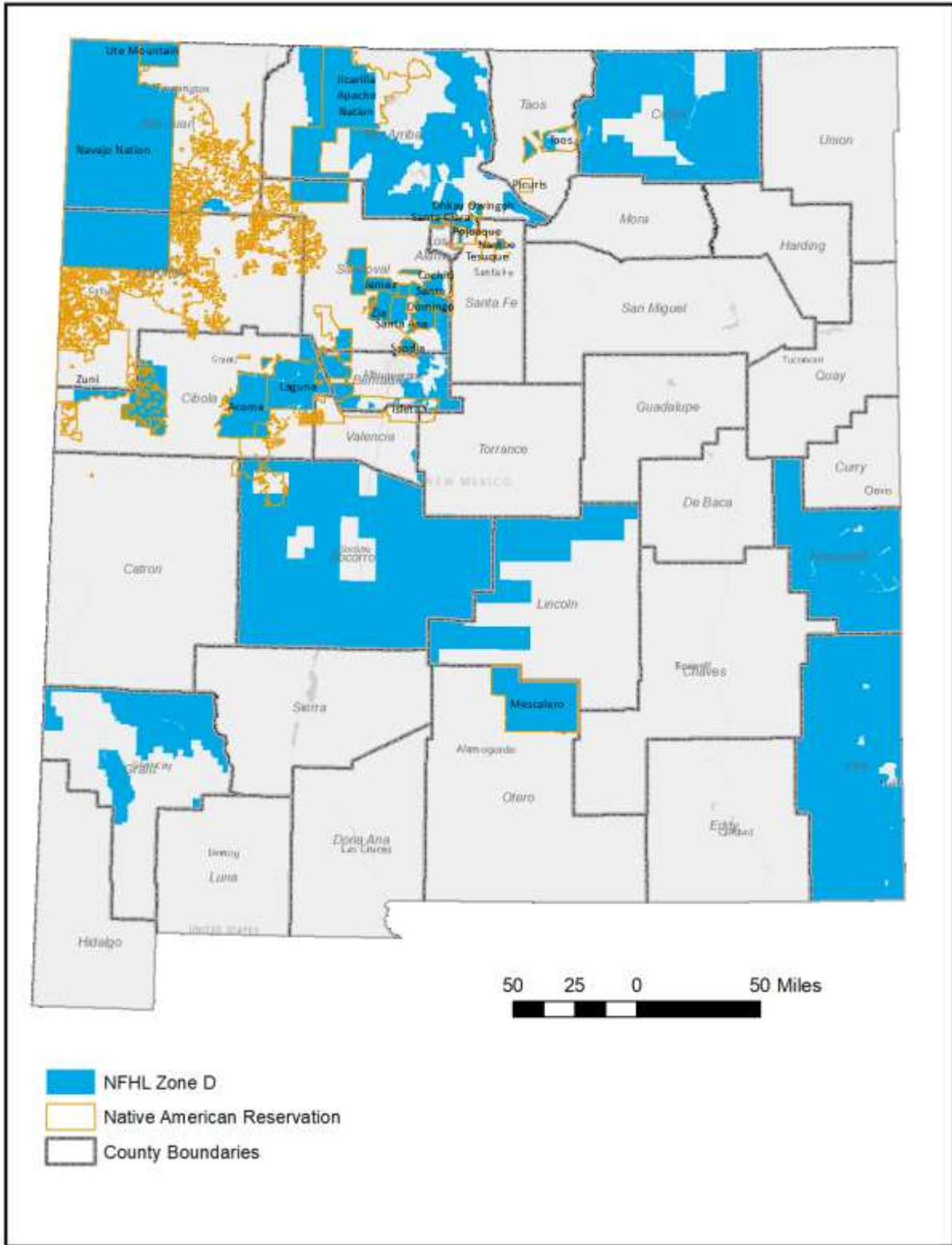


Figure 1 – Map of Zone D in New Mexico.

Zone D Areas of New Mexico

The National Flood Hazard Layer (NFHL) dataset was used to identify all Zone D flood hazard areas in New Mexico. The political jurisdiction feature class (*S_Pol_Ar*, - location and attributes for political jurisdictions shown on the Flood Insurance Rate Map) was used as the source for political jurisdictions for the Zone D areas. Additionally, the NFHL political jurisdiction feature class was combined with the Bureau of Land Management surface land ownership dataset to further refine ownership information.

Then estimated population was calculated for each of the jurisdictional entities that have areas of Zone D, which is shown in Table 3. Population was estimated using the 2010 Census Block data for New Mexico; this is only an estimate for each area since Zone D boundaries do not correspond to the boundaries of the 2010 Census Blocks. Additionally, Census Block population represents the number of individuals living in the entire area of the Census Block, and it does not take into account the distribution of population (if the inhabitants are evenly distributed across the Census Block or confined to one area within the Census Block).

Table 2 shows the square miles of Zone D by non-tribal jurisdiction and Table 3 shows the square miles for tribal entities.

Table 2 – County and Towns Zone D Area and Estimated Population.

Name	Square Miles	Est. Population
Bernalillo County	105.59	6,142
Cibola County	210.65	537
City of Espanola	0.04	76
City of Eunice	0.87	1,557
City of Hobbs	0.2	7
City of Portales	1.66	91
Colfax County	3,076.61	2,120
Grant County	1,386.26	1,534
Lea County	4,338.53	14,670
Lincoln County	1,356.62	886
Rio Arriba County	3.9	135
Roosevelt County	2,429.51	7,548
San Juan County	97.44	58
Sandoval County	79	155
Socorro County	5,884.36	2,734
Town of Cochiti Lake	1.21	550
Town of Edgewood	6.04	0
Town of Elida	0.8	186
Valencia County	25.99	80

Village of Angel Fire	28.38	883
Village of Corona	1	166
Village of Eagle Nest	3.8	91
Village of Floyd	3.08	60

Table 3 – Zone D Area of Tribal Nations and Estimated Population.

Name	Square Miles	Est. Population
Acoma Pueblo	449.51	2,899
Canoncito Indian Reservation	2.35	0
Cochiti Pueblo	45.64	1,001
Isleta Pueblo	81.44	16
Jemez Pueblo	138.23	1,815
Jicarilla Apache Reservation	1,159.03	371
Laguna Pueblo	544.51	2,894
Mescalero Apache Reservation	720.47	4,226
Nambe Pueblo	10.56	8
Navajo Nation	6,563.56	34,029
Ohkay Owingeh Pueblo	17.27	217
Ramah Navajo Indian Reservation	335.17	1,687
San Felipe Pueblo	78.21	3,578
San Felipe/Santa Ana Indian Reservation	0.97	0
San Felipe/Santo Domingo Indian Reservation	1.3	0
San Ildefonso Pueblo	7.66	0
Sandia Pueblo	35.58	4,342
Santa Ana Pueblo	73.4	2
Santa Clara Pueblo	63.12	615
Santo Domingo Pueblo	99.82	3,177
Taos Pueblo	73.51	2,526
Ute Mountain Indian Reservation	327.66	0
Zia Pueblo	190.39	738
Zuni Pueblo	86.06	0

Nearly 4,000 square miles of the Zone D area in New Mexico are on land owned by the U.S. federal government. Table 4 shows the Zone D area owned by federal entities. For example, the United States Forest Service administers 3,736 square miles, the US Department of Defense manages 257 square miles, and the National Park Service administers the smallest area on the Valles Caldera National Preserve.

Table 4 – Federal Land Zone D.

Name	Square Miles
Carson National Forest	1,408.7
Cibola National Forest	95.76
Gila National Forest (Grant County)	1368
Santa Fe National Forest	863
Valles Caldera National Preserve (NPS)	3.88
Kirtland Air Force Base	47.51
White Sands Missile Range	209.9

Essential Facilities

The Community Anchor Site Assessment (CASA) is a database of essential community facilities that the Earth Data Analysis Center (EDAC) updates and maintains for the New Mexico Department of Information Technology. This database was utilized to identify essential facilities that are located in Zone D areas. Table 5 shows the facilities broken out by jurisdiction. The Government/Community Support category includes institutions like Senior Centers, Court Houses, Chapterhouses, and Community Centers.

Table 5 – CASA Facilities Located in Zone D.

Name	EOC	Fire	Government/ Community Support	Health	Enforcement Law	Library	Medical	School	Grand Total
Bernalillo County		1						1	2
Cibola County	1	1	2			1	1	1	8
City of Eunice			4		1			4	9
City of Portales		1							1
Cochiti Pueblo		1				1		2	4
Colfax County		10	1		1				12
Grant County		2							2
Jemez Pueblo	1		2	2	2	1		3	11
Jicarilla Apache Reservation	1	1	2		1	1		4	10
Kirtland Air Force Base	1	5	1		3			2	12
Laguna Pueblo	1		2	1	1	1		2	8
Lea County		3	4		2		1		10
Lincoln County		1							1
Mescalero Apache Reservation	1	3	3	1	3	1	2	1	15
Navajo Nation		3	25	7	3	1	1	32	72
Ohkay Owingeh Pueblo	1		2		2	1		3	9

Laguna Pueblo		1	1	2	1		1	2	8
Ramah Navajo Indian Reservation		3		2				1	6
Rio Arriba County		3	5	1	2	1		5	17
Roosevelt County		5	4				1	3	13
San Felipe Pueblo	1	1	2	2		1		2	9
San Juan County					1				1
Sandia Pueblo			1			1			2
Sandoval County				1					1
Santa Ana Pueblo	1		1	1	1	1			5
Santa Clara Pueblo	1	1	1		1	1		1	6
Santo Domingo Pueblo		1	2	1		1		2	7
Socorro County		2				1			3
Taos County			1						1
Taos Pueblo	1		1	2	1			1	6
Town of Cochiti Lake	1		1	1		1			4
Town of Elida		1	2		1			3	7
Village of Angel Fire		4	4		1	1		1	11
Village of Corona		1	6	1		1		3	12
Village of Eagle Nest			2						2
Village of Floyd		1	1					4	6
Zia Pueblo		1	1	1		1		1	5
Grand Total	12	57	84	26	29	19	7	84	317

Prioritization of Zone D

The Cooperating Technical Partner (CTP) will prioritize projects to address the resolution of the Zone D issue using the information from this analysis. Base Level Engineering (BLE) is the most efficient and cost-effective mechanism to assist local communities and tribes in dealing with the Zone D designations in their areas. BLE projects require LiDAR-based elevation data and part of the prioritization order will be using when LiDAR data are collected for the area of interest. The data produced from BLE studies can be used as best available data and be used to update community DFIRMs. Figure 2 shows the status of LiDAR collection in New Mexico.

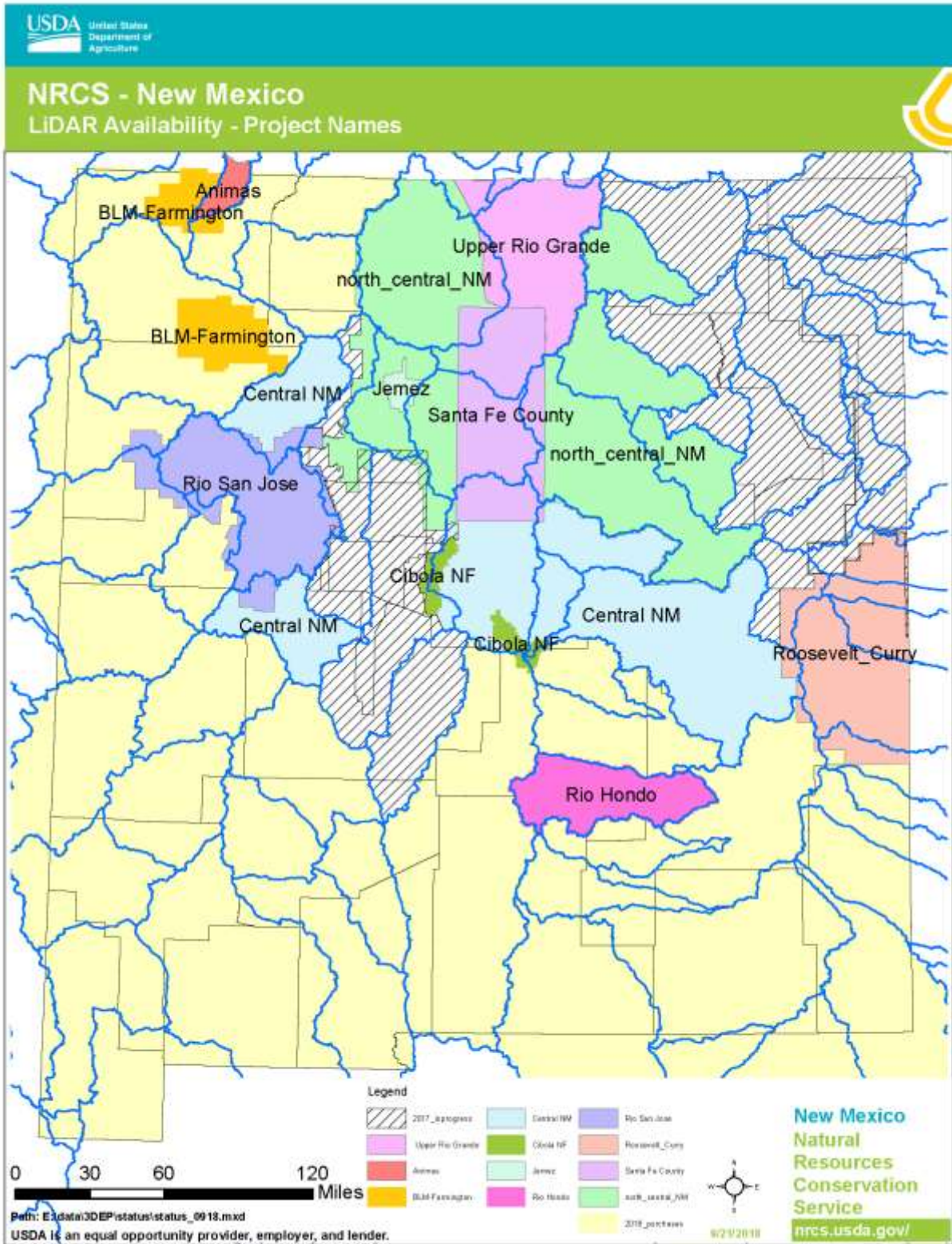


Figure 2 –New Mexico Lidar Status (courtesy NRCS).

County/Municipality Prioritization

In New Mexico, the counties with the largest area of Zone D have over 1,300 square miles of Zone D; Table 6 shows these six counties along with their estimated population. This combination of area of Zone D and population along with the presence of LiDAR derived elevation data is the most efficient way to prioritize Zone D areas. BLE studies already underway or planned for the upcoming project year will cover areas of Zone D in Taos County, Taos Pueblo, and some of the area in Rio Arriba County.

The New Mexico CTP program in 2017-2018 conducted a BLE study for Roosevelt County, and the community is currently evaluating the BLE information for potential update of the DFIRMs. Roosevelt County was selected for a BLE project due to the availability of LiDAR data for the County and the fact that the local floodplain administrator had raised the Zone D problem with FEMA Region 6 and the New Mexico CTP. A potential wind and solar farm project in the county was delayed due to the lack of flood hazard mapping in the county. The delay in this project posed an economic loss for this rural county.

Lea County has the highest population and one of the largest Zone D coverage areas. LiDAR collection is scheduled for the upcoming year, and once completed it will receive a high priority in the BLE project list. The current Floodplain administrator for Lea County, Lorenzo Espinosa, has expressed interest in a BLE project for the county.

Socorro and Colfax counties have the next highest area and population. EDAC will work with the local floodplain administrators to assess the interest and develop a potential schedule for adding these areas to the BLE project list.

Table 6 – Counties over 1,300 Square Miles of Zone D.

Name	Square Miles	Est. Population	Lidar Status
Lea County	4,338.53	14,670	2020 (anticipated)
Socorro County	5,884.36	2,734	2019 & 2020 (anticipated)
Colfax County	3,076.61	2,120	2019 & Collected
Roosevelt County	2,429.51	7,548	Collected
Grant County	1,386.26	1,534	2020 (anticipated)
Lincoln County	1,356.62	886	2020 (anticipated)

Tribal Prioritization

Currently, Zuni Pueblo is the only tribal entity in New Mexico that participates in the NFIP and only a small percentage of its reservation is Zone D.

The tribal nations of New Mexico have had portions of their reservations mapped as a Special Flood Hazard Area (SFHA), (Table 7). However, large portions of these areas were mapped as Zone D. The Navajo Nation and the Jicarilla Apache Nation have the largest area of Zone D (Table 3) which corresponds to size of their respective reservations.

The CTP will consider tribal requests for BLE projects, in addition to requests from local communities, current and future BLE projects will provide flood hazard information for tribal lands. The CTP will stay in regular communication with FEMA Region 6 about the issues and complications that arise with tribal lands mapped as Zone D and will work with the tribal entities and Region 6 to incorporate project requests into the New Mexico Business Plan.

Table 7 – Tribal NFHL Zones.

Name	NFHL Zone		
		A	D
Acoma Pueblo		A	D
Cochiti Pueblo		A	D
Isleta Pueblo	AE	A	D
Jicarilla Apache Nation			D
Jemez Pueblo			D
Laguna Pueblo		A	D
Mescalero Apache Reservation			D
Nambe Pueblo		A	
Navajo Nation		A	D
Picuiris Pueblo		A	
Pojoaque Pueblo	AE	A	
Okhay Owingeh Pueblo	AE	A	D
Ramah Navajo Indian Reservation		A	D
San Felipe Pueblo		A	D
Sandia Pueblo	AE	A	D
San Ildefonso Pueblo	AE	A	D
Santa Ana Pueblo		D	A
Santa Clara Pueblo	AE	A	D
Santo Domingo Pueblo		A	D
Tesuque Pueblo	AE	A	
Taos Pueblo	AE	A	D
Ute Mountain Indian Reservation			D
Zia Pueblo			D
Zuni Pueblo	AE	A	D

Conclusions

The CTP will prioritize BLE projects for areas of Zone D based on total area of Zone D, Population and Lidar availability. Additionally, the CTP will coordinate with the local floodplain administrator to assess the level of community interest in supporting a BLE project, if there is no local support for a BLE project the community will be moved lower on the project list.

The analysis of the location of critical facilities (i.e., CASA) also highlights the need for the BLE studies in New Mexico, as the actual risk to these critical facilities is not known and therefore, no mitigation activities can be planned or conducted. BLE data would help in planning the location of new critical facilities.

Updating the NFIP flood hazard zones in these large areas of Zone D has the potential to increase the number of flood insurance policies since the cost of policies outside of Zone D more accurately reflects the residents flood risk. Currently there are only eight policies in an area of approximately 19,042 square miles with an estimated population of 40,266. If residents could purchase flood insurance at a rate appropriate to their risk then they would be more likely to make that purchase and be able to recover faster in the event of a flood.

The decision to map large areas of New Mexico as Zone D during the end of FEMA's Flood Map Modernization (Map Mod) initiative, when there were no funds available to conduct a detailed study, has left large areas of New Mexico mapped with unknown risk. This has an impact both on the ability of residents to purchase flood insurance and potential business projects in those areas. One of the outcomes of mapping large areas in this general manner is that areas of higher potential flood risk are not identified and no mitigation projects or strategies can be developed to protect communities and residents in those areas. And no community planning or zoning efforts can be undertaken to better protect residents.

GIS Data Sources

1. Community Anchor Site Assessment (CASA) Geodatabase, downloaded from the RGIS Data Portal – the New Mexico digital geospatial data clearinghouse, <https://rgis-data.unm.edu>.
2. National Flood Hazard Layer Geodatabase, NFHL_35_20180220.gdb, downloaded from <https://msc.fema.gov>.
3. New Mexico Surface Land Ownership, 2017, BLM New Mexico Surface Ownership, downloaded from the RGIS Data Portal – the New Mexico digital geospatial data clearinghouse, <https://rgis-data.unm.edu>.
4. The U.S. Census Blocks, 2010 Census Blocks New Mexico, downloaded from the RGIS Data Portal – the New Mexico digital geospatial data clearinghouse, <https://rgis-data.unm.edu>.