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1 APPENDIX A - HAZARD IDENTIFICATION/RISK ASSESSMENT

1.1. Dam Failure

Figure 1-1 Comprehensive List of Dams in New Mexico

Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
ALBUQUERQUE INFLATABLE DIVERSION DAM	3/3/2006	Local Government	Concrete	BERNALILLO	5
AMOLE ARROYO DETENTION DAM	3/19/2013	Local Government	Earth	BERNALILLO	5
AMOLE DEL NORTE DETENTION DAM	1/28/2011	Local Government	Earth	BERNALILLO	5
ARROYO DEL OSO DETENTION DAM	1/28/2011	Local Government	Earth	BERNALILLO	5
BLACK ARROYO DETENTION DAM	1/30/2013	Local Government	Earth	BERNALILLO	5
BOCA NEGRA DETENTION DAM	2/26/2014	Local Government	Earth	BERNALILLO	5
BORREGA DETENTION DAM	1/29/2013	Local Government	Earth	BERNALILLO	5
BRIDGE BLVD DETENTION BASIN	1/6/2006	Local Government	Earth	BERNALILLO	5
CLAREMONT DETENTION DAM	12/9/1999	Local Government	Other	BERNALILLO	5
DON FELIPE DETENTION DAM	4/26/2013	Local Government	Earth	BERNALILLO	5
EMBUDO DAM	1/28/2011	Local Government	Earth	BERNALILLO	5
GRIEGOS DETENTION DAM	1/6/2006	Local Government	Earth	BERNALILLO	5
HUBBELL LAKE DETENTION DAM	3/19/2013	Local Government	Earth	BERNALILLO	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
JOHN ROBERT DAM	6/21/2013	Local Government	Earth	BERNALILLO	5
KINNEY DAM	6/14/2013	Local Government	Earth	BERNALILLO	5
KIRTLAND AFB DETENTION DAM	12/9/2003	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 10	7/12/2013	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 11	11/20/2006	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 12	7/12/2013	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 13	11/20/2006	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 14	8/23/2013	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 15	8/23/2013	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 3	4/27/2004	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 5	4/27/2004	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 6	11/20/2006	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 7	11/20/2006	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 8	11/20/2006	Local Government	Earth	BERNALILLO	5
LADERA DAM NO. 9	11/20/2006	Local Government	Earth	BERNALILLO	5
LAS VENTANAS DETENTION DAM	1/30/2013	Local Government	Earth	BERNALILLO	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
MANZANO MESA DETENTION BASIN	1/5/2006	Local Government	Earth	BERNALILLO	5
MARIPOSA DAM	1/28/2011	Local Government	Earth	BERNALILLO	5
MCCOY DETENTION DAM	4/26/2013	Local Government	Earth	BERNALILLO	5
MENAU DETENTION DAM	12/8/2005	Local Government	Earth	BERNALILLO	5
NORTH DOMINGO BACA DAM	6/14/2013	Local Government	Earth	BERNALILLO	5
NORTH/SOUTH COORS DETENTION DAM	12/8/2005	Local Government	Earth	BERNALILLO	5
PIEDRA LISA DETENTION DAM	1/5/2006	Local Government	Earth	BERNALILLO	5
PIEDRAS MARCADAS DETENTION DAM	4/3/2013	Local Government	Earth	BERNALILLO	5
PINO DAM	6/21/2013	Local Government	Earth	BERNALILLO	5
RAYMAC DETENTION DAM	1/29/2013	Local Government	Earth	BERNALILLO	5
RENAISSANCE DETENTION BASIN	12/8/2005	Local Government	Earth	BERNALILLO	5
SANDIA PEAK PHASE 2 POND	6/14/2013	Private	Earth	BERNALILLO	5
SETTLED WATER STORAGE DAM NO. 1	4/29/2011	Local Government	Earth	BERNALILLO	5
SOUTH DOMINGO BACA DAM	6/28/2013	Local Government	Earth	BERNALILLO	5
SUNPORT BLVD DETENTION DAM	12/1/2004	Local Government	Earth	BERNALILLO	5
SWINBURNE DAM	1/30/2013	Local Government	Earth	BERNALILLO	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
TOHAJILEE	9/27/2012	Federal	Earth	BERNALILLO	5
TOWER/SAGE PARK DETENTION DAM	12/8/2005	Local Government	Earth	BERNALILLO	5
WEST DETENTION DAM	4/29/2011	Local Government	Earth	BERNALILLO	5
WESTGATE DETENTION DAM	4/3/2013	Local Government	Earth	BERNALILLO	5
GOAT DETENTION DAM NO.1	-	Federal	-	CATRON	6
GOAT DETENTION DAM NO.2	-	Federal	-	CATRON	6
HUBBELL DAM NO. 1	6/25/2013	Private	Earth	CATRON	6
QUEMADO LAKE DAM	9/16/2014	State	Earth	CATRON	6
RED HILL DETENTION DAM NO. 2	-	Federal	-	CATRON	6
RED HILL DETENTION DAM NO. 3	-	Federal	-	CATRON	6
RED HILL DETENTION DAM NO.1	-	Federal	-	CATRON	6
ROMERO LAKE DAM	10/18/2011	Private	Earth	CATRON	6
SNOW LAKE DAM	9/16/2014	State	Earth	CATRON	6
WALL LAKE DAM	11/4/2014	Private	Earth	CATRON	6
LEPRINO WASTE TREATMENT POND	3/17/2014	Private	Earth	CHAVES	1
TWO RIVERS DAM (DIAMOND A & ROCKY)	8/2/2011	Federal	Earth	CHAVES	1



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
ZUBER DRAW SITE 1 DAM	5/29/2013	Local Government	Earth	CHAVES	1
ZUBER DRAW SITE 2 DAM	5/29/2013	Local Government	Earth	CHAVES	1
ZUBER DRAW SITE 3 DAM	5/29/2013	Local Government	Earth	CHAVES	1
ZUBER HOLLOW RESERVOIR	4/1/2015	Private	Earth	CHAVES	1
ACOMITA	6/15/2012	Federal	Earth	CIBOLA	4
BIBO DAM	11/20/2006	Private	Earth	CIBOLA	4
BLUEWATER DAM	5/21/2013	Local Government	Arch	CIBOLA	4
CUBERO IRRIGATION DAM	6/20/2013	Local Government	Earth	CIBOLA	4
HOMESTAKE EVAPORATION POND 3	11/22/2010	Private	Earth	CIBOLA	4
HOMESTAKE MINING COMPANY EVAP POND NO.1	6/25/2015	Private	Earth	CIBOLA	4
HOMESTAKE MINING COMPANY EVAP POND NO.2	6/25/2015	Private	Earth	CIBOLA	4
LOWER NIELSON RETARDING DAM	6/12/2014	Local Government	Earth	CIBOLA	4
PAGUATE	7/18/2012	Federal	Earth	CIBOLA	4
PROP CANYON SITE 1 DAM	4/30/2015	Local Government	Earth	CIBOLA	4
PROP CANYON SITE 2A DAM	4/30/2015	Local Government	Earth	CIBOLA	4
SAN MATEO LAKE DAM	6/25/2015	Local Government	Earth	CIBOLA	4



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SEBOYETA IRRIGATION DAM	6/20/2013	Local Government	Earth	CIBOLA	4
T X DIVERSION DAM NO 3	4/29/2011	Federal	Earth	CIBOLA	4
ANCHO DAM A-5A	10/4/2012	Private	Earth	COLFAX	2
ANCHO DAM A-6B	10/4/2012	Private	Earth	COLFAX	2
ANCHO DAM A-6C	10/4/2012	Private	Earth	COLFAX	2
ANCHO DAM A-8	10/4/2012	Private	Earth	COLFAX	2
ANTELOPE VALLEY DAM NO. 2	5/3/2011	Local Government	Earth	COLFAX	2
ANTELOPE VALLEY DAM NO. 3	5/3/2011	Local Government	Earth	COLFAX	2
CIMARRONCITO DAM	6/1/2015	Local Government	Earth	COLFAX	2
CLARKS FORK SITE NO. 2	4/16/2008	Private	Earth	COLFAX	2
DAVIS RESERVOIR DAM	9/3/2014	Private	Earth	COLFAX	2
DRY LAKE SITE NO. 3	-	Private	Earth	COLFAX	2
EAGLE NEST DAM	9/23/2014	State	Arch	COLFAX	2
FRENCH LAKE DAM	5/3/2011	Private	Earth	COLFAX	2
HAGARDON RESERVOIR NO. 5	9/14/2010	Private	Earth	COLFAX	2
JARITAS DAM NO. 2	6/4/2013	Private	Earth	COLFAX	2



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
JARITAS RESERVOIR B DAM	11/13/2013	Private	Earth	COLFAX	2
KOEHLER DAM	9/3/2014	Private	Earth	COLFAX	2
LAKE ALICE DAM	3/26/2014	Local Government	Earth	COLFAX	2
LAKE ALLEN DAM	4/10/2007	State	Earth	COLFAX	2
LAKE MALOYA DAM	6/2/2015	Local Government	Earth	COLFAX	2
LEWIS RESERVOIR DAM	9/3/2014	Private	Earth	COLFAX	2
MAXWELL DAM NO. 11	4/6/2011	Private	Earth	COLFAX	2
MAXWELL DAM NO. 12	4/6/2011	Private	Earth	COLFAX	2
MAXWELL DAM NO. 13	4/6/2011	Private	Earth	COLFAX	2
MAXWELL DAM NO. 14	4/6/2011	Private	Earth	COLFAX	2
MAXWELL DAM NO. 2	4/6/2011	Private	Earth	COLFAX	2
MIAMI LAKE DAM NO. 2	9/23/2014	Private	Earth	COLFAX	2
MONTE VERDE DAM	8/13/2013	Private	Earth	COLFAX	2
RITO DEL PLANO RESERVOIR	11/29/2012	Private	Earth	COLFAX	2
SALTPETER CREEK SITE 1A	6/5/2013	Local Government	Earth	COLFAX	2
SPRINGER DAM NO. 1	10/11/2012	Local Government	Earth	COLFAX	2



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SPRINGER DAM NO. 2	10/11/2012	Local Government	Earth	COLFAX	2
SPRINGER LAKE DAM	9/30/2014	Private	Earth	COLFAX	2
STUBBLEFIELD DAM	8/14/2013	Private	Earth	COLFAX	2
THROTTLE DAM NO. 2	9/4/2014	Private	Earth	COLFAX	2
UPPER SHUREE POND DAM	6/15/2011	Federal	Earth	COLFAX	2
URRACA DAM	6/1/2015	Private	Earth	COLFAX	2
UTE CREEK DAM	6/1/2015	Private	Earth	COLFAX	2
VAN BRUGGEN RESERVOIR DAM	11/29/2012	Private	Earth	COLFAX	2
WEBSTER DAM	6/1/2015	Private	Earth	COLFAX	2
CLOVIS NEW POND DETENTION DAM	9/22/2009	Local Government	Earth	CURRY	1
CLOVIS WASTEWATER LAGOON EXPANSION DAM	4/21/2015	Local Government	Earth	CURRY	1
INGRAM LAKE DAM	4/21/2015	Local Government	Earth	CURRY	1
RUNNING WATER DRAW SITE 1 DAM	4/21/2015	Local Government	Earth	CURRY	1
SOUTHWEST CHEESE LRAL/ASB DAM	8/3/2005	Private	Earth	CURRY	1
SUMNER	8/18/2015	Federal	Earth	DEBACA	1
ALAMEDA DAM	8/5/2015	Federal	Earth	DONA ANA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
ANTHONY ARROYO DAM NO. 1	9/17/2013	Local Government	Earth	DONA ANA	6
APACHE BRAZITO MESQUITE DAM NO. 1	5/21/2014	Local Government	Earth	DONA ANA	6
APACHE BRAZITO MESQUITE DAM NO. 2	5/21/2014	Local Government	Earth	DONA ANA	6
APACHE BRAZITO MESQUITE DAM NO. 3	5/22/2014	Local Government	Earth	DONA ANA	6
APACHE BRAZITO MESQUITE DAM NO. 4	5/22/2014	Local Government	Earth	DONA ANA	6
APODACA ARROYO DAM	10/29/2010	Private	Earth	DONA ANA	6
BREEDLOVE FLOOD CONTROL DAM	3/16/2015	Local Government	Earth	DONA ANA	6
CABALLO ARROYO DAM NO. 2	4/21/2015	Local Government	Earth	DONA ANA	6
CABALLO ARROYO DAM NO. 3	4/22/2015	Local Government	Earth	DONA ANA	6
CABALLO ARROYO DAM NO. 4	11/2/2011	Local Government	Earth	DONA ANA	6
CABALLO ARROYO DAM NO. 5	11/2/2011	Local Government	Earth	DONA ANA	6
CROW BROAD PLACITAS DAM NO. 1	2/4/2014	Local Government	Earth	DONA ANA	6
CROW BROAD PLACITAS DAM NO. 2A	2/4/2014	Local Government	Earth	DONA ANA	6
DOMINGUEZ DAIRY POND DAM	4/29/2014	Private	-	DONA ANA	6
DONA ANA SITE 1	9/18/2013	Local Government	Earth	DONA ANA	6
DONA ANA SITE 2	9/18/2013	Local Government	Earth	DONA ANA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
F & A DAIRY WASTEWATER POND	10/5/2005	Private	Earth	DONA ANA	6
FILLMORE SITE 1 DAM	9/18/2013	Local Government	Earth	DONA ANA	6
FILLMORE SITE 2 DAM	10/28/2010	Local Government	Earth	DONA ANA	6
FILLMORE SITE 3 DAM	10/28/2010	Local Government	Earth	DONA ANA	6
GARDNER DAM	10/29/2013	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYO DAM NO. 1	4/22/2015	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYO DAM NO. 2	4/22/2015	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYO DAM NO. 6	4/21/2015	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYOS DAM NO. 3	2/3/2014	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYOS DAM NO. 4	2/3/2014	Local Government	Earth	DONA ANA	6
HATCH VALLEY ARROYOS DAM NO. 5	2/3/2014	Local Government	Earth	DONA ANA	6
KIGHT FLOOD CONTROL PROJECT	-	Private	Earth	DONA ANA	6
KIGHT FLOOD RETARD DAM	2/3/2014	Local Government	Earth	DONA ANA	6
LAS CRUCES DAM	3/17/2015	Local Government	Earth	DONA ANA	6
LAS UVAS DETENTION DAM #1	4/14/2008	Federal	Earth	DONA ANA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
LAS UVAS DETENTION DAM #5	4/15/2008	Federal	Earth	DONA ANA	6
LAS UVAS DETENTION DAM #6	6/16/2008	Federal	Earth	DONA ANA	6
LAUSON ARROYO FLOOD DETENTION DAM	10/29/2013	Local Government	Earth	DONA ANA	6
LEASBURG ARROYO DAM	10/24/2011	Local Government	Earth	DONA ANA	6
LEASBURG DIVERSION	8/30/2013	Federal	-	DONA ANA	6
LITTLE HALLA WILSON DAM	3/24/2010	Local Government	Earth	DONA ANA	6
LUCERO DETENTION DIKE	4/29/2014	Local Government	Earth	DONA ANA	6
MCCLERNON DAM	12/7/2011	Private	Earth	DONA ANA	6
MCLEAD FLOOD CONTROL DAM	11/2/2011	Local Government	Earth	DONA ANA	6
MESILLA DIVERSION	8/30/2013	Federal	-	DONA ANA	6
NORTH FORK DAM	12/7/2011	State	Earth	DONA ANA	6
PICACHO NORTH DAM	3/18/2014	Local Government	Earth	DONA ANA	6
PICACHO SOUTH DAM	3/18/2014	Local Government	Earth	DONA ANA	6
PORTER WHISENHUNT DAM	3/16/2015	Private	Earth	DONA ANA	6
RHODES ARROYO RETARD DAM	10/24/2011	Private	Earth	DONA ANA	6
SAND HILL ARROYO DAM	10/28/2013	Local Government	Earth	DONA ANA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SANTA TERESA DAM NO. 1	1/9/2007	Private	Earth	DONA ANA	6
SOUTH FORK DAM	12/7/2011	State	Earth	DONA ANA	6
SPRING CANYON DAM	2/5/2014	Local Government	-	DONA ANA	6
TORTUGAS SITE 1 DAM	9/18/2013	Local Government	Earth	DONA ANA	6
TORTUGAS SITE 2 DAM	9/18/2013	Local Government	Earth	DONA ANA	6
ARTESIA WASTEWATER RE-USE IRRIGATION POND 1	3/17/2014	Local Government	Earth	EDDY	1
AVALON	8/18/2015	Federal	Earth	EDDY	1
BRANTLEY	8/17/2015	Federal	-	EDDY	1
BRINE RECIRCULATION IMPOUNDMENT	-	Private	-	EDDY	1
CASS DRAW SITE 1 DAM	5/30/2013	Local Government	Earth	EDDY	1
CASS DRAW SITE 2 DAM	5/30/2013	Local Government	Earth	EDDY	1
COTTONWOOD-WALNUT SITE #8	4/1/2015	Local Government	Earth	EDDY	1
COTTONWOOD-WALNUT SITE #6	4/1/2015	Local Government	Earth	EDDY	1
EAGLE-TUMBLEWEED DRAW WATERSHED DAM	4/1/2015	Local Government	Earth	EDDY	1
EAST CATCHMENT BASIN DAM	-	Private	Earth	EDDY	1



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
HACKBERRY DRAW SITE NO. 1 DAM	3/31/2015	Local Government	Earth	EDDY	1
HACKBERRY DRAW SITE NO. 2 DAM	3/31/2015	Local Government	Earth	EDDY	1
INTREPID POTASH WEST PLANT DAM	3/2/2011	Private	Earth	EDDY	1
LOWER TANSIL DAM	3/17/2014	Local Government	Concrete	EDDY	1
MOSAIC POTASH CARLSBAD CLAY SETTLING DAM	3/2/2011	Private	Earth	EDDY	1
NORTH DYKE	-	Private	-	EDDY	1
NORTH WEST DYKE	-	Private	-	EDDY	1
SE STORM DRAINAGE DETENTION DAM	3/17/2014	Local Government	Earth	EDDY	1
SILVER LAKE	12/1/2015	Bureau of Indian Affairs	Earth	EDDY	1
SIX MILE POWER DAM	3/1/2011	Local Government	Gravity	EDDY	1
SOUTHWEST LAGUNA GRANDE DAM	3/17/2014	Private	Earth	EDDY	1
UPPER TANSIL DAM	3/17/2014	Local Government	Concrete	EDDY	1
BEAR CANYON DAM	6/19/2013	State	Earth	GRANT	6
BILL EVANS DAM	11/18/2014	Private	Earth	GRANT	6
CHINO MINES DAM NO. 3A	11/19/2014	Private	-	GRANT	6
CHINO MINES DAM NO. 8	9/23/2013	Private	Earth	GRANT	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
CHINO MINES DAM NO. 9	10/21/2009	Private	Earth	GRANT	6
CHINO MINES RESERVOIR NO. 17	9/19/2007	Private	Concrete	GRANT	6
CHINO MINES RESERVOIR NO. 4A	11/15/2005	Private	Concrete	GRANT	6
CHINO MINES RESERVOIR NO. 7 DAM	9/14/2011	Private	Earth	GRANT	6
CHINO MINES TAILINGS DAM NO. 4	11/19/2014	Private	Other	GRANT	6
CHINO MINES TAILINGS DAM NO. 6	11/19/2014	Private	Other	GRANT	6
CHINO MINES TAILINGS DAM NO. 7	11/19/2014	Private	Other	GRANT	6
COBRE MAIN TAILINGS DAM	9/24/2013	Private	Other	GRANT	6
COBRE STORMWATER CONTAINMENT SITE 1	8/9/2005	Private	Concrete	GRANT	6
COBRE STORMWATER CONTAINMENT SITE 2	8/9/2005	Private	Concrete	GRANT	6
COBRE STORMWATER CONTAINMENT SITE 3	8/9/2005	Private	Concrete	GRANT	6
JAMES CANYON DAM	10/14/2010	Private	Earth	GRANT	6
LAKE ROBERTS DAM	6/19/2013	State	Earth	GRANT	6
MAGNETITE TAILINGS DAM	9/24/2013	Private	Other	GRANT	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
UPPER GILA VALLEY SITE NO. 1 DAM	10/16/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 10 DAM	10/17/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 11 DAM	10/17/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 12 DAM	10/17/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 3 DAM	10/16/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 4 DAM	10/16/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 5 DAM	10/21/2009	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 6 DAM	10/16/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 7 DAM	10/16/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 8 DAM	10/17/2013	Local Government	Earth	GRANT	6
UPPER GILA VALLEY SITE NO. 9 DAM	10/17/2013	Local Government	Earth	GRANT	6
POWER LAKE DAM	11/5/2014	Local Government	-	GUADALUPE	1
RAILROAD DAM NO.1	11/5/2014	Local Government	-	GUADALUPE	1
RAILROAD DAM NO.2	11/5/2014	Local Government	-	GUADALUPE	1
SANTA ROSA DAM	4/17/2012	Federal	-	GUADALUPE	1
ABBOTT LAKE LOWER DAM	11/13/2013	Private	Earth	HARDING	2



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
ABBOTT LAKE UPPER DAM	11/14/2013	Private	-	HARDING	2
ANTELOPE CANYON DETENTION DAM	7/7/2009	Federal	Earth	HIDALGO	6
BANNER MILL TAILINGS DAM	3/26/2014	Private	Rockfill	HIDALGO	6
DAGGER DRAW DETENTION DAM 1	7/20/2015	Federal	Earth	HIDALGO	6
DAGGER DRAW DETENTION DAM 2	7/21/2015	Federal	Earth	HIDALGO	6
HORSESHOE TERRACE DETENTION DAM	7/22/2015	Federal	Earth	HIDALGO	6
LEE DETENTION	-	Federal	Earth	HIDALGO	6
LORDBURG WWTP MATURATION LAGOON DAM	11/28/2007	Local Government	Earth	HIDALGO	6
LORDBURG WWTP POND 1 DAM	11/28/2007	Local Government	Earth	HIDALGO	6
LORDBURG WWTP POND 2 DAM	3/26/2014	Local Government	Earth	HIDALGO	6
LORDBURG WWTP POND 3 DAM	3/26/2014	Local Government	Earth	HIDALGO	6
LORDBURG WWTP POND 6 DAM	11/28/2007	Local Government	Earth	HIDALGO	6
LORDBURG WWTP PRIMARY LAGOON DAM	11/28/2007	Local Government	Earth	HIDALGO	6
LORDBURG WWTP SECONDARY LAGOON DAM	11/28/2007	Local Government	Earth	HIDALGO	6
ROUND MOUNTAIN DETENTION DAM 3	7/20/2015	Federal	Earth	HIDALGO	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SECHO DETENTION DAM	7/22/2015	Federal	Earth	HIDALGO	6
STANFORD DETENTION DAM 1	7/21/2010	Federal	Earth	HIDALGO	6
STANFORD DETENTION DAM 2	8/25/2010	Federal	Earth	HIDALGO	6
STANFORD DETENTION DAM 3	7/15/2015	Federal	Earth	HIDALGO	6
STANFORD DETENTION DAM 4	7/15/2015	Federal	Earth	HIDALGO	6
TRI-STATE PYRAMID	2/14/2007	Public Utility	Earth	HIDALGO	6
CATCH BASIN	-	Private	-	LEA	1
HOBBS SE DETENTION DAM	2/16/1996	Local Government	Earth	LEA	1
HOBBS SOUTH DAL PASO DAM	2/16/1996	Local Government	Earth	LEA	1
ALTO LAKE DAM	8/26/2014	Local Government	Earth	LINCOLN	1
BONITO DAM	8/26/2014	Local Government	-	LINCOLN	1
GRINDSTONE CANYON DAM	8/26/2014	Local Government	RCC	LINCOLN	1
UPPER RIO HONDO SITE NO. 1 DAM	3/23/2011	Local Government	Earth	LINCOLN	1
LOS ALAMOS CANYON DAM	5/26/2015	Local Government	Earth	LOS ALAMOS	3
LUNA ENERGY FACILITY EVAPORATION PONDS 1 & 2	8/26/2014	Private	Earth	LUNA	6
MILLER GIBSON DAM #1	11/24/2009	Federal	Earth	LUNA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
PALOMAS #7	-	Federal	Earth	LUNA	6
PALOMAS DRAW DENTENTION DAM #9	-	Federal	Earth	LUNA	6
PALOMAS RED HILL DETENTION	7/7/2009	Federal	Earth	LUNA	6
STARVATION DRAW DETENTION DAM #2	6/27/2012	Federal	Earth	LUNA	6
STARVATION DRAW DETENTION DAM #3	-	Federal	Earth	LUNA	6
STARVATION DRAW DETENTION DAM #4	2/11/2009	Federal	Earth	LUNA	6
STARVATION DRAW DETENTION DAM #5	2/11/2009	Federal	Earth	LUNA	6
ASAAYI	9/26/2012	Federal	Earth	MCKINLEY	4
BLACK ROCK	8/28/2012	Federal	Earth	MCKINLEY	4
ESCALANTE GENERATING STATION BOTTOM ASH POND DAM	6/3/2014	Public Utility	Earth	MCKINLEY	4
ESCALANTE GENERATING STATION COAL YARD RUNOFF RETE	6/3/2014	Public Utility	Earth	MCKINLEY	4
ESCALANTE GENERATING STATION EVAPORATION POND 5	6/3/2014	Public Utility	Earth	MCKINLEY	4
ESCALANTE GENERATING STATION EVAPORATION PONDS 1-4	7/30/2007	Public Utility	Earth	MCKINLEY	4



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
ESCALANTE GENERATING STATION RAW WATER STORAGE DAM	6/3/2014	Public Utility	Earth	MCKINLEY	4
GALLUP SPORTS COMPLEX DETENTION DAM	11/28/2007	Local Government	Earth	MCKINLEY	4
KERR-MCGEE STORAGE DAM	6/24/2013	Private	Earth	MCKINLEY	4
MCGAFFEY LAKE DAM	4/30/2015	State	Earth	MCKINLEY	4
MOSQUITO DAM	4/28/2011	Federal	Earth	MCKINLEY	4
PESCADO	8/28/2012	Federal	Earth	MCKINLEY	4
PLAINS-ESCALANTE GENERATING STATION	7/8/2003	Public Utility	Earth	MCKINLEY	4
RAMAH DAM	4/30/2015	Local Government	Earth	MCKINLEY	4
RED LAKE	3/14/2012	Federal	Earth	MCKINLEY	4
SAN LUCAS DAM	5/21/2013	Private	Earth	MCKINLEY	4
TRAPPED ROCK	8/28/2012	Federal	Earth	MCKINLEY	4
BERLIER RESERVOIR DAM	6/4/2013	Private	Earth	MORA	2
HORSE LAKE DAM	11/13/2014	Private	Earth	MORA	2
LA CUEVA DAM NO. 1	11/13/2014	Private	Earth	MORA	2
MORPHY LAKE DAM	6/26/2013	Local Government	Earth	MORA	2



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
RED LAKE LA CUEVA DAM NO. 2	11/13/2014	Private	Earth	MORA	2
EAGLE CREEK NO. 1	6/13/2012	Federal	-	OTERO	6
LA LUZ-FRESNAL EAST RESERVOIR	6/3/2015	Local Government	Earth	OTERO	6
LA LUZ-FRESNAL NORTH & SOUTH RESERVOIRS	6/3/2015	Local Government	Earth	OTERO	6
LAKE MESCALERO	6/13/2012	Federal	Earth	OTERO	6
SILVER LAKE	6/13/2012	Federal	Earth	OTERO	6
UPPER PENASCO SITE 1	5/9/2012	Local Government	Earth	OTERO	6
UPPER PENASCO SITE 2	6/3/2015	Local Government	Earth	OTERO	6
UPPER PENASCO SITE 3A	6/3/2015	Local Government	Earth	OTERO	6
HITTSOON CREEK DAM	11/5/2014	Private	Earth	QUAY	1
QUAY COUNTY DAM (MORRIS)	4/10/1991	Private	Earth	QUAY	1
UTE DAM	1/7/2015	State	Earth	QUAY	1
ABIQUIU DAM	8/19/2013	Federal	Earth	RIO ARRIBA	3
CROWLEY IRRIGATION SYSTEM	6/12/2013	Private	Earth	RIO ARRIBA	3
DULCE	7/11/2012	Federal	Earth	RIO ARRIBA	3
DWIGHT BAKER DAM	3/21/2014	Private	Earth	RIO ARRIBA	3



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
EL VADO	7/30/2015	Federal	-	RIO ARRIBA	3
FORT HERON PRESERVE PHASE I DAM	6/12/2013	Private	Earth	RIO ARRIBA	3
FORT HERON PRESERVE PHASE II DAM	6/12/2013	Private	Earth	RIO ARRIBA	3
FOURTH OF JULY	7/11/2012	Federal	Earth	RIO ARRIBA	3
GRADY HAMILTON	7/11/2012	Federal	Earth	RIO ARRIBA	3
HERON	7/20/2015	Federal	-	RIO ARRIBA	3
HERON DIKE	7/20/2015	Federal	Earth	RIO ARRIBA	3
HOPEWELL LAKE DAM	5/15/2014	State	Earth	RIO ARRIBA	3
LA JARA	7/11/2012	Federal	Earth	RIO ARRIBA	3
LA MESILLA SITE 1 DAM	4/18/2014	Local Government	Earth	RIO ARRIBA	3
LA TIERRA GRANDE DAM	5/15/2014	Private	Earth	RIO ARRIBA	3
LAGUNA DEL CAMPO DAM	6/10/2015	State	Earth	RIO ARRIBA	3
LOWER MUNDO	7/12/2012	Federal	Earth	RIO ARRIBA	3
PAPPAWS	7/12/2012	Federal	Earth	RIO ARRIBA	3
PINE TREE	7/12/2012	Federal	Earth	RIO ARRIBA	3
SAN GREGORIO DAM	5/15/2014	Local Government	Earth	RIO ARRIBA	3



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SANTA CRUZ SITE 1 DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SANTA CRUZ SITE 2G DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SANTA CRUZ SITE 3 DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SANTA CRUZ SITE 3A DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SANTA CRUZ SITE 4 DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SANTA CRUZ SITE 5 DAM	11/15/2013	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN BM 1 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 18 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 2 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 3 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 4 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 5 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
SEBASTIAN MARTIN SITE 6 DAM	3/6/2014	Local Government	Earth	RIO ARRIBA	3
STONE LAKE	7/12/2012	Federal	Earth	RIO ARRIBA	3
APS ASH POND TAILINGS DAM NO. 3	10/23/2013	Public Utility	Earth	SAN JUAN	4



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
APS ASH POND TAILINGS DAM NO. 6	10/23/2013	Public Utility	Earth	SAN JUAN	4
APS LINED ASH IMPOUNDMENT	10/23/2013	Public Utility	Earth	SAN JUAN	4
APS LINED DECANT WATER POND	10/23/2013	Public Utility	Earth	SAN JUAN	4
AZTEC RAW WATER RESERVOIR NO. 1	9/10/2009	Local Government	Earth	SAN JUAN	4
AZTEC RAW WATER RESERVOIR NO. 2	9/10/2009	Local Government	Earth	SAN JUAN	4
BLANCO RESERVOIR DAM	6/10/2015	Private	Earth	SAN JUAN	4
BLOOMFIELD DAM NO. 1	11/19/2014	Local Government	Earth	SAN JUAN	4
BOLACK NO 1 DAM	11/11/2013	Private	Earth	SAN JUAN	4
CAPTAIN TOM	10/31/2012	Federal	Earth	SAN JUAN	4
CUTTER	2/1/2012	Federal	Earth	SAN JUAN	4
EL PASO NATURAL GAS DAM NO. 5	2/15/2011	Local Government	Earth	SAN JUAN	4
FARMINGTON CITY RESERVOIR	9/10/2009	Local Government	Earth	SAN JUAN	4
FARMINGTON LAKE DAM	2/9/2015	Local Government	Earth	SAN JUAN	4
JACKSON LAKE DAM	11/19/2014	State	Earth	SAN JUAN	4
KOCH EVAPORATION POND	5/7/2007	Private	Earth	SAN JUAN	4
KOCH EVAPORATION POND 2	5/7/2007	Private	Earth	SAN JUAN	4



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
LEE/HAMMOND WATER TREATMENT POND	11/19/2014	Local Government	Earth	SAN JUAN	4
LOWER VALLEY RAW WATER STORAGE DAM	4/29/2009	Local Government	Earth	SAN JUAN	4
MARTIN ARROYO DAM	2/9/2015	Local Government	Earth	SAN JUAN	4
MORGAN LAKE DAM	11/20/2014	Public Utility	Earth	SAN JUAN	4
NAGEEZI DAM	4/25/2011	Federal	Earth	SAN JUAN	4
NORTH STAR RAW WATER STORAGE DAM	11/19/2014	Private	Earth	SAN JUAN	4
SAN JUAN NORTH POND 1	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN NORTH POND 2	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN NORTH POND 3	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN POWER GENERATION DAM	11/20/2014	Public Utility	Earth	SAN JUAN	4
SAN JUAN SOUTH POND 1	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN SOUTH POND 2	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN SOUTH POND 3	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN SOUTH POND 4	2/7/2013	Public Utility	Earth	SAN JUAN	4
SAN JUAN SOUTH POND 5	2/7/2013	Public Utility	Earth	SAN JUAN	4
THIRTIETH STREET DAM	2/9/2015	Local Government	Earth	SAN JUAN	4



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
TODACHEENE	4/14/2012	Federal	Earth	SAN JUAN	4
NAVAJO	7/16/2015	Federal	Earth	SAN JUAN, RIO ARRIBA	3 & 4
ARAGON DAM	1/23/2013	Private	Earth	SAN MIGUEL	2
BRADNER DAM	9/24/2014	Local Government	Earth	SAN MIGUEL	2
CONCHAS DAM	5/5/2015	Federal	-	SAN MIGUEL	2
CORRALITAS DAM	1/23/2013	Private	Earth	SAN MIGUEL	2
LAKE ISABEL DAM	5/3/2011	Private	Earth	SAN MIGUEL	2
PECOS ARROYO WATERSHED SITE 1	6/26/2013	Local Government	Earth	SAN MIGUEL	2
PETERSON DAM	9/24/2014	Local Government	Arch	SAN MIGUEL	2
SINK HOLE GAP RESERVOIR	2/18/2015	Private	Earth	SAN MIGUEL	2
STORRIE DAM	9/24/2014	Private	Earth	SAN MIGUEL	2
ALAMOS DETENTION DAM	-	Federal	Earth	SANDOVAL	5
BEAR PAW LAKE NO 7 DAM	6/16/2010	Private	Earth	SANDOVAL	5
BIG ISLAND DAM	-	Federal	Earth	SANDOVAL	5
CALLADITO DET DAM	-	Federal	Earth	SANDOVAL	5
CANADA CORRALES DAM	-	Federal	Earth	SANDOVAL	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
CENTER DETENTION DAM	-	Federal	Earth	SANDOVAL	5
CHIMNEY DETENTION DAM	-	Federal	Earth	SANDOVAL	5
COCHITI LAKE	11/10/2011	Federal	Earth	SANDOVAL	5
CORRALES HEIGHTS DAM	7/2/2013	Local Government	Earth	SANDOVAL	5
COUNTY LINE DAM	-	Federal	Earth	SANDOVAL	5
ENCHANTED HILLS DETENTION DAM NO. 1	7/9/2013	Local Government	Earth	SANDOVAL	5
ENCHANTED HILLS DETENTION DAM NO. 2	12/18/2007	Private	Earth	SANDOVAL	5
ENCINO DET DAM 049	11/5/2010	Federal	Earth	SANDOVAL	5
ENCINO DET DAM 083	-	Federal	Earth	SANDOVAL	5
ENCINO DETENTION DAM NO. 40	11/6/2010	Federal	Earth	SANDOVAL	5
FENTON LAKE DAM	5/20/2015	State	Earth	SANDOVAL	5
HATCH RESERVOIR DAM	5/20/2015	Private	Earth	SANDOVAL	5
JEMEZ CANYON DAM	7/14/2010	Federal	Earth	SANDOVAL	5
LOWER VALLECITO DAM	5/20/2015	Local Government	Earth	SANDOVAL	5
MINUTE DAM	4/28/2011	Federal	Earth	SANDOVAL	5
MONTOYAS ARROYO SPORTSPLEX DAM	7/2/2013	Local Government	Earth	SANDOVAL	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
NANAKA	8/15/2012	Federal	Earth	SANDOVAL	5
PIN DEE	8/15/2012	Federal	Earth	SANDOVAL	5
PINON CANYON DAM 4	-	Federal	Earth	SANDOVAL	5
PINON CANYON DAM 6	-	Federal	Earth	SANDOVAL	5
PONDEROSA IRRIGATION RESERVOIR NO. 2 DAM	7/19/2007	Local Government	Earth	SANDOVAL	5
RIO PUERCO DET DAM 130	-	Federal	Earth	SANDOVAL	5
RIO PUERCO DET DAM 132	-	Federal	Earth	SANDOVAL	5
RIO PUERCO DETENTION DAM #8	-	Federal	Earth	SANDOVAL	5
RIO RANCHO URBAN POND NO. 4 DAM	12/18/2007	Local Government	Earth	SANDOVAL	5
ROUND VALLEY DET DAM	-	Federal	Earth	SANDOVAL	5
RSN DETENTION DAM 40	12/10/2010	Federal	Earth	SANDOVAL	5
RSN DETENTION DAM 43	12/11/2010	Federal	Earth	SANDOVAL	5
SAN FRANCISCO	8/23/2012	Federal	Earth	SANDOVAL	5
SANDIA MOUNTAIN SITE NO. 1 DAM	8/21/2013	Local Government	Earth	SANDOVAL	5
SANDIA PUEBLO 82-1	8/24/2012	Federal	Earth	SANDOVAL	5



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SANDIA PUEBLO 82-2	8/24/2012	Federal	Earth	SANDOVAL	5
SANDIA PUEBLO 82-3	8/24/2012	Federal	Earth	SANDOVAL	5
SANDIA PUEBLO 82-4	8/24/2012	Federal	Earth	SANDOVAL	5
SANTA ANA	8/24/2012	Federal	Earth	SANDOVAL	5
TREE FARM POND A DAM	12/18/2007	Local Government	Earth	SANDOVAL	5
TSCHICOMA	8/15/2012	Federal	Earth	SANDOVAL	5
WATER TANK	8/23/2012	Federal	-	SANDOVAL	5
WEINPOVI	8/15/2012	Federal	Earth	SANDOVAL	5
GALISTEO DAM	11/14/2012	Federal	Earth	SANTA FE	3
KINSELL RESERVOIR DAM	5/10/2011	Private	Earth	SANTA FE	3
LAS CAMPANAS DAM 18E	11/9/2009	Private	Earth	SANTA FE	3
LAS CAMPANAS EFFLUENT STORAGE POND	11/9/2009	Private	Earth	SANTA FE	3
MCCLURE DAM	5/15/2015	Local Government	Earth	SANTA FE	3
NAMBE FALLS	7/29/2015	Federal	-	SANTA FE	3
NICHOLS DAM	5/15/2015	Local Government	Earth	SANTA FE	3
SANTA CRUZ DAM	5/15/2015	Local Government	-	SANTA FE	3



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SANTA CRUZ SITE 6	-	Local Government	Earth	SANTA FE	3
SANTA CRUZ SITE 6 DAM	11/15/2013	Local Government	Earth	SANTA FE	3
TESUQUE	6/16/2012	Federal	Earth	SANTA FE	3
BARTOO DAM	11/9/2011	Local Government	Earth	SIERRA	6
CABALLO	5/5/2015	Federal	-	SIERRA	6
CABALLO ARROYO DAM NO. 1	6/2/2015	Local Government	Earth	SIERRA	6
COPPER FLATS TAILINGS DAM	3/25/2014	Private	Earth	SIERRA	6
COUNTY LINE DETENTION DAM	6/2/2015	Local Government	Earth	SIERRA	6
CUCHILLO-NEGRO DAM	3/4/2015	Local Government	-	SIERRA	6
ELEPHANT BUTTE	5/6/2015	Federal	-	SIERRA	6
ELEPHANT BUTTE DIKE	8/8/2014	Federal	-	SIERRA	6
GREEN CANYON DAM	6/2/2015	Local Government	Earth	SIERRA	6
IRON MOUNTAIN DETENTION DAM	-	Federal	Earth	SIERRA	6
MARIE STREET DAM	3/4/2015	Local Government	Earth	SIERRA	6
PERCHA ARROYO DIVERSION	5/5/2015	Federal	Earth	SIERRA	6
PERCHA DIVERSION	8/30/2013	Federal	-	SIERRA	6



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SIBLEY GREEN SITE 4	6/2/2015	Local Government	Earth	SIERRA	6
SIBLEY GREEN SITE 5	2/4/2014	Local Government	Earth	SIERRA	6
ST. ANNE'S DAM	3/4/2015	Local Government	Earth	SIERRA	6
T OR C SITE 8C DAM	6/2/2015	Local Government	Earth	SIERRA	6
FLANDERS DETENTION DAM	2/12/2011	Federal	Earth	SOCORRO	5
HEMENWAY DAM	12/9/2008	Private	Earth	SOCORRO	5
INDIO LOCO DETENTION DAM	2/11/2011	Federal	Earth	SOCORRO	5
PJ #6 DETENTION DAM	2/13/2011	Federal	Earth	SOCORRO	5
BEAVER PARK DAM NO 1	5/9/2008	Private	Earth	TAOS	3
BEAVER PARK DAM NO 2	5/9/2008	Private	Earth	TAOS	3
CABRESTO DAM	6/8/2015	Local Government	Earth	TAOS	3
CARSON DAM	4/18/2014	Private	Earth	TAOS	3
CERRO DAM	5/7/2009	Local Government	Earth	TAOS	3
COSTILLA DAM	6/8/2015	Private	Earth	TAOS	3
QUESTA TAILINGS DAM 1	5/27/2014	Private	Earth	TAOS	3
QUESTA TAILINGS DAM 4	5/27/2014	Private	Earth	TAOS	3



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
RC&D PROJECT MEASURE 83 DAM	3/19/2014	Local Government	Earth	TAOS	3
TALPA IRRIGATION DAM	6/1/2011	Private	Earth	TAOS	3
MESCALERO RESERVOIR DAM	2/8/2012	Local Government	Earth	TORRANCE	5
BROWN RESERVOIR DAM	8/13/2013	Private	Earth	UNION	2
CLAUDE HUTCHERSON NO. 1 DAM	11/19/2002	Private	Earth	UNION	2
CLAUDE HUTCHERSON NO. 2 DAM	11/19/2002	Private	Earth	UNION	2
CLAUDE HUTCHERSON NO. 3 DAM	11/19/2002	Private	Earth	UNION	2
CLAUDE HUTCHERSON NO. 4 DAM	11/19/2002	Private	Earth	UNION	2
CLAUDE HUTCHERSON NO. 5 DAM	11/19/2002	Private	Earth	UNION	2
CLAYTON DAM	9/4/2014	State	Earth	UNION	2
EKLUND STORAGE WORKS DAM	6/4/2013	Private	Earth	UNION	2
GARDNER DAM	10/23/2013	Private	Earth	UNION	2
HOWARD ROBERTSON DAM	10/23/2013	Private	Earth	UNION	2
POLING EROSION CONTROL DAM	10/22/2013	Private	Earth	UNION	2
POLING IRRIGATION SYSTEM DAM	10/22/2013	Private	Earth	UNION	2
SMITHSON RESERVOIR NO. 1	6/16/2015	Private	Earth	UNION	2



Dam Name	Inspection Date	Owner Type	Dam Type	County	Preparedness Area
SMITHSON RESERVOIR NO. 2	3/31/2010	Private	Earth	UNION	2
SMITHSON RESERVOIR NO. 3	6/16/2015	Private	Earth	UNION	2
SMITHSON RESERVOIR NO. 4	6/16/2015	Private	Earth	UNION	2
SNYDER LAKE DAM	9/4/2014	Private	Earth	UNION	2
TRAMPEROS CREEK NO. 2 DAM	10/22/2013	Local Government	Earth	UNION	2
TRAMPEROS CREEK SITE 1 DAM	10/22/2013	Local Government	Earth	UNION	2
WEATHERLY RESERVOIR DAM	9/4/2014	Private	Earth	UNION	2
BADGER DETENTION DAM	2/15/2011	Federal	Earth	VALENCIA	5
HOUSTON ARROYO DAM	2/16/2015	Private	Earth	VALENCIA	5
LOS MORROS BUSINESS PARK OFFSITE DRAINAGE DAM 5	8/14/2013	Local Government	Earth	VALENCIA	5



1.2. Flood/Flash Floods

Figure 1-2 Significant Past Occurrences of Flood/Flash Flood by Date

Date	Location	Significant Event
October 2017	Silver City, Grant County (Preparedness Area 6)	A Silver City couple died after their vehicle was swept away in a flash flood on 19th Street in October 2017 in the early morning as they were crossing San Vicente Arroyo. Areas around Silver City had picked up one to three inches of rain, causing high water flows in the arroyo. The couple drove onto 19th Street and into the fast-moving water crossing 19th Street at the arroyo and was washed south about one-tenth of a mile to the Silver Heights/U.S. 180 East Bridge. Officials had to wait until the high water receded before attempting to a search because of danger to rescue personnel.
September 15-26, 2014	Eddy, Lincoln, Lea County (Preparedness Area 1) Colfax, San Miguel County (Preparedness Area 2) Santa Fe County (Preparedness Area 3) Otero, Sierra County (Preparedness Area 6)	Remnants of Hurricane Odile brought record rainfall to southeastern New Mexico over four days, causing extensive flooding and dangerous flash floods to the region. Some areas received more than one inch of rain in less than half a day. In Luna County, Sheriff’s deputies saved a 78-year-old motorist after his vehicle was swept away by a strong current of floodwater. Deming logged a 30-year record for September rainfall, with nearly five inches from the storm in a month that typically averages little more than one inch. Extensive flood damage required closing Highway 152 indefinitely for repairs. Severe flooding hit the oil and gas country of Eddy County, which saw between one and five inches of rain in different areas. A surging stream trapped two Texas oilfield workers on their way home from work, killing one of them. Tansil Dam saw a rise in water of 1.5 feet in only 10 minutes. Lea County Highway 176 and 248 were closed due to flooding after heavy rain fell across the county. Property damages exceeded \$90 million. La Uñion and Berino had flooded roads. Three families were flooded out of their homes. A train car waiting for water to recede from the tracks prompted a hazardous materials response in Rincon.



Date	Location	Significant Event
July 27 – August 5, 2014	Guadalupe, Lincoln County (Preparedness Area 1) San Miguel County (Preparedness Area 2) Rio Arriba County (Preparedness Area 3) Sandoval County (Preparedness Area 5) Otero County (Preparedness Area 6)	<p>Severe thunderstorms sparked floods in Albuquerque’s South Valley and portions of eastern New Mexico over several days. Damage was widespread, affecting multiple jurisdictions. DR-4197 was declared on October 6, 2014, for recovery efforts in the areas affected by severe storms and flooding in New Mexico from July 27 to August 5, 2014. In Sandoval County rapid runoff from an estimated two to four inch downpour resulted in a breached levee that flooded several homes across from the Algodones fire station. A water-conveyance channel was overtopped, causing water to flow over service roads just west of the Santa Clara Pueblo. A berm in Santa Fe estimated to be four or five feet high was completely washed out along an arroyo. Heavy rains washed out two roads near Navajo Dam in San Juan County. Five to six feet of water from the Alamogordo Creek drained over Highway 156, stripping off pavement in Guadalupe County. Three to four feet of water drained over Highway 84 in De Baca County, making it impassable. In Catron County at least two roads were washed out near Beaverhead from heavy rainfall. Property damages exceeded \$8.5 million.</p>
September 2013	Colfax County (Preparedness Area 2) Bernalillo, Sandoval, Socorro Counties and Cochiti, Santa Domingo, San Felipe, Sandia Pueblos (Preparedness Area 5) Luna County (Preparedness Area 6)	<p>A stationary upper level low pressure system that settled into the Great Basin around the 10th provided a steady stream of near record subtropical atmospheric moisture over New Mexico. At least four back-to-back upper level disturbances pushed north and east across the region and interacted with the monsoon moisture plume through the 14th to produce widespread historic rainfall amounts. Significant flooding impacted the state as rainfall amounts over this five-day period averaged three to six inches and in some areas just over 10 inches. Several river gauges reported record to near record crests and in a couple cases gauges were completely destroyed. Emergency management reported disastrous impacts to residential, commercial, and transportation infrastructure. A total of 14 counties, four cities and towns, five pueblos, and the Navajo Nation were included in a State-wide and Presidential disaster declaration. The New Mexico State EOC was staffed at Level 2 operations for several days. Damages from this widespread historic rainfall event for northern and central New Mexico likely exceeded 10 million dollars.</p>



Date	Location	Significant Event
August 24, 2012	Lincoln County (Preparedness Area 1) Los Alamos and Santa Clara Pueblo (Preparedness Area 3) Sandoval County (Preparedness Area 5) Mescalero Apache (Preparedness Area 6)	<p>FEMA-DR- 4079 was declared on August 24, 2012 for emergency work and repair/replacement of facilities damaged by the flooding in Lincoln County, Sandoval County and the Pueblo of Santa Clara The flooding occurred during the period of June 22 to July 12, 2012. Los Alamos County and Mescalero Apache were added to the Declaration at a later date.^{52F¹}</p> <p>Early monsoon rains provided an initial moisture surge impacting parts of the State June 20 through 22, 2012. Moisture spread into western New Mexico on June 21, giving the Albuquerque to Belen corridor (Preparedness Area 5) around one half to three quarters of an inch of rain. Additionally, heavy rain and flash flooding impacted the Little Bear and Whitewater Baldy burn scars on June 22 (Preparedness Area 6). A much more significant and sustained monsoon burst developed on July 2' 2012 and peaked July 5 and 6, 2012 before weakening July 11, 2012.^{53F²}</p>
August 12, 2012	Thoreau, NM (Preparedness Area 4)	<p>A backdoor cold front pushed across the State from the northeast corner through the gaps of the central mountain chain and continued westward to the Arizona border. This front in combination with rich low level Gulf of Mexico moisture and mid- level monsoon moisture created a very unstable atmosphere. Precipitable water values were nearly 150% of normal across much of the State. Slow storm movement and repeated development of storms over the same general areas led to flash flooding in western New Mexico. Flooding was reported into Thoreau Baptist Church, Giant Gas Station, Thoreau Chapter House as well as multiple other businesses and six homes. Several bridges and roads were also washed over with debris, including State roads 118, 371 and 612 and county roads 61, 27, 51, and Castle Rock.</p>

¹ Source: <http://www.fema.gov/pdf/news/pda/4047.pdf>

² Source: National Weather Service – Albuquerque, 2012 Monsoon Season Summary



Date	Location	Significant Event
November 23, 2011	Pueblo of Santa Clara (Preparedness Area 3) Cibola County and Pueblo of Acoma (Preparedness Area 4) Sandoval County (Preparedness Area 5)	FEMA-DR- 4047 was declared for emergency work and repair/replacement of facilities damaged by the flooding in Cibola County, Sandoval County, the Pueblo of Acoma and the Pueblo of Santa Clara. The flooding occurred during the period of August 19-24, 2011. ³
August 22, 2011	Cochiti Pueblo (Preparedness Area 5)	For the second day in a row, the southern portions of the Las Conchas burn scar was inundated with heavy rains as weak disturbances continued to round the western periphery of the upper high. Though storm coverage was less than on the 21st, slow storm motions resulted in significant impacts. Cochiti Canyon sustained the brunt of the flooding and damage as over 2 inches of rain fell on the headwaters. During the damage survey of the previous days flooding, abundant rain above Cochiti Canyon resulted in another, more devastating flood, to Dixon's Apple Orchard which was witness first hand by the NWS Albuquerque Warning Coordination Meteorologist. The force of the flow was estimated to be 3 times as that of the previous days flood. At least 10 feet high, the width of the flood waters was approximately 100 yards wide. 20 to 40 percent more of the apple orchard was destroyed. Also, the main storage building that sustained damage in the previous days flood was wiped completely off its foundation. The semi-truck that moved 200 yards before, was washed downstream and ended up in the Cochiti Lake Reservoir in pieces. Property damage costs totaled \$3M.

³ Source: <http://www.fema.gov/pdf/news/pda/4047.pdf>



Date	Location	Significant Event
August 21, 2011	Frijoles, NM (Preparedness Area 5)	<p>The first day of flash flooding over the Las Conchas burn scar was widespread. Early in the afternoon, showers and thunderstorms developed over the central and northern portions of the burn scar. These storms generally produced one to two inches of rainfall. Later in the afternoon and early evening, even stronger and very slow moving storms developed across the southern portions of the burn scar. Flash flooding was reported with each of these storms. The storms moved eastward over Santa Fe in the evening and produced additional flooding. Major flash flooding ensued causing damage in and around Bandelier National Monument. Two barrier walls around the Visitors Center were overtopped and the septic system lift station was inundated with water. Major flooding was also reported in Peralta Canyon. Damage was reported to the access road as well as other local roads.</p> <p>Along and downstream of Cochiti Canyon sustained the most damage from flood waters. Flows were reported to be eight to 10 feet high when they reached Dixon's Apple Orchard. The flood waters damaged the owners personal residence, inundated the main storage facility with 10 feet of mud and debris, moved a semi-truck approximately 200 yards and destroyed approximately 10 percent of the apple orchard. The water also wiped out a 50 yard long four foot by four foot rock retaining wall that was built in 1942. Property damage was reported to be \$3.75M and crop damage was \$1M.</p>
August 21, 2011	Los Alamos, NM (Preparedness Area 3)	<p>The first day of flash flooding over the Las Conchas burn scar was widespread as weak upper level disturbances rounded the west side of the upper high. Early in the afternoon, showers and thunderstorms developed over the central and northern portions of the burn scar. These storms generally produced one to two inches, even stronger and very slow moving storms developed across the southern portions of the burn scar. Radar estimated three to four inches of rain across a widespread area. Flash flooding was reported with each of these storms. The storms moved eastward over Santa Fe in the evening, and produced additional flooding. After one to 1.5 inches of rain fell on the northern portion of the Las Conchas burn scar, flash flooding was reported in Santa Clara Canyon. Four people that were working in the canyon had to be rescued by helicopter. Total reported property damage was \$6M.</p>



Date	Location	Significant Event
August 14, 2008	<p>Navajo Nation</p> <p>Guadalupe and Lincoln Counties (Preparedness Area 1)</p> <p>Harding, Mora and San Miguel Counties (Preparedness Area 2)</p> <p>Rio Arriba and Taos Counties (Preparedness Area 3)</p> <p>Cibola and McKinley Counties (Preparedness Area 4)</p> <p>Sandoval, Socorro, Torrance and Valencia Counties (Preparedness Area 5)</p> <p>Doña Ana, Grant, Hildago, Luna, Otero and Sierra Counties (Preparedness Area 6)</p>	<p>Severe storms and flooding between July 26 and Sept. 18, 2006 led to DR 1659. In the 500-yr event, one storm in particular dropped about an inch and a half of rain in 40 minutes over Marble Canyon, which drains into eastern Alamogordo. Roads along the eastern heights turned into raging torrents and mud flowed into numerous houses and apartments when an arroyo overflowed in Hatch, NM. An apartment complex was condemned and 150+ families were evacuated. The Rio Grande River reached a stage of 9.3 feet, the highest in 50 years. The Navajo Nation (where two deaths occurred) and 19 counties were declared eligible for public assistance funds including: Cibola, Doña Ana, Grant, Guadalupe, Harding, Hidalgo, Lincoln, Luna, McKinley, Mora, Otero, Rio Arriba, Sandoval, San Miguel, Sierra, Socorro, Taos, Torrance and Valencia. Federal funding for this disaster exceeds \$20 million. 55F⁴</p>
May 23, 2007	<p>Luna County Sierra County Doña Ana County (Preparedness Area 6)</p> <p>San Juan County (Preparedness Area 4)</p> <p>Rio Arriba County Las Alamos County (Preparedness Area 3)</p> <p>Sandoval County (Preparedness Area 5)</p>	<p>Federal disaster funds were authorized for this event (FEMA-1301) in September 1999 to help communities recover from the floods in Luna, Sierra, Doña Ana, San Juan, Rio Arriba, Los Alamos, Sandoval, and Mora Counties.</p>

⁴ Source: New Mexico Storms and Flooding– FEMA- 1783-DR." <http://www.fema.gov/pdf/news/pda/1783.pdf>. Federal Emergency Management Agency, 14 Aug. 2008. Web. 13 May 2010. <http://www.fema.gov/pdf/news/pda/1783.pdf>



Date	Location	Significant Event
July 26 through September 18, 2006	Southern Sacramento Mountains, Alamogordo, Hatch, 19 Counties (Preparedness Areas 1, 2, 3, 4, 5, and 6)	<p>Disaster Declaration FEMA 1659. In what was determined to be a 500-yr event, strong thunderstorms developed over the southern Sacramento Mountains and along the eastern heights of Alamogordo. One storm in particular dropped about an inch and a half of rain in 40 minutes over Marble Canyon, which drains into eastern Alamogordo. Roads along the eastern heights turned into raging torrents, which flowed westward into the center of town. The entire city of Hatch was flooded and mud flowed into numerous houses and apartments, when an arroyo overflowed.</p> <p>The entire apartment complex was condemned and 150+ families were evacuated. The Rio Grande River reached a stage of 9.3 feet, the highest in 50 years. The Navajo Nation (where two deaths occurred) and 19 counties were declared eligible for public assistance funds including: Cibola, Doña Ana, Grant, Guadalupe, Harding, Hidalgo, Lincoln, Luna, McKinley, Mora, Otero, Rio Arriba, Sandoval, San Miguel, Sierra, Socorro, Taos, Torrance and Valencia. Doña Ana and Otero counties were declared for Individual Assistance. Federal funding exceeded \$20 million.⁵</p>
April 2004	Bernalillo County (Preparedness Area 5) Eddy County (Preparedness Area 1) Mora County San Miguel County (Preparedness Area 2)	Heavy thunderstorms caused flash flooding in several areas of the State. This flooding led to Federal disaster (FEMA-1514) funds being authorized for four counties (Bernalillo, Eddy, Mora, and San Miguel). Damage costs for this event were approximately \$5.8 million.
July 2, 2001	Los Alamos County (Preparedness Area 3)	A storm with heavy rain of one to two inches in an hour developed over Pueblo Canyon on the west edge of Los Alamos. Storm runoff from the burned forest was brief, but intense with water and mudflows estimated at 1,500 cubic feet per second, which overwhelmed the inlet structure west of North Road and then breached the street 60 feet above. A 150-yard section of road surface was destroyed and one of the city's main sewer lines was undercut and then broken. Debris filled the basements of at least five homes along Alabama Avenue. The total damage estimate for this event was \$3.5 million.

⁵ Source: <http://www.fema.gov/pdf/news/pda/1783.pdf>



Date	Location	Significant Event
May 23, 2001	Luna County Sierra County Doña Ana County (Preparedness Area 6) San Juan County (Preparedness Area 4) Rio Arriba County Las Alamos County (Preparedness Area 3) Sandoval County (Preparedness Area 5)	Federal disaster funds were authorized for this event (FEMA-1301) in September 1999 to help communities recover from the floods in Luna, Sierra, Doña Ana, San Juan, Rio Arriba, Los Alamos, Sandoval, and Mora Counties.
July 29, 1999	Rio Rancho, NM Sandoval County (Preparedness Area 5)	A flash flood event from heavy rain of two inches in about two hours caused road and soil erosion in northern Rio Rancho. No injuries were reported, but residents in some of the newer or remote subdivisions on the far north edge of the city were stranded after numerous dirt roads and low water arroyo crossings were washed out. Some roads became gullies four feet deep and 14 feet wide. The area around the city landfill, along with Waste Water Treatment Plant #2, suffered heavily, with two miles of roads isolated by at least five deep cuts. Damage costs were estimated at \$1 million.
June 16, 1999	Albuquerque, NM Bernalillo County (Preparedness Area 5)	Heavy rains up to two inches in a 45-minute period flooded streets and dry arroyos across northern Albuquerque. Over 100 new automobiles on a dealer lot were flooded by rapidly rising water. Poor or clogged drainage was partially to blame for these losses. The total losses were estimated at \$1.2 million.
July 28, 1994	Las Cruces Doña Ana County (Preparedness Area 6)	Heavy rains up to three inches produced flooding in several businesses, an apartment complex, and a church day care center. Property damage was estimated at \$5 million.



Figure 1-3 State Disaster Flood Event History (2003 – 2018)

Event Type	State Executive Order	State and Local Dollar Loss
Flood	2003-045	\$43,427
Flood	2003-046	\$24,611
Flood	2004-036	\$429,172
Flood	2004-038	\$415,068
Flood	2004-057	\$70,323
Flood	2004-064	\$18,849
Flood	2005-008	\$1,352,561
Flood	2005-057	\$1,112,649
Flood	2005-058	\$352,262
Flood	2006-033	\$1,063,724
Flood	2006-043	\$347,180
Flood	2006-045	\$750,000
Flood	2006-047	\$750,000
Flood	2006-054	\$750,000
Flood	2006-055	\$750,000
Flood	2007-001	\$750,000
Flood	2007-004	\$750,000
Flood	2007-017	\$750,000
Flood	2007-018	\$750,000
Flood	2007-019	\$750,000
Flood	2007-046	\$225,671
Flood	2008-042	\$750,000
Flood	2008-042a	\$750,000
Flood	2008-048	\$266,666



Event Type	State Executive Order	State and Local Dollar Loss
Flood	2008-049	\$16,470
Flood	2008-050	\$66,666
Flood	2008-051	\$311,018
Flood	2010-031	\$266,666
Flood	2010-034	\$1,000,000
Flood	2010-035	\$533,333
Flood	2010-036	\$1,000,000
Flood	2010-039	\$333,333
Flood	2010-040	\$33,333
Severe Storm and Flood	2010-042	\$333,333
Severe Storm and Flood	2010-045	\$1,000,000
Flood Threat	2011-063	\$750,000
Flooding	2011-075	\$300,000
Flood Threat	2012-007	\$250,000
Flooding	2012-008	\$450,000
Flood Threat	2012-018	\$750,000
Flood Threat	2012-031	\$750,000
Flood Threat	2012-032	\$1,500,000
Flood	2013-001	\$10,500,000
Flood Threat	2013-022	\$750,000
Flood	2013-027	\$500,000
Flood	2013-031	\$750,000
Flood Threat	2014-004	\$750,000
Flood Threat	2014-005	\$500,000
Flood Threat	2014-006	\$750,000



Event Type	State Executive Order	State and Local Dollar Loss
Flood Threat	2014-013	\$750,000
Flood Threat	2014-015	\$750,000
Flood Threat	2015-007	\$750,000
Flood Threat	2015-008	\$63,000,000
Flooding	2015-013	\$2,500,000
Flood Threat	2015-017	\$750,000
Flooding	2015-008	\$7,875,000
Flooding	2016-04	\$1,250,000
Flood Threat	2016-027	\$750,000
Monsoon Flooding	2015-017	\$750,000



1.3. Severe Winter Storms

Figure 1-4 Severe Winter Storms, Significant Past Occurrences by Date

Date	Name/Location	Significant Event
January 5, 2017	Union County, Harding County, San Miguel County, Guadalupe County, Quay County, Roosevelt County, Curry County, DeBaca County, and NWS zones throughout northern and central New Mexico (Preparedness Areas 1 and 2)	A major winter storm impacted nearly all of northern and central New Mexico just a few days after ringing in 2017. An extremely cold airmass shifted slowly south and west into eastern New Mexico on the 5th while a moist, slow-moving upper level wave shifted north and east from Arizona through the 6th. The combination of bitterly cold air at the surface and abundant mid and upper level moisture resulted in a major winter storm across New Mexico. Temperatures in the single digits with widespread snowfall amounts of four to eight inches created severe travel conditions across the eastern plains. The Sangre de Cristo Mountains were pummeled with one to two feet of snowfall. Bitterly cold air seeped into the Rio Grande Valley from the eastern plains on the morning of the 6th while a band of snowfall pushed across the area. Temperatures in the middle teens with around one inch of snow created treacherous travel conditions across the Albuquerque metro area. Nearly 100 motor vehicle accidents shut down many roads across the city and closed schools. Shelters were opened in many areas and the New Mexico EOC was activated for several days until impacts improved. The coldest air since 2011 filtered into the State behind this storm. Wind chill values across the eastern plains fell to between 20 and 30 degrees below zero. Estimated property damage of \$250,000.
December 26, 2015	Dona Ana County, Lincoln County, and Otero County (Preparedness Areas 4 and 6)	A deep upper low dove south out of the Great Basin into northern Mexico. A cold front pushed in from the northeast and a second one from the west which brought sub-freezing temperatures to the region. The storm peaked during the overnight hours, bringing blizzard conditions with wind gusts up to 90 mph in the Sacramento Mountains that brought down trees and power lines. Snowfall amounts were up to 30 inches in the Cloudcroft area with six to 12 inches common over the lowlands of New Mexico. Snowfall totals from Cloudcroft to Sunspot ranged from 15 to 30 inches for the duration of the event. Drifts were much higher as east winds of 80 to 90 mph were also reported during the storm at Sunspot and Apache Point.



Date	Name/Location	Significant Event
November 26, 2015	Chaves County, Curry County, De Baca County, Guadalupe County, Harding County, Lincoln County, and San Miguel County (Preparedness Areas 1 and 2)	A deep layer of sub-tropical moisture that surged northeast off the eastern Pacific Ocean interacted with a shallow but potent cold airmass over eastern New Mexico around the Thanksgiving holiday. A persistent band of freezing rain moved over the area from Lincoln County northeast across the eastern plains of New Mexico. A rare freezing rain event resulted in severe impacts to travel across much of this area, including Interstate 40 and U.S. Highways 54, 285, 60/84, and 70/380. Widespread freezing rain accumulations of one quarter inch to one half inch were reported, with locally higher amounts. Light snow accumulations fell on top of the ice in a few areas mainly north of Interstate 40. Power lines were downed around Curry County leaving almost 2000 residents without power. Widespread treacherous travel conditions and traffic accidents were reported.
December 25, 2011	Curry County (Preparedness Area 1)	A strong upper level low pressure system that slowly moved south over Arizona and then over southern New Mexico brought copious amounts of snow to the State. Some of the areas that were hit the hardest included the same areas that were blanketed by snow from the previous storm. However, this time, it was the southeast portion of the State, rather than the northeast portion of the State, that was hit hard. Another cold front moved down the plains and through the gaps of the central mountain chain on the 22nd, and snow quickly developed across the western two-thirds of the State. One to two feet of snow was common across the east slopes of the Sandia and Manzano Mountains as well as the west central and southwest mountains. As the low slowly moved east across southern portions of the State, snow was heaviest from the south central mountains eastward to the Texas State line. These areas saw between six and 12 inches of snow at lower elevations, while well over a foot of fresh snow was reported across the high terrain. A four year old girl died after her family's SUV lost traction on an icy Highway 209 north of Clovis and overturned. The girl's mother and sister suffered minor injuries.
December 24, 2011	Albuquerque, NM (Preparedness Area 5)	A major winter storm event moving through the Albuquerque Metro area caused the shutdown of I-25 / I-40 for over 18 hours stranding passengers.



Date	Name/Location	Significant Event
December 12, 2011	Central Highlands Clines Corner, NM (Preparedness Area 5)	After a very strong back door frontal passage on December 1st, which plowed through the eastern plains and westward through the gaps of the central mountain chain toward the Arizona border, much cooler temperatures were in place across the State. Then on the 2nd and 3rd, an upper level storm system swept across New Mexico. A nearly perfect setup for the State, significant snows were reported from south central New Mexico across far northeast New Mexico along a heavy band of snow. Lighter amounts of snow were reported elsewhere. Traffic was significantly impacted across the region. Two people were killed in separate rollover accidents on Interstate 40 near Clines Corners during the morning hours of the 2nd. The first crash occurred around 7 am near exit 218. The second occurred approximately three miles east a half an hour later, taking the life of a 70 year- old man. Both drivers lost control due to icy roadways.
January 4-5, 2009	Bloomfield & Farmington, NM (San Juan County) (Preparedness Area 4)	Up to five inches of snow fell in Bloomfield and Farmington. There was one death reported according to the NCDC.
December 15, 2008	Upper Rio Grande Valley (Preparedness Area 5)	A deep low pressure area centered over California continued to pump moisture into New Mexico on the 15th and 16th. A strong short wave trough ejected out of the low and helped bring widespread, heavy snow to much of the area near and north of Interstate 40. Eight to 12 inches of snow fell over much of the Upper Rio Grande Valley. Two deaths were reported from this storm event.



Date	Name/Location	Significant Event
January 1, 2001	McKinley County Cibola County (Preparedness Area 4) San Miguel County Union County Mora County (Preparedness Area 3) Torrance County (Preparedness Area 5)	A slow-moving winter storm howled into northern and central New Mexico with gusty winds and heavy snow, which closed State highways and many rural roads and contributed to two deaths from exposure. Tribal police found one body just north of Gallup and another near Bluewater. The storm produced 18 to 36 inches of heavy snow that engulfed snow removal and closed roads from the eastern Sangre de Cristo Mountains south over Las Vegas into the central highlands to Vaughn and Corona and westward over the Estancia Valley and the east slope communities of the Sandia and Manzano Mountains. Some residents remained trapped in their homes for 4-5 days before enough snow removal opened both the major and minor county roads. A State of emergency was declared in several counties including Mora, San Miguel and Torrance.
December 22-25, 1997	All Counties (Preparedness Area 1) Union County (Preparedness Area 3) Torrance County (Preparedness Area 5)	The State received a Federal Declaration (FEMA-1202) for a severe winter storm that affected Chaves, DeBaca, Eddy, Guadalupe, Lincoln, Mora, Quay, Torrance, and Union counties. Interstate 40 was closed for an extended period between Albuquerque and Santa Rosa. Approximately 400 tons of hay was airlifted to livestock, and over 10,000 sheep and cattle were lost. Total losses (property and crop) were valued at \$6.5 million, and the cost for clearing and repairing roads and highways was estimated at \$4 million.
April 1997	DeBaca and Guadalupe Counties (Preparedness Area 1) Torrance County (Preparedness Area 5)	The northern half of the State experienced blizzard conditions with widespread power outages. Utility damages were estimated at \$1.5 million, and the three county area of DeBaca, Guadalupe, and Torrance Counties sustained over \$1 million dollars in livestock losses, including an estimated 5,000 dead sheep.



Date	Name/Location	Significant Event
January 1997	Albuquerque, NM (Preparedness Area 5)	<p>Winter storms produced widespread heavy snow and icy roads across much of New Mexico. Icy roads were the direct cause of numerous auto mishaps as road conditions deteriorated very quickly. At least two fatal accidents were directly related to the weather, with weather an indirect cause of a third fatal crash. A car spun while in snow south of Carrizozo and collided with a school bus killing a 27-year-old passenger. A passenger was also killed near Tucumcari when a van slid off the road in a snowstorm and overturned several times. A 30 year old woman and her three year old son were also killed when their automobile crashed into the rear a semi-truck stopped at the end of traffic tie-up about 15 miles west of Grants. In Rio Rancho, an elderly woman slipped and fell on ice in her driveway January 13; she could not get up and died of exposure before anyone found her. The Interstate had been closed three miles away to clear other accidents. Roads were snow packed and icy. Snow totals in many areas averaged seven inches with amounts of 10 to 19 inches reported on the Highlands between Edgewood and Santa Rosa and south to Carrizozo. Amounts of 14 inches were also recorded near Zuni and Pietown in west central sections of the State. Many rural roads remained snow clogged for several days and large sections of the Interstate highways leading to Albuquerque in all directions were closed overnight until late on the 16th.</p>



1.4. Thunderstorms

Figure 1-5 Thunderstorm, Significant Past Occurrence (2006 – 2017) by Date

Date	Location	Significant Event
June 25, 2017	Torrance County (Preparedness Area 5)	A major hail storm struck Interstate 40 at State Road 3 producing significant damage and impacts to travel. Hail up to the size of tennis balls slammed the Interstate. Numerous vehicles had windshields smashed out. Traffic was stopped for over two hours. Emergency response personnel attended to several stranded vehicles with injured motorists. Hail was up to five inches deep and flooding was reported along highway. Estimated property damages of \$1,000,000.
September 17, 2016	Lea County (Preparedness Area 1)	A thunderstorm moved across Lea County and produced tennis ball sized hail in Jal. The hail caused widespread damage to homes and vehicles. The cost of damage is a rough estimate of \$3,500,000.
August 01, 2015	Rio Arriba County (Preparedness Area 3)	Strong to severe thunderstorms moved slowly over portions of northern and eastern New Mexico during the afternoon and evening of the 1st. The strongest of these storms rolled through the Santa Rosa area, dropping quarter size hail and producing damaging wind gusts up to 60 mph that caused roof damage to several buildings. The 1.5 to two inches of rain that accompanied the storm also caused flash flooding that resulted in one road being closed due to being submerged in water. Between 1.5 and 3.35 inches of heavy rain also fell near Santa Fe, leading to flash flood waters between one and 1.5 feet high making a road impassable. No other significant flooding as a result of heavy rains was reported. A lightning strike led to a fatal motorcycle crash along U.S. Highway 64 near Hopewell Lake.
September 29, 2014	Curry County, De Baca County, Guadalupe County, Harding County, Lincoln County, Quay County, Rio Arriba County (Preparedness Areas 1, 2, and 3)	An upper level low passing to the north of New Mexico steered a polar jet overhead. The right entrance region of the jet crossed south central to east central areas increasing dynamic forcing and the threat for severe weather as abundant moisture as well as instability were also present. By early afternoon a long line of showers and thunderstorms had developed across the northern mountains with another line extending from Raton down the eastern plains to Carrizozo. Many of these embedded storms became severe with large hail, high wind, and even a tornado reported. The activity continued into the late night hours across Quay County resulting in damage to buildings, vehicles, ranches, and yards.



Date	Location	Significant Event
June 07, 2014	Curry County, Lincoln County (Preparedness Area 1)	This was the second day in a multi-day significant severe weather outbreak across eastern New Mexico. A back door cold front moved into the northeast and east central portions of the State throughout the morning then nudged up against the central mountain chain by the afternoon hours. Deep moisture and instability aided in the development of supercell thunderstorms during the afternoon and evening hours along the east slopes of the central mountain chain that moved into the eastern plains. Large, damaging hail, strong winds, heavy downpours, and tornadoes were reported. Hail ranging from two to four inches in diameter caused significant damage to windows and vehicles as well as livestock and homes around Corona and Clovis. A tornado was also reported in Corona with only damage to open rangeland. Another thunderstorm that moved through Ranchvale and Clovis produced widespread wind damage.
June 16, 2012	Logan, NM (Preparedness Area 1)	Thunderstorms developed over the Sacramento Mountains early in the afternoon and produced localized flooding and severe hail. Another complex of thunderstorms that developed over northeastern New Mexico moved southeast and produced a large scale severe outflow boundary with winds of 60 to 70 mph. Several boats on Ute Lake were damaged due to strong winds. Over \$500K in crop damage was reported. No report on the cost of damage to the boats.
October 2, 2010	Cedar Crest, NM (Preparedness Area 5)	A lone severe thunderstorm developed near San Felipe Pueblo and moved east-southeast along the east mountains. Hail up to two inches in diameter fell and devastated trees, roofs, windshields and windows across the area. Golf ball sized hail accumulated two inches deep on the ground. Over 200 houses sustained significant damage including roof and window damage. Multiple vehicles were also dented and damaged by the large hail. Over \$6M in property damage was reported.
June 6, 2010	Clovis, NM (Preparedness Area 1)	A cold front stalled over the eastern plains, along with an approaching trough, brought moisture, lift and instability to far eastern New Mexico on the 12th. Numerous large hail was observed along with a few high wind reports. The hailstorm left much of the Clovis area battered by hail up to the size of golf balls. The majority of the damage occurred in the northeastern portion of the community. Over 1600 home and auto claims were submitted to insurance companies. Over \$1.25M was reported in property damage and \$25K in crop damage.



Date	Location	Significant Event
March 7, 2010	Carlsbad, NM (Preparedness Area 1)	An upper level low pressure system approaching from the west, combined with daytime heating and low level moisture, produced isolated thunderstorms across portions of southeast New Mexico. Significant hail damage was observed at car dealerships located north of Church Street in Carlsbad. Although there were specific reports of roof damage, an exact number of homes impacted could not be established and this portion of the property damage was roughly estimated. Over \$7M in property damage was reported.
June 14, 2009	Jal, NM (Preparedness Area 1)	<p>An upper level trough across the Great Basin resulted in southwest flow aloft across west Texas and southeast New Mexico. The combination of disturbances moving northeast across the area, strong daytime heating and good low level moisture ahead of the dryline resulted in severe weather across the area. The main threat during this episode was large hail and strong damaging winds.</p> <p>The most extensive damage during this event was confined to the eastern portions Jal, NM with the most notable damage along State Highway 128 in the vicinity of the Lea County/Jal Airport. At this location, a small single engine plane was flipped over. Also, numerous aircraft hangar doors were blown in due to the high winds which resulted in extensive damage to several aircraft storage buildings. Along State Highway 128, 28 power poles stretched along the southern edge of the highway were blown over into the eastbound lane of traffic. Overall, a total of 60 power poles were damaged. Closer to the city, numerous residential structures received significant roof damage, mainly in the form of lost roof shingles. Several trees were also downed near the Jal Lake Recreational Area. Over \$88K in property damage was reported.</p>



Date	Location	Significant Event
October 11, 2008	Moriarty, NM (Preparedness Area 1)	<p>A powerful early autumn storm system over the Great Basin spread strong winds and deep moisture across much of north and central New Mexico beginning early on October 11th. Strong to severe thunderstorms first developed over the southwest portion of the State and spread quickly north and east into the central valley and eastern plains by midafternoon. High winds also developed by the afternoon over the far western portions of the State.</p> <p>A steel building was destroyed and blown onto Interstate 40, six power poles were snapped, at least three water tanks were damaged beyond repair and a pumpkin shooter was damaged from sustained winds estimated at 55 to 70 mph with gusts of 90-100 mph. Corn stalks were also damaged in a large corn maze. Over \$80K in property damage was reported.</p>



Date	Location	Significant Event
August 14, 2008	<p>Lincoln County (Preparedness Area 1)</p> <p>Otero County (Preparedness Area 6)</p>	<p>Governor Bill Richardson requested a major Disaster Declaration due to severe weather from the remnants of Hurricane Dolly beginning on July 26, 2008 and continuing. The Governor requested a Declaration for Individual Assistance and Hazard Mitigation for one county and Public Assistance for two counties. During the period of July 31 to August 3, 2008, joint Federal, State, and local Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude, that effective response is beyond the capabilities of the State and the affected local governments, and that Federal assistance is necessary.</p> <p>On August 14, 2008, President Bush declared that a major disaster exists in the State of New Mexico. This Declaration made Public Assistance requested by the Governor available to State and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms and flooding in Lincoln and Otero Counties. Direct Federal assistance also was authorized. This Declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures for Lincoln County. A copy of the summary of damage assessment information used in determining whether to declare a major disaster.</p> <p>The source for this information can be found at the following website: http://www.fema.gov/pdf/news/pda/1783.pdf</p>
September 13, 2006	<p>Las Cruces, NM (Doña Ana County)</p> <p>Luna County (Preparedness Area 6)</p>	<p>A heavy precipitation super-cell thunderstorm tracked from far eastern Luna County eastward along Interstate 10 through Las Cruces. This storm dropped golf ball sized hail, resulting in a four car collision on Interstate 10 in far eastern Luna County, and hundreds of damaged roofs and automobiles and destroyed skylights in Mesilla and south Las Cruces. The US Border Patrol Checkpoint was evacuated.</p> <p>This was the costliest hailstorm in the history of the NWS warning area, totaling more than \$10 million in damage from large hail driven by strong winds. Finally, two inches of rain within 30 minutes caused flash flooding in Picacho Hills (far west Las Cruces) and forced the closure of I-10 in western Doña Ana County. Crop damage was estimated at \$500 thousand.</p>



Date	Location	Significant Event
August 17, 2006	Santa Fe, NM (Santa Fe County) (Preparedness Area 3)	Two men in their 20s were struck by lightning while standing on rebar rods at a Santa Fe construction site. One man recovered immediately, but the other had to be revived with CPR.



1.5. Wildland/Wildland-Urban Interface Fires

Figure 1-6 Wildland/WUI Fires, Significant Previous Occurrences by Date

Date	Location	Significant Event
June 15, 2017	Santa Fe National Forest, Sandoval County (Preparedness Area 5)	The 1,412-acre El Cajete Fire started from an abandoned campfire. The fire burned across a section of Hwy 4 near the community of Sierra de los Pinos and a segment of the Las Conchas Trail (#137). The fire occurred within the footprint of the Southwest Jemez Collaborative Forest Landscape Restoration Project (SWJ CFLRP). The treatments played a role in protecting the community of Sierra de Los Pinos. The fire was declared as FMAG-5184.
June 1, 2018	Hwy 64 in Ute Park, between Eagles Nest Lake and Cimarron, Colfax County (Preparedness Area 2)	The Ute Park Fire started on May 31 st and burned a total of 36,740 acres on private and state lands. The cause was unknown. 26,387 acres and 14 outbuildings were destroyed on the Philmont Scout Ranch. Previous hazardous fuels reduction efforts slowed the fire to low intensity burn on part of the Philmont Scout Ranch. Philmont canceled scouting activities for the summer. Cimarron Canyon State Park was closed to the public during the fire. Closure of Hwy 64 was expected due to the potential for flash flooding. Burn scar flooding threatened the Village of Cimarron and Town of Clayton's drinking water supplies. Post-fire flooding events occurred in July and August and impacted the downstream communities. The fire was declared as FMAG-5239.
June 8, 2018	Mescalero Apache, Otero County (Preparedness Area 6)	The Soldier Canyon Fire started on June 7 th one mile north of the Town of Mescalero on Mescalero Apache land. The fire burned 1,270 acres and was human-caused. The fire was declared as FMAG-5240.



Date	Location	Significant Event
June 29, 2017	Northwest Plateau, San Juan County (Preparedness Area 4)	A brush fire in Bloomfield caused several residents to evacuate their homes as the fire destroyed two structures and three vehicles. The Bloomfield, Farmington and San Juan County fire departments were dispatched to reports of a brush fire near San de Cristo Court around 4 p.m. The Bloomfield Police Department also responded to the scene. No homes were destroyed in the fire, but two outbuildings and three vehicles were destroyed. About three acres of land was burned. A reverse 911 call was made to residents along San De Cristo Court to evacuate and meet at Bloomfield High School. Traffic along U.S. Highway 64 was shut down between North First Avenue and Mustang Lane due to the fire. Estimated property damage of \$80,000.
July 14, 2016	31 miles SW of Cloudcroft, NM (Otero County) (Preparedness Area 6)	The <u>Timberon Fire</u> burned 290 acres, 67 structures, including 30 homes and resulted in the declaration of FMAG #5134 provided \$2,872 in eligible emergency work funding.
June 14, 2016	6 miles NW of Tajiue, NM (Torrance County/Bernalillo County) (Preparedness Area 5)	The Dog Head Fire started on June 14, 2016 in Torrance County, approximately six miles northwest of Tajiue, and on June 15 crossed over into Bernalillo County. In total, 17,912 acres were burned. FMAG #5127 provided \$158,342 of eligible emergency work funding.
June 25, 2014	Coyote, New Mexico (Rio Arriba County) Preparedness Area 3	Diego fire burned 3,525 acres and damaged one structure.
June 15, 2014	Chuska Mountains (San Juan County) (Preparedness Area 4)	14,712 acres burned and 24 structures destroyed. Communities of Naschittie and Sheep Springs partially evacuated with approximately 500 residents displaced.
June 10, 2013	8 miles south of Truchas (Rio Arriba County) (Preparedness Area 3)	The Jaroso Wildfire burned 11,149 total acres (100% in National Forest Land). 100% contained as of 8/5/2013.
June 7, 2013	Vicinity of Kingston (Sierra County) (Preparedness Area 6)	The Silver Wildfire burned 138,705 total acres (99% in National Forest Land). 85% contained as of 7/21/2013.



Date	Location	Significant Event
May 31, 2013	10 miles north of Jemez (Sandoval County) (Preparedness Area 5)	The Thompson Ridge Wildfire burned 23,965 total acres (99% in National Forest Land). 100% contained as of 7/1/2013.
May 20, 2013	10 miles north of Pecos (San Miguel County) (Preparedness Area 2)	The Tres Lagunas Wildfire burned 10,219 total acres of Gallinas Canyon area near Pecos, NM. The cause was attributed to a windblown dead tree on powerlines and possible electric company neglect. The fire burned private and public land, 71% on federal national forest land. The resulting-FMAG #5026 was declared on June 5 th , 2013 and funded \$14,138 of eligible emergency work.
June 20, 2012	Corrales (Sandoval and Bernalillo County) (Preparedness Area 5)	The Romero Fire burned 360 acres. This fire started in the Corrales Bosque brush along the Rio Grande just north of Albuquerque, apparently from a discarded cigarette from a fire patrol member. FMAG #2982 provided \$24,942 of public assistance grants.
June 18, 2012	Northwest Plateau (Preparedness Area 4)	The Blanco Wildfire burned out of control 10 miles east of Bloomfield consuming more than 350 acres. A wildfire along CR 1491 burned quickly out of control in the bosque along the San Juan River and consumed more than 350 acres, five homes, and 12 outbuildings. Property Damage was \$1 Million. FMAG #2981.
June 9, 2012	Lincoln County (Preparedness Area 1)	The Little Bear Fire was the most destructive Fire in State history. It burned 44,330 acres including 35 structures. FMAG #2979.



Date	Location	Significant Event
May 6, 2012	Southwest Mountains (Preparedness Area 6)	By the end of May, the Whitewater/Baldy Complex broke the record for the largest wildfire in New Mexico State history. It burned in Catron and Grant Counties. On May 6th, the Baldy Fire started and on May 16, the Whitewater fire was detected. Both of these fires were started by lightning. On May 24th, strong winds allowed the Whitewater and Baldy fires to join, then becoming the Whitewater/Baldy Complex. At this time 12 structures burned in the Willow Creek subdivision. On May 26th, another bout of stronger winds led to the evacuation of Mogollon. Spotting was reported up to three-quarters of a mile within mixed conifer and ponderosa pine on the northern side of the fire, while pinon pine and juniper were more common on the southeast flank. The fire led to numerous road closures including Forest Service Road 141, Forest Service Road 28 at the Forest Service Road 94 junction, and State Road 159 at Whitewater and Forest Service Road 150 at the Forest Service Road 142 junction. By the time of containment in July, the fire had burned 297,845 acres, causing \$26 million in damage including 20 structures. FMAG #2978.
March 25, 2012	Lower Chama River Valley (Preparedness Area 3)	Near record breaking temperatures fueled a human caused fire near Chimayo. The Chimayo Wildfire, near Highway 76 and County Road 87, was started when hot jumper cables were laid on dry vegetation. The fire, 10 acres in size, scorched Bureau of Land Management and privately owned land. In total, two homes and two outbuildings were burned. Total property damage was \$300K.
June 30, 2011	Otero County (Preparedness Area 6)	Little Lewis Fire was detected on June 28 th , 2011 2 miles southwest of Weed, NM and was lightning-caused. The FMAG #2934 was declared on June 29 th , 2011 with \$75,494 of approved public assistance
June 29, 2011	Lincoln County (Preparedness Area 1)	The lightning-caused Donaldson Fire occurred 10 miles south of Hondo burning 100,831 acres of grazing lands. 21,000 acres were on former newsman Sam Donaldson's ranch. FMAG #2935 approved \$3,173,062 in public assistance.



Date	Location	Significant Event
June 26, 2011	Jemez Mountains (Preparedness Area 3)	<p>The Las Conchas Wildfire began when a tree fell on a power line 12 miles southwest of Los Alamos on June 26th. The fire quickly spread eastward under windy and unstable conditions, covering more than 40,000 acres the first day. The fire was contained by the end of the month. In all, this fire burned 156,593 acres, making it the largest fire in New Mexico history. The Las Conchas wildfire damaged 80 homes, of which, 15 were primary residences. The other 65 homes were seasonal. Numerous outbuildings were also damaged or destroyed and 10 vehicles were completely destroyed. The fire prompted evacuations of Los Alamos National Labs, Bandelier National Monument, the city of Los Alamos, as well as numerous other campgrounds and homes within the burn area itself. The fire burned portions of the Santa Clara, Cochiti, San Ildefonso and Santa Domingo Indian Reservations as well as portions of Bandelier National Monument and the Valles Caldera National Preserve. This fire burned on both sides of Highway 4, and up to Highway 501, causing both highways to be closed for a time. Some of this area was previously burned by the Cerro Grande Fire in 2000. Fortunately, no member of the public or any emergency responders were seriously injured during the fire suppression efforts. Total property damage was \$17 Million. FMAG #2933. State EO 2011- 053.</p>
June 26, 2011	Albuquerque Metro Area (Preparedness Area 5)	<p>Hot, dry and windy conditions allowed this human caused fire in the Bosque to quickly destroy a few residences and outbuildings. The 346 Fire, located five miles south of Belen in the Bosque, burned 262 acres over a five day period. The fire destroyed three residences and seven outbuildings, and also damaged another three residences and seven outbuildings. Total property damage was \$700K.</p>
June 16, 2011	South Central Mountains (Preparedness Area 5)	<p>The Swallow Wildfire quickly engulfed nine homes amidst breezy, hot and very dry conditions. This human caused fire, named the Swallow Fire for starting on Swallow Drive, and burned 10 acres of land in a wooded Ruidoso neighborhood. Nine homes were lost to the blaze. Total Property damage was \$3.5 Million.</p>



Date	Location	Significant Event
June 12, 2011	Raton Ridge / Johnson Mesa (Preparedness Area 2)	Breezy and dry conditions fueled the Track Wildfire for several days before crews could get a handle on the fire. The fire quickly gained recognition when Interstate 25 had to be closed and traffic had to be diverted for nearly 3.5 days. This grass and timber fueled fire, named the Track Fire, started just north of Raton and burned along and between Bartlett and Horse Mesas, and on either side of the Interstate 25 corridor. I-25 was closed for approximately 3.5 days. This fire was caused by engine exhaust particles, likely expelled by an ATV on Burlington Northern Santa Fe Railway property. The ATV rider trespassed onto land owned by BNSF through access from nearby private property. Evacuations were needed along the north side of Raton, Pine Valley Estates, and within Sugarite Canyon State Park and Yankee Canyon. The Raton watershed sustained significant damage. In all, 27,792 acres burned, 19,962 of which was in New Mexico. In all, eight residences and 11 outbuilding were destroyed. Property damage was \$2.5 Million. FMAG #2918.
June 9, 2011	Catron County (Preparedness Area 6)	The Wallow Fire started in the White Mountains near Alpine, Arizona on May 29, 2011. The fire eventually spread across the stateline into western New Mexico causing the evacuation of Luna, NM. By the time the fire was contained on July 8, it had consumed 538,049 acres of land, 522,642 acres in Arizona and 15,407 acres in New Mexico. The fire was started accidentally by two men who were camping. FMAG declaration #2917 occurred on July 10 th approving \$515,274 in public assistance.
April 17, 2011	Curry and Roosevelt Counties (Preparedness Area 1)	The Tire Fire started from sparks from the rim of vehicle that blew its tire which ignited a grass fire off Hwy 90 between Floyd and Portales communities. The fire destroyed three homes and charred over 3500. FMAG #2897 was delcared for April 17-21 st , 2011 with \$75,184 in approved public assistance.



Date	Location	Significant Event
April 3, 2011	South Central Mountains (Preparedness Area 1)	As a storm system approached New Mexico on the 3rd, the mid-level gradient and surface pressure gradient increased sharply, leading to high, damaging winds. These strong winds fueled a new wildfire near Ruidoso. A human-caused wildfire begun in Gavilan Canyon and quickly spread north and northeast as very strong winds fueled the fire. The White Wildfire crossed Highway 70 near Ruidoso Downs and continued to move toward Forest Service Road 120. Highway 70 between mile markers 265 and 271 was closed for a time. Much of the burned area consists of steep, rough and rocky terrain, which made it difficult to contain the fire. In all, 10,384 acres were scorched, five homes and seven outbuildings were destroyed and another two homes and two outbuildings were damaged. Property damage was \$1.5 Million. FMAG #2880.
March 8, 2011	Grant County (Preparedness Area 6)	Quail Ridge Fire 1776 acre grass fire occurred south of the Silver City area. The cause was sparks cast from a grinder. Several homes were lost in the fire. The March 7-11 th , 2011 FMAG #2866 resulted in \$267,933 in approved public assistance grants.
June 23, 2010	San Juan Mountains (Preparedness Area 3 and Preparedness Area 5)	Thunderstorms were the result of a back door cold front which slid through the eastern plains of New Mexico during the day. Initially, thunderstorms brought hail and gusty winds across southeast New Mexico. Then later, the thunderstorms evolved into a cluster which slowly moved east into Texas. This cluster of storms brought rainfall amounts of up to two inches in one hour's time across the east. Later that night, the front pushed through the gaps of the central mountain chain resulting in east winds topping 60 mph. Tree damage was noted across much of Albuquerque. A two-acre fire resulted in damage of the Cumbres and Toltec Scenic Railroad by the Lobato Trestle. The fire, which was approximately five miles north-northeast of Chama near the Colorado border, destroyed the wooden ties that support the rail bed. As a result, the railroad had to halt train operations through the area. The cause of the fire remains unknown, though arson and natural causes have been ruled out. Property damage was \$1 Million.



Date	Location	Significant Event
June 23, 2008	Sandia/Manzano Mountains (Preparedness Area 5)	Lightning started a wildfire in heavy timber on the east side of the Manzano Mountains, not far from the area of the Trigo Wildfire, which had burned earlier in the spring. Over 5000 acres were consumed before the fire was contained June 30th. The Big Springs Wildfire consumed 5478 acres on the east slopes of the Manzano Mountains about three to six miles west northwest of Tajique. Six homes and 10 outbuildings were destroyed in the fire in the Apache Canyon area. Property damage was \$1 Million.
April 30, 2008	Sandia/Manzano Mountains (Preparedness Area 5)	A human-caused fire turned into a large wildfire during several days of strong winds. Very dry conditions were present prior to the wildfire due to a lack of precipitation in the preceding weeks. The Trigo Wildfire began on the west slopes of the Manzano Mountains and was initially spread by southwest wind gusts to 35 mph. The fire reached Osha Peak during the evening of April 16th. On the 20th, the fire spread rapidly northeast due to 40 mph winds. It entered flatter terrain on the east side of the Manzanos, and by April 21st, 3750 acres were burned including nine homes, nine outbuildings and two recreational vehicles. The 4800 acre fire was 95 percent contained by April 29th, but was fanned by strong southwest winds of 40 to 50 mph on the 30th, forcing the evacuation of Sufi and Apple Mountain Campgrounds and the Sherwood Forest subdivision, west of Torreon. Over 50 additional homes and one communications tower were damaged or destroyed, mainly in the Sherwood Forest area as the fire grew to more than 11,000 acres. The fire continued to be uncontained into the month of May. Cost was \$8.5 Million.
November 19, 2007	Sandia/Manzano Mountains (Preparedness Area 5)	A small human-caused wildfire which began in the southern Manzano Mountains early in the morning on the 19th grew to around 7000 acres early on the 21st. Three residences and four outbuildings were destroyed. Nearly 100 people were evacuated prior to Thanksgiving Day in the villages of Punta de Agua and Manzano. Cost was \$500K.



Date	Location	Significant Event
February 23, 2007	Belen (Valencia County) (Preparedness Area 5)	Fire threatened approximately 150 homes, three businesses in the City of Belen, several power lines and a sewer treatment plant. As a result, an estimated 400 individuals were evacuated and two shelters were opened to aid in the evacuations. The fire burned at least 500 acres, destroyed two homes and two people were injured. Federal assistance was approved for this event.
March 12, 2006	Lea County (Preparedness Area 1)	An emergency flare at a gas plant started a wildfire that grew to nearly 100,000 acres. Sustained wind speeds of 35 to 45 mph with gusts to 84 mph and very low relative humidity values contributed to the rapid growth and spread of this fire. New Mexico State Road 206 was closed by the New Mexico State Police between Tatum and McDonald due to the fire. News reports in later days indicated that the final acreage of the burn area was 92,390 acres. The fire was contained one day later after burning down the U.S. Post Office, two primary residences, four abandoned homes, three barns, and several pieces of fire equipment. Two dozen fire departments fought to put out the fire and one man suffered burns and was treated at a burn center in Lubbock, Texas. The property damage estimate exceeded \$300 thousand.
January 1, 2006	Hobbs and Tatum (Lea County) (Preparedness Area 1)	A grass fire driven by wind burned 50,000 acres west of Hobbs. The western side of Hobbs had to be evacuated, including the community college, a casino, and several neighborhoods. Three firefighters sustained minor injuries, but no one was seriously injured. Four families were provided shelter by the Red Cross, and 11 homes were destroyed. Two businesses and 10 vehicles also were destroyed by the fire. In addition to the wildfire west of Hobbs, two fires burned near Tatum in northern Lea County. No structures were damaged in these fires; however, U.S. Highway 380 was closed from Roswell to the Texas State line during the day because of the fires. According to local authorities, one fire near Tatum was caused by fireworks and the other was sparked by a car crash. These fires combined to cause \$700 thousand in property damage and \$10 thousand in crop damage.



Date	Location	Significant Event
May 2004	Lincoln County (Preparedness Area 1)	Lightning is suspected to have started the May 15 th , 2004 Peppin Wildfire in the Capitan Mountains about 15 miles northeast of Lincoln which had consumed nearly 48,000 acres by the end of the month and destroyed about 15 historic cabins dating back to near 1920. The Lookout wildfire flared from an improperly extinguished campfire in the Gallinas Mountains just west of Corona. This 5500-acre wildfire claimed a ranch headquarters and mountain top communications facilities before it was contained. Total Damage \$600 thousand. FMAG-2518 was declared on May 25 th , 2004 with \$283,186 of public assistance.
June 2003	Albuquerque, NM (Bernalillo County) (Preparedness Area 5)	Fireworks ignited the Bosque Fire in Albuquerque, which burned hundreds of acres. The threat to surrounding residences, businesses, and infrastructure was very high, response costs and losses were approximately \$1 million.
June 1, 2002	Colfax County (Preparedness Area 2)	The Ponil Wildfire occurred northwest of Cimarron, in Colfax County near the Philmont Scout Ranch. This fire was caused by lightning and is the largest fire to occur in New Mexico to date. Valiant efforts by 1,342 personnel, 13 water dropping helicopters, 31 engines, 24 dozers, and 12 water tenders contained the fire by June 17, but not before it encompassed 92,000 acres (143 Sq. miles). About 28,000 (42 Sq. miles) of those were part of Philmont Scout Ranch. FSA-2416 approved over \$5 million in public assistance on June 4, 2002.
March 2002	Lincoln County (Preparedness Area 1)	Winds of 45 to 55 mph whipped an accidental fire into a fast moving wildfire that consumed 12,000 acres and 20 homes before crews and air tanker assaults gained control in much lighter winds. Damages were approximately \$5 million.



Date	Location	Significant Event
May 2000	Los Alamos County (Preparedness Area 3)	<p>The Cerro Grande Wildfire, was the costliest fire in the State's history. The entire county of Los Alamos was evacuated when a prescribed burn, which was ignited May 4 on property of the Bandelier National Monument quickly, escaped its project area (Los Alamos Canyon) and entered the city's western perimeter. Although there was considerable warning, the city's 11,000 residents had only a very short time to evacuate. Over 400 residences were destroyed, with many more damaged by smoke and prolonged power outages. The wildfire progressed north and eastward of Los Alamos onto the Santa Clara Pueblo, burning approximately 7,400 acres of the reservations 46,000 acres (16%). The fire burned nearly 47,000 acres and hundreds of structures in Los Alamos and the adjacent Los Alamos National Laboratory (LANL), before it was completely contained in July 2000. The event resulted in a Federal Disaster Declaration, FEMA-1329.</p>
May 1996	Taos County (Preparedness Area 2)	<p>In Taos County, the Hondo Wildfire swept through the unincorporated community of Lama, south of Questa. This community was built in the forest and did not stand a chance against the fire that burned over 4000 acres in the first afternoon. Luckily, no one was injured, but the destruction was nearly total. Approximately 32 homes were destroyed, and the fire burned into the high country until it was finally extinguished by summer rains.</p>



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2 APPENDIX B – CAPABILITIES AND RESOURCES

2.1 [Programs Implemented by NMDHSEM](#)

2.1.1 [Hazard Mitigation Assistance Program](#)

Figure 2-1 History of Hazard Mitigation Grant Program Funds in New Mexico

Disaster	Year	Approx. \$ available	Grantee or Sub-Grantee	Approximate Federal Share	Project Description
945	1992	\$80,000	Hobbs	\$80,000	Drainage Study
992	1993	\$211,000	Silver City	\$211,000	Road Drainage Improvements
1202	1998	\$290,000	Lovington	\$13,000	Warning System
			Hobbs	\$278,000	Buy-outs
1301	1999	\$240,000	Eddy County	\$16,000	NOAA Radio and Lightning Protection
			Zuni Pueblo	\$224,000	Flood Protection
1329	2000	\$2,299,000	EMNRD	\$50,000	Video
			Santa Fe	\$40,000	Phone Alert System
			SSCAFCA	\$20,000	Precipitation Monitors
			Angel Fire	\$175,000	Fuel Reduction
			Ruidoso	\$502,000	Fuel Reduction
			Las Vegas	\$463,000	Fuel Reduction
			Rio Rancho	\$473,000	Two Drainage Improvements
1514	2004	\$408,000	Taos County	\$41,000	Mitigation Plan
1659	2006	\$2,400,000	Pueblo of Isleta	\$45,000	Mitigation Plan
1690	2007	\$147,570		0	0
1783	2008	\$2,120,980	Dona Ana County	\$67,500	Mitigation Plan
			Santa Fe City	\$34,140	Mitigation Plan
1936	2010	\$1,376,350	Chaves County	\$18,000	Mitigation Plan
			De Baca County	\$22,500	Mitigation Plan
			Santa Clara Pueblo	\$30,000	Mitigation Plan
			NM DHSEM	\$68,819	Wildfire Public Service Radio Announcements
			Farmington	\$70,211	Porter Arroyo Detention Basin
1962	2011	\$265,070	Cibola County	\$15,000	Mitigation Plan
4047	2011	\$4,077,400	Alamogordo	\$28,367	Mitigation Plan



Disaster	Year	Approx. \$ available	Grantee or Sub-Grantee	Approximate Federal Share	Project Description
			Cochiti Pueblo	\$30,383	Mitigation Plan
			Lea County	\$22,500	Mitigation Plan
			Rio Arriba County	\$33,750	Mitigation Plan
			Ruidoso	\$52,500	Mitigation Plan
			San Juan County	\$33,750	Mitigation Plan
			NM DHSEM	\$30,000	State Mitigation Plan
			Lincoln County	\$216,217	Wildfire Thinning Phase 1
4079	2012	\$7,441,168	Corrales	\$1,649,636	Drainage Improvements
			Department of Agriculture	\$58,147	Watershed Health Education
			ND DHSEM	\$363,873	State Management Costs
			Lincoln County	\$118,000	Wildfire Thinning
			SSCAFCA	\$4,064,881	Lomitas Negras Arroyo Channel Stabilization
			SSCAFCA	\$274,538	Montanyo Bank Stabilization
			SSCAFCA	\$1,004,096	Alberta Road Drainage Improvements
			SSCAFCA	\$124,928	Arroyo Safety Education/Outreach
4148	2013	\$899,235	Hidalgo County	\$31,112	Mitigation Plan
			Ohkay Owingeh	\$33,715	Mitigation Plan
4152	2013	\$6,004,820	Torrance County	\$33,750	Mitigation Plan
			Mescalero Apache Tribe	\$33,750	Mitigation Plan
			Taos County	\$33,750	Mitigation Plan
			UNM	\$33,750	Mitigation Plan
			UNM	\$67,561	Earthquake Retrofit
			Pojoaque Pueblo	\$33,437	Mitigation Plan
			Catron County	\$33,713	Mitigation Plan
			Nambe Pueblo	\$33,841	Flood Warning System
			Santa Ana Pueblo	\$30,272	Mitigation Plan
			Socorro County	\$61,711	Wildfire Thinning Bosque South, Phase 1
			Socorro County	\$1,223,171	Wildfire Thinning Bosque South, Phase 2 (not yet awarded)
			City of Dexter	\$58,433	Warning Sirens



Disaster	Year	Approx. \$ available	Grantee or Sub-Grantee	Approximate Federal Share	Project Description
			Nambe Pueblo	\$1,119,369	Debris Flow Barrier
			City of Hagerman	\$38,985	Warning Sirens
			NM DHSEM	\$93,378	Statewide Mitigation Plan
			UNM-EDAC	\$16,572	Landslide/Soil Mapping
			NM Tech	\$97,355	Landslide/Soil Risk Assessment
4197	2014	\$1,299,374	Socorro County	\$41,443	Wildfire Thinning Bosque North, Phase 1
			Socorro County	\$861,251	Wildfire Thinning Bosque North, Phase 2 (not yet awarded)
			Claunch Pinto SWCD	\$131,876	Wildfire Thinning Phase 1
			Claunch Pinto SWCD	\$861,411	Wildfire Thinning Phase 2 (not yet awarded)
			City of Bloomfield	\$102,923	Generator
4199	2014	\$12,896,165	City of Las Cruces	\$168,919	Weather Monitoring and Flood Warning Stations
			NM Dept of Agriculture	\$218,908	Dam Inundation Mapping and Outreach
			Sierra County	\$45,000	Mitigation Plan
			Village of Angel Fire	\$37,500	Mitigation Plan
			Socorro County	\$45,000	Wildfire Education
			DeBaca County	\$71,250	Generator
			Eddy County	\$48,750	Mitigation Plan
			Santa Clara Pueblo	\$187,500	Flood Mitigation Phase 1
			Santa Clara Pueblo	\$2,062,500	Flood Mitigation Phase 2 (not yet awarded)
			Dona Ana County	\$77,500	Weather Monitoring and Flood Warning Stations
			Los Alamos County	\$18,750	Wildfire Thinning and Education Phase 1
			Los Alamos County	\$295,250	Wildfire Thinning and Education Phase 2 (not yet awarded)
			UNM EDAC	\$377,208	Acequia Study
			Los Alamos	\$90,000	Road Stabilization Phase 1



Disaster	Year	Approx. \$ available	Grantee or Sub-Grantee	Approximate Federal Share	Project Description
			County		
			Los Alamos County	\$122,500	Road Stabilization Phase 2 (not yet awarded)
			SSCAFCA	\$1,221,253	Lisbon Ponds
			Socorro County	\$338,000	8 fire station generators
			Albuquerque	\$720,476	Montano Levee Phase 1 award
			Albuquerque	\$4,679,524	Montano Levee Phase 2 (not yet awarded)
			EMNRD	\$56,145	Wildfire Mapping Study
			Rio Rancho	\$66,695	SportsPlex Flood Mitigation Phase 1
			Rio Rancho	\$469,150	SportsPlex Flood Mitigation Phase 2 (not yet awarded)
			Otero County	\$37,500	Mitigation Plan
			Zia Pueblo	\$37,500	Mitigation Plan
			Zuni Pueblo	\$37,500	Mitigation Plan



Figure 2-2 History of Awards of Pre-disaster Mitigation Funds in New Mexico

Year	Sub-Grantee	Approximate Federal Share	Project Description
2002	State Emergency Management	\$9,000	Local mitigation plan training
	State Emergency Management	\$41,000	State Mitigation Plan
	17 communities	\$293,031	Mitigation Plans
2003	4 local mitigation plans	\$248,375	Mitigation Plans
	State Emergency Management	\$30,000	State Mitigation Plan
2004	Torrance County		Multi-jurisdictional Mitigation Plan
2007	The New Mexico Institute of Mining and Technology	\$65,105	Multi-jurisdictional Mitigation Plan for Socorro County
	Otero County	\$30,000	Mitigation Plan
	University of New Mexico	\$185,156	Mitigation Plan
	Sierra County	\$20,000	Multi-jurisdictional Mitigation Plan
	Lincoln County	\$29,000	Mitigation Plan
2008	Nambe Pueblo	\$33,750	Mitigation Plan
2010	San Miguel County	\$51,365	Mitigation Plan
2012	Valencia County	\$36,000	Multi-jurisdictional Mitigation Plan
	McKinley County	\$21,908	Multi-jurisdictional Mitigation Plan
	Bernalillo County	\$43,095	Multi-jurisdictional Mitigation Plan
	Luna County	\$35,625	Multi-jurisdictional Mitigation Plan
	Guadalupe County	\$40,000	Multi-jurisdictional Mitigation Plan
	Curry County	\$30,000	Multi-jurisdictional Mitigation Plan
2014	Quay County	\$33,750	Multi-jurisdictional Mitigation Plan
	Taos Pueblo	\$33,750	Mitigation Plan
	Grant County	\$33,750	Multi-jurisdictional Mitigation Plan
	Socorro County	\$33,750	Multi-jurisdictional Mitigation Plan
2016	SSCAFCA	\$1,405,805	Cactus Ponds
2017	Chaves County	\$37,500	Multi-jurisdictional Mitigation Plan
	Dona Ana County	\$60,000	Multi-jurisdictional Mitigation Plan
	McKinley County	\$37,500	Multi-jurisdictional Mitigation Plan
	San Juan County	\$48,727	Multi-jurisdictional Mitigation Plan
	San Miguel County	\$41,250	Multi-jurisdictional Mitigation Plan
	Santa Fe, City of	\$37,500	Mitigation Plan
	Union County	\$37,500	Multi-jurisdictional Mitigation Plan



Figure 2-3 History of A-G Public Assistance Amounts as of 8/8/17

Disaster	PA Category	# of Project Worksheets	Total Project Amount	406 Mitigation Amount	Number of 406 Project Worksheets
1936	A	29	\$1,336,193.60	\$-	
	B	27	\$231,869.04	\$-	
	C	582	\$4,575,759.51	\$1,942,692.56	259
	D	50	\$3,324,501.57	\$1,171,626.44	25
	E	4	\$108,720.02	\$-	
	F	19	\$355,765.04	\$334,743.83	4
	G	6	\$55,454.21	\$5,514.83	2
1783	A	16	\$476,862.49	\$-	
	B	39	\$4,341,647.33	\$-	
	C	68	\$5,839,628.84	\$258,002.35	20
	D	18	\$2,452,261.13	\$232,428.00	10
	E	5	\$170,390.00	\$-	
	F	25	\$37,475,625.79	\$126,337.14	11
	G	9	\$254,133.95	\$41,100.00	2
4047	A	10	\$23,167,992.47	\$-	
	B	8	\$873,479.32	\$-	
	C	25	\$11,212,405.19	\$4,306,855.07	12
	D	10	\$437,667.49	\$179,538.00	4
	E	2	\$31,297.82	\$-	
	F	1	\$ -	\$-	
	G	1	\$36,604.14	\$-	
4079	A	18	\$126,240,248.42	\$-	
	B	19	\$6,124,288.73	\$-	
	C	26	\$1,253,086.46	\$28,611.80	5
	D	19	\$112,414,673.15	\$5,391.75	4
	E	5	\$217,337.83	\$-	
	F	4	\$15,856.50	\$-	
	G	3	\$250,074.99	\$-	



Disaster	PA Category	# of Project Worksheets	Total Project Amount	406 Mitigation Amount	Number of 406 Project Worksheets
4148	A	38	\$2,489,731.74	\$-	
	B	21	\$155,475.53	\$-	
	C	65	\$3,111,523.91	\$149,327.80	19
	D	13	\$884,150.80	\$-	
	E	45	\$759,739.98	\$20,286.14	2
	F	8	\$50,478.67	\$218.28	1
	G	9	\$34,772.92	\$-	
4152	A	100	\$16,618,844.40	\$-	
	B	63	\$843,533.47	\$-	
	C	297	\$16,631,838.52	\$1,623,775.07	62
	D	104	\$11,826,485.38	\$1,737,079.23	26
	E	188	\$2,067,370.80	\$11,608.26	4
	F	36	\$4,634,920.67	\$985,458.99	3
	G	33	\$2,247,782.90	\$3,884.35	3
4197	A	6	\$1,974,792.03	\$-	
	B	5	\$423,523.96	\$-	
	C	18	\$8,023,152.39	\$1,623,776.63	8
	D	16	\$1,683,402.30	\$70,026.02	5
	E	1	\$37,465.37	\$-	
	F	2	\$23,236.52	\$10,284.23	2
	G	0	\$-	\$-	
4199	A	9	\$1,687,707.64	\$-	
	B	11	\$1,301,078.10	\$-	
	C	23	\$112,042,521.31	\$46,810,566.46	13
	D	8	\$1,022,896.67	\$88,165.00	2
	E	0	\$-	\$-	
	F	0	\$-	\$-	
	G	0	\$-	\$-	



2.2 Federal Program Summary

Figure 2-4 Federal Programs Summary Chart

Program / Activity	Type of Assistance	Agency & Contact
Basic and Applied Research/Development		
Center for Integration of Natural Disaster Information	Technical Assistance: Develops and evaluates technology for information integration and dissemination	Department of Interior (DOI) –US Geological Survey (USGS) The Center for Integration of Natural Hazards Research: Phone: (703) 648-6059 Email: hazinfo@usgs.gov
Hazard Reduction Program	Funding for research and related educational activities on hazards.	National Science Foundation (NSF), Directorate for Engineering, Division of Civil and Mechanical Systems, Hazard Reduction Program: Phone: (703) 306-1360 Website: www.nsf.gov/sbe/drms/start.htm
Decision, Risk, and Management Science Program	Funding for research and related educational activities on risk, perception, communication, and management (primarily technological hazards).	NSF – Directorate for Social, Behavioral and Economic Science, Division of Social Behavioral and Economic Research, Decision, Risk, and Management Science Program (DRMS): Phone: (703) 306-1757 Website: www.nsf.gov/sbe/drms/start.htm
Societal Dimensions of Engineering, Science, and Technology Program	Funding for research and related educational activities on topics such as ethics, values, and the assessment, communication, management and perception of risk.	NSF – Directorate for Social, Behavioral and Economic Science, Division of Social, Behavioral and Economic Research, Societal Dimensions of Engineering, Science and Technology Program: Phone: (703) 306-1743
National Earthquake Hazard Reduction Program (NEHRP) in Earth Sciences	Research into basic and applied earth and building sciences.	FEMA Region VI contact is Bart.Moore@FEMA.DHS.gov NM DHSEM contact is Wendy.Blackwell@state.nm.us Website: www.nehrp.gov



Program / Activity	Type of Assistance	Agency & Contact
Technical and Planning Assistance		
Mitigation Planning Assistance	Each FEMA Region has a Mitigation Directorate that provides technical assistance to States and tribal entities. Through the State, FEMA Region also provides technical assistance to local government agencies.	FEMA Region VI contact is Shanene.Thomas@FEMA.DHS.gov NM DHSEM contact is Wendy.Blackwell@state.nm.us Website: www.FEMA.gov/mitigation-planning-assistance-resources
Planning Assistance to States and Tribes	Technical and planning assistance for the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Albuquerque contact is: Chief, Civil Projects Management Branch Deborah.A.Foley@usace.army.mil
Disaster Mitigation Planning and Technical Assistance	Technical and planning assistance grants for capacity building and mitigation project activities focusing on creating disaster resistant jobs and workplaces.	Department of Commerce (DOC), Economic Development Administration (EDA): (800) 345-1222 EDA's Disaster Recovery Coordinator: Phone: (202) 482-6225 Website: www.doc.gov/eda
Watershed Surveys and Planning	Surveys and planning studies for appraising water and related resources, and formulating alternative plans for conservation use and development. Grants and advisory/counseling services to assist w/ planning and implementation improvement.	US Department of Agriculture (USDA) – National Resources Conservation Service (NRCS) Watersheds and Wetlands Division Website: www.nrcs.usda.gov New Mexico NRCS contact for this program is Resource Conservationist Email: seth.fiedler@nm.usda.gov Phone: 505-761-4430



Program / Activity	Type of Assistance	Agency & Contact
National Flood Insurance Program	Formula grants to States to assist communities to comply with NFIP floodplain management requirements (Community Assistance Program).	FEMA Region VI contact is David.Hiegel@FEMA.DHS.gov NM DHSEM contact is VeronicaE.Chavez@state.nm.us Websites: www.fema.gov/national-flood-insurance-program www.floodsmart.gov www.fema.gov/protecting-our-communities/plan-ahead-dam-failure
Emergency Management Institute	Training in disaster mitigation, preparedness, planning.	NM DHSEM contact is Joyce.Purley@state.nm.us Website: www.training.FEMA.gov/EMI
National Dam Safety Program	Technical assistance, training, and grants to help improve State dam safety programs.	FEMA Region VI contact is Bart.Moore@FEMA.DHS.gov NM OSE contact is Charles.Thompson@state.nm.us Websites: http://www.fema.gov/about-national-dam-safety-program www.fema.gov/protecting-our-communities/plan-ahead-dam-failure
Floodplain Management Services	Technical and planning assistance at the local, regional, or national level needed to support effective floodplain management.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Albuquerque District contact is: Floodplain Management Services Program Manager Email: Stephen.K.Scissons@usace.army.mil
Watershed Protection and Flood Prevention Program	Technical and financial assistance for installing works of improvement to protect, develop, and utilize land or water resources in small watersheds under 250,000 acres. Pre-disaster planning and hazard mitigation are eligible activities.	USDA-NRCS- Watersheds and Wetlands Division Website: www.nrcs.usda.gov New Mexico NRCS contact for this program is Resource Conservationist Email: seth.fiedler@nm.usda.gov



Program / Activity	Type of Assistance	Agency & Contact
Environmental Quality Incentives Program (EQIP)	Technical, educational, and limited financial assistance to encourage environmental enhancement.	USDA-NRCS Website: www.nrcs.usda.gov New Mexico NRCS contact for this program is Resource Conservationist Email: michael.neubeiser@nm.usda.gov
Hazard Identification and Mapping		
National Flood Insurance Program: Flood Mapping;	Flood insurance rate maps and floodplain management maps for all NFIP communities;	FEMA Region VI contact is Jerry.Clark@FEMA.DHS.gov NM DHSEM contact is VeronicaE.Chavez@state.nm.us Websites: https://msc.FEMA.gov www.floodsmart.gov
National Digital Orthophoto Program	Develops topographic quadrangles for use in mapping of flood and other hazards.	DOI-USGS- National Mapping Division: Phone: (573) 308-3802
Streamgaging and Flood Monitoring Network	The operation of a network of over 7,000 stream gaging stations that provide data on the flood characteristics of rivers.	DOE-USGS Chief, Office of Surface Water USGS: (703) 648-5303
Mapping Standards Support	Expertise in mapping and digital data standards to support the National Flood Insurance Program.	DOI-USGS- National Mapping Division: Phone: (573) 308-3802
Soil Survey	Maintains soil surveys of counties or other areas to assist with farming, conservation, mitigation or related purposes.	USDA-NRCS – Deputy Chief for Soil Science and Resource Assessment: Phone: (202) 720-4630 New Mexico NRCS contact for this program is State Soil Scientist Email: richard.strait@nm.usda.gov
National Earthquake Hazards Reduction Program	Seismic mapping for U.S.	DOI-USGS-Earthquake Program Coordinator: Phone: (703) 648-6785



Program / Activity	Type of Assistance	Agency & Contact
Project Support		
Aquatic Ecosystem Restoration	Direct support for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Albuquerque District contact is: Chief, Environmental Resources Section Email: Julie.A.Alcon@usace.army.mil
Beneficial Uses of Dredged Materials	Direct assistance for projects that protect, restore, and create aquatic and ecologically related habitats, including wetlands, in connection with dredging an authorized Federal navigation project.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Albuquerque District contact is: Chief, Environmental Resources Section Email: Julie.A.Alcon@usace.army.mil
Wetlands Protection – Development Grants	Grants to support the development and enhancement of State and tribal wetlands protection programs.	US Environmental Protection Agency EPA Wetlands Hotline: (800) 832-7828 EPA Headquarters, Office of Water Chief, Wetlands Strategies and State Programs: Phone: (202) 260-6045
Clean Water Act Section 319 Grants	Grants to States to implement non-point source programs, including support for non-structural watershed resource restoration activities.	EPA Office of Water Phone: (202) 260-7088, 7100
Community Development Block Grant (CDBG) State-Administered Program	Grants to States to develop viable communities (e.g., housing, a suitable living environment, expanded economic opportunities) in non-entitled areas, for low- and moderate-income persons.	US Department of Housing and Urban Development (HUD) State CDBG Program Manager State and Small Cities Division, Office of Block Grant Assistance, HUD Headquarters Phone: (202) 708-3587



Program / Activity	Type of Assistance	Agency & Contact
Community Development Block Grant Entitlement Communities Program	Grants to entitled cities and urban counties to develop viable communities (e.g., decent housing, a suitable living environment, expanded economic opportunities), principally for low- and moderate-income persons.	<p>HUD</p> <p>Community Planning and Development HUD field office.</p> <p>Entitlement Communities Division, Office of Block Grant Assistance, HUD Headquarters: (202) 708-1577, 3587</p>
Emergency Watershed Protection Program	Provides technical and financial assistance for relief from imminent hazards in small watersheds, and to reduce the vulnerability of life and property in small watershed areas if the damage is caused by an eligible disaster.	<p>USDA – NRCS</p> <p>Phone: (202) 690-0848</p> <p>New Mexico NRCS contact for this program is Resource Conservationist</p> <p>Email: seth.fiedler@nm.usda.gov</p>
Rural Development Assistance -- Utilities	Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs.	<p>USDA-Rural Utilities Service (RUS)</p> <p>Program Support: (202) 720-1382</p> <p>Northern Regional Division: (202) 720-1402</p> <p>Electric Staff Division: (202) 720-1900</p> <p>Power Supply Division: (202) 720-6436</p>
Rural Development Assistance – Housing	Grants, loans, and technical assistance in addressing rehabilitation, health and safety needs in primarily low-income rural areas. Declaration of major disaster necessary.	<p>USDA-Rural Housing Service (RHS)</p> <p>Community Programs: (202) 720-1502</p> <p>Single Family Housing: (202) 720-3773</p> <p>Multi-Family Housing: (202) 720-5177</p>
HOME Investments Partnerships Program	Grants to States, local government and consortia for permanent and transitional housing (including support for property acquisition and rehabilitation) for low-income persons.	<p>HUD</p> <p>Community Planning and Development, Grant Programs, Office of Affordable Housing, HOME Investment Partnership Programs:</p> <p>(202) 708-2685</p> <p>(202) 708 0614 extension 4594</p> <p>1-800-998-9999</p>



Program / Activity	Type of Assistance	Agency & Contact
Disaster Recovery Initiative	Grants to fund gaps in available recovery assistance after disasters (including mitigation).	Community Planning and Development Divisions at HUD field offices HUD Community Planning and Development: (202) 708-2605
Non-Structural Alternatives to Structural Rehabilitation of Damaged Flood Control Works	Direct planning and construction grants for non-structural alternatives to the structural rehabilitation of flood control works damaged in floods or coastal storms. \$9 million FY99	Department of Defense (DOD), US Army Corps of Engineers (USACE) Albuquerque USACE contact is: Floodplain Management Services Program Manager Email: Stephen.K.Scissons@usace.army.mil
Partners for Fish and Wildlife	Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats.	Department of Interior (DOI) Fish and Wildlife Service (FWS) National Coordinator, Ecological Services: (703) 358-2201 A list of State and Regional contacts is available from the National Coordinator upon request.
Project Modifications for Improvement of the Environment	Provides for ecosystem restoration by modifying structures and/or operations or water resources projects constructed by the USACE, or restoring areas where a USACE project contributed to the degradation of an area.	Department of Defense (DOD) US Army Corps of Engineers (USACE) Albuquerque District contact is: Chief, Environmental Resources Section Email: Julie.A.Alcon@usace.army.mil
Post-Disaster Economic Recovery Grants and Assistance	Grant funding to assist with the long-term economic recovery of communities, industries, and firms adversely impacted by disasters.	Department of Commerce (DOC) – Economic Development Administration (EDA) Disaster Recovery Coordinator Phone: (202) 482-6225
Public Housing Modernization Reserve for Disasters and Emergencies	Funding to public housing agencies for modernization needs resulting from natural disasters (including elevation, flood proofing, and retrofit).	HUD Director, Office of Capital Improvements: Phone: (202) 708-1640



Program / Activity	Type of Assistance	Agency & Contact
Native American Housing Assistance (Housing Improvement Program)	Project grants and technical assistance to substantially eliminate sub-standard tribal housing.	Department of Interior (DOI)-Bureau of Indian Affairs (BIA) Division of Housing Assistance, Office of Tribal Services Phone: (202) 208-5427
Land Protection	Technical assistance for runoff retardation and soil erosion prevention to reduce hazards to life and property.	USDA-NRCS (202) 720-4527 New Mexico NRCS District Offices are the contact for this program. District Conservationists can be reached through 505-761-4400
North American Wetland Conservation Fund	Cost-share grants to stimulate public/private partnerships for the protection, restoration, and management of wetland habitats.	DOI-FWS North American Waterfowl and Wetlands Office Phone: (703) 358-1784
Land Acquisition	Acquires or purchases easements on high-quality lands and waters for inclusion into the National Wildlife Refuge System.	DOI-FWS Division of Realty, National Coordinator Phone: (703) 358-1713
Federal Land Transfer / Federal Land to Parks Program	Identifies, assesses, and transfers available Federal real property for acquisition for State and local parks and recreation, such as open space.	DOI-NPS General Services Administration Offices Fort Worth, TX: (817) 334-2331 Boston, MA: (617) 835-5700 NPS National Office, Federal Lands to Parks Leader Phone: (202) 565-1184
Wetlands Reserve Program	Financial and technical assistance to protect and restore wetlands through easements and restoration agreements.	USDA-NRCS National Policy Coordinator, NRCS Watersheds, and Wetlands Division Phone: (202) 720-3042 New Mexico NRCS District Offices are the contact for this program. District Conservationists can be reached through 505-761-4400



Program / Activity	Type of Assistance	Agency & Contact
Transfers of Inventory Farm Properties to Federal and State Agencies for Conservation Purposes	Transfers title of certain inventory farm properties owned by FSA to Federal and State agencies for conservation purposes (including the restoration of wetlands and floodplain areas to reduce future flood potential)	US Department of Agriculture (USDA) – Farm Service Agency (FSA) Farm Loan Programs Phone: (202) 720-3467, 1632
Financing and Loan Guarantees		
Hazard Mitigation Grant Program, Pre-disaster Mitigation Grant Program, Flood Mitigation Assistance Program	Federal grants administered by States with typically 75% federal share and 25% non-federal share. Tribal entities can apply directly to FEMA Region for funding.	FEMA Region VI contact is Christina.King@FEMA.DHS.gov NM DHSEM contact is Wendy.Blackwell@state.nm.us Website: www.FEMA.gov/mitigation-planning-assistance-resources
Physical Disaster Loans and Economic Injury Disaster Loans	Disaster loans to non-farm, private sector owners of disaster-damaged property for uninsured losses. Loans can be increased by up to 20 percent for mitigation purposes.	Small Business Administration (SBA) Associate Administrator for Disaster Assistance Phone: (202) 205-6734
Conservation Contracts	Debt reduction for delinquent and non-delinquent borrowers in exchange for conservation contracts placed on environmentally sensitive real property that secures FSA loans.	USDA-FSA Farm Loan Programs (202) 720-3467, 1632 Or local FSA Office
Clean Water State Revolving Funds	Loans at actual or below-market interest rates to help build, repair, relocate or replace wastewater treatment plants.	EPA Office of Water, State Revolving Fund Branch Phone: (202) 260-7359 A list of Regional Offices is available upon request



Program / Activity	Type of Assistance	Agency & Contact
Section 108 Loan Guarantee Program	Loan guarantees to public entities for the community and economic development (including mitigation measures).	Community Planning and Development staff at HUD field office Section 108 Office in HUD Headquarters Phone: (202) 708-1871
Section 504 Loans for Housing	Repair loans, grants and technical assistance to very low-income senior homeowners living in rural areas to repair their homes and remove health and safety hazards.	US Department of Agriculture (USDA) – Rural Housing Service (RHS) RHS Headquarters Director, Single Family Housing Direct Loan Division Phone: (202) 720-1474
Section 502 Loan and Guaranteed Loan Program	Provides loans, loan guarantees, and technical assistance to very low and low-income applicants to purchase, build, or rehabilitate a home in a rural area.	USDA-RHS Contact the Local RHS Field Office Director, Single Family Housing Guaranteed Loan Division Phone: (202) 720-1452
Rural Development Assistance -- Utilities	Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs.	USDA-Rural Utility Service (RUS) Contact Rural Development Field Offices RHS, Deputy Administrator, Community Programs Division Phone: (202) 720-1490
Farm Ownership Loans	Direct loans, guaranteed/insured loans, and technical assistance to farmers so that they may develop, construct, improve, or repair farm homes, farms, and service buildings, and to make other necessary improvements.	USDA-FSA Director, Farm Programs Loan Making Division, FSA Phone: (202) 720-1632



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3 APPENDIX C - VULNERABILITIES

3.1 Critical Facility List

3.1.1 Government Offices

Facility: State Capitol Complex

Location: Santa Fe, Santa Fe County

Why Critical: State Government Headquarters

Replacement Value: \$152,988,000

Contents Value: \$6,616,000

Hazards/Potential Losses:

Earthquake PGA 14, 10-20% damage possible

Flood: Zone C, minimal hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F average winter temperature, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Low-moderate, up to 25% damage possible

Facility: Harold Runnels Building

Location: Santa Fe, Santa Fe County

Why Critical: NM Department of Health Headquarters, for Secretary of Health administration; infectious disease epidemiology and environmental health surveillance; public health services delivery.

Replacement Value: \$31,676,000

Contents Value: \$3,800,000

Hazards/Potential Losses

Earthquake PGA 14, 10-20% damage possible

Flood: Zone C, minimal hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med. Zone 11 (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential.

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No damages anticipated

Land Subsidence: Uncertain

Facility: Wallace/Lamy Buildings



Location: Santa Fe, Santa Fe County

Why Critical: Critical State Government Activities

Replacement Value: \$6,486,000

Contents Value: \$604,000

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Low to moderate, up to 25% damage possible

Facility: Villagra Building

Location: Santa Fe, Santa Fe County

Why Critical: Attorney General Offices, Critical Government Operations

Replacement Value: \$13,455,000

Contents Value: \$1,305,000

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Uncertain

Facility: Bataan Memorial Building

Location: Santa Fe, Santa Fe County

Why Critical: Department of Finance and Administration, critical government function

Replacement Value: \$27,899,000

Contents Value: \$2,443,000

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction



Landslide: none-low
Dam Failure: none-low
Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Med, Zone II (EF2-3) up to 50% damage
Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential
Winter Storm: 20-40" snow, 24-32°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Low to moderate, up to 25% damage possible

Facility: Siler Building F

Location: Santa Fe, Santa Fe County

Why Critical: Houses the Department of Health Emergency Operations Center and Emergency Medical Services.

Replacement Value: N/A (no up-date available for the 2018 Plan)

Contents Value: N/A (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Uncertain

Facility: Simms Building

Location: Santa Fe, Santa Fe County

Why Critical: Houses main IT, communications, computer systems for state

Replacement Value: \$11,184,000

Contents Value: \$1,922,000

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential



Winter Storm: 20-40" snow, 24-32°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Uncertain

3.1.2 Department of Corrections

Facility: Penitentiary of New Mexico (PNM)

Location: Santa Fe, Santa Fe County

Why Critical: Houses over 900 inmates

Replacement Value: \$161,872,000

Contents Value: \$ 6,393,000

Hazards/Potential Losses:

Earthquake: PGA 16, 10-20% damages

Flood: Zone X, outside 500-year flood

Wildfire: Med risk, fire resistant construction, minimal damage anticipated

Landslide: None to low, no damages predicted

Dam Failure: none-low risk

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Uncertain

Facility: Roswell Correctional Facility (RCF)

Location: Roswell, Chaves County

Why Critical: Houses 230+ inmates

Replacement Value: \$ 11,398,000

Contents Value: \$ 1,059,000

Hazards/Potential Losses:

Earthquake: PGA 2, no damage anticipated

Flood: Zone C, minimal Hazard

Wildfire: none-low, fire resistant construction

Landslide: None to low, no damages predicted

Dam Failure: Medium, dam failure could flood the city, not expected to affect RCF, but impacts are possible

Thunderstorm: 30-40 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: low, up to 10 mph average winds, Beaufort 0-3, no damage expected

Winter Storm: 1-10" snow per year, average winter temperatures above 40°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Low to moderate, up to 25% damage possible



Facility: Southern New Mexico Correctional Facility (SNMCF)

Location: Las Cruces, Doña Ana County

Why Critical: houses over 800 inmates

Replacement Value: \$66,125,000

Contents Value: \$3,969,000

Hazards/Potential Losses:

Earthquake: PGA 8, no damage expected

Flood: Zone X, outside the 500-year event

Wildfire: Low, fire resistant construction

Landslide: None to low, no damages predicted

Dam Failure: none-low risk

Thunderstorm: 30-40 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: straddles Zone I-II border, (up to EF3) up to 50% damage

Wind: Average wind speed 10 mph, higher gusts possible, up to Beaufort 3, no damage expected

Winter Storm: 1-10" snow per year, average winter temperatures above 40°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 75% damage possible

Facility: Springer Detention Center (SDC)

Location: Springer, Colfax County

Why Critical: Houses 220 inmates

Replacement Value: \$25,914,000

Contents Value: \$2,375,000

Hazards/Potential Losses:

Earthquake: PGA 6, no damage anticipated

Flood: Zone C, no BFEs, Minimal damages

Wildfire: none-low risk, fire resistant construction

Landslide: Low to moderate, 10-50% damages possible

Dam Failure: low risk, the city of Springer lies below Eagle Nest Dam along the Cimarron River, but SDC is not near the river

Thunderstorm: 70+ thunderstorm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Wind Zone II (EF2-3) up to 50% damage possible

Wind: average wind speeds 12-13 mph, Beaufort 3-4, no damage anticipated

Winter Storm: as much as 60" of snow annually, average of 24-32°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 50% damage possible

Facility: Central New Mexico Correctional Facility (CNMCF)

Location: Los Lunas, Valencia County

Why Critical: Houses over 1,100 inmates

Replacement Value: \$93,010,000

Contents Value: \$7,016,000

Hazards/Potential Losses:



Earthquake: PGA 19, as much as 30% damage possible
Flood: Zone X, outside the 500-year flood
Wildfire: Med risk, fire resistant construction no damage expected
Landslide: None to low, no damages predicted
Dam Failure: low risk, the Rio Grande runs through the city but CNMCF is located some distance from the river
Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: location is on the Zone I-II border, (up to EF3) up to 50% damage
Wind: average wind speeds in area up to 15 mph, Beaufort 4, gusts occur often in area, minimal damages anticipated
Winter Storm: approximately 10" of snow annually, average winter temperatures 32-40°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 75% damage possible

Facility: Grants Correctional Facility (GCF)

Location: Grants, Cibola County

Why Critical: Houses 420+ inmates

Replacement Value: \$30,908,000

Contents Value: \$2,558,000

Hazards/Potential Losses:

Earthquake: PGA 10, 10-15% damage possible
Flood: Zone C, no BFEs, Minimal damages
Wildfire: Medium risk, fire resistant construction, no damages expected
Landslide: low, no damages predicted
Dam Failure: none-low risk, no dams upstream of GCF
Thunderstorm: as many as 50 t-storm days annually, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: wind zone I, lowest tornado risk, no tornadoes reported in county
Wind: average annual wind speed up to 12 mph, Beaufort 0-3, gusts possible, no damages anticipated
Winter Storm: 10-20 inches of snow on average annually, average winter temperature 24-32°F
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Moderate to high, up to 50% damage possible

3.1.3 Department of Public Safety (DPS)

Facility: DPS Headquarters

Location: Santa Fe, Santa Fe County

Why Critical: Statewide Headquarters for NM State Police, Disaster critical personnel

Replacement Value: \$39,174,000

Contents Value: \$8,096,000

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, within city limits



Landslide: none-low
Dam Failure: none-low
Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Med, Zone II (EF2-3) up to 50% damage
Wind: none-low, average wind speed up to 13 mph, Beaufort 4, high gust potential, minimal damages anticipated
Winter Storm: 20-40" snow, 24-32°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Uncertain

Facility: DPS District 1

Location: Santa Fe, Santa Fe County

Why Critical: (Same location as DPS HQ) Disaster critical personnel

Replacement Value: \$630,000

Contents Value: \$ 282,000

Earthquake: PGA 14, 10-20% damage possible

Flood: Zone C, minimal Hazard

Wildfire: none-low, within city limits

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 4, high gust potential, minimal damages anticipated

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated, potential delays in service, personnel at risk

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 50% damage possible

Facility: DPS District 2

Location: Las Vegas, San Miguel County

Why Critical: Disaster critical personnel

Replacement Value: \$5,383,000

Contents Value: \$620,000

Hazards/Potential Losses:

Earthquake: PGA 12, up to 10% damage possible

Flood: Zone C, minimal hazard

Wildfire: Medium risk area, masonry building, no damage anticipated

Landslide: none to low risk, no damages predicted

Dam Failure: none –low risk, no dams upstream of facility

Thunderstorm: 50-60 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Zone II (EF2-3), up to 50% damage

Wind: average wind speeds up to 13 mph, up to Beaufort 4, no damages anticipated,



Winter Storm: up to 60" average snow annually, 24-32°F average winter temperature, response delays
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Moderate to high, up to 50% damage possible

Facility: DPS District 3

Location: Roswell, Chaves County

Why Critical: Disaster critical personnel

Replacement Value: \$800,000

Contents Value: \$135,000

Hazards/Potential Losses:

Earthquake: PGA 2, No damages expected

Flood: Flood Zone X, outside the 500-year flood

Wildfire: Medium, non-combustible masonry

Landslide: none to low risk, no damages predicted

Dam Failure: Failure of the Two Rivers Reservoir will affect Roswell; inundation is possible at this facility but not likely

Thunderstorm: Thunderstorm: 30-40 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Wind Zone II (EF2-3), up to 50% damage

Wind: low, up to 10 mph average winds, Beaufort 0-3, no damage expected

Winter Storm: 1-10" snow per year, average winter temperatures above 40°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate, up to 35% damage possible

Facility: DPS District 4

Location: Las Vegas, San Miguel County

Why Critical: First Responders

Replacement Value: \$5,145,000

Contents Value: \$1,011,000

Hazards/Potential Losses:

Earthquake: PGA 8, up to 10% damage possible

Flood: Zone X, outside the 500-year flood boundary

Wildfire: Medium risk area, joisted masonry building, no damage anticipated

Landslide: none to low risk, no damages predicted

Dam Failure: none –low risk, no dams upstream of facility

Thunderstorm: 50-60 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Zone II (EF2-3), up to 50% damage

Wind: average wind speeds up to 11 mph, up to Beaufort 3, high gusts possible, no damages anticipated,

Winter Storm: up to 60" average snow annually, 24-32°F average winter temperature, response delays

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated



Land Subsidence: Uncertain
Facility: DPS District 5
Location: Albuquerque, Bernalillo County
Why Critical: First Responders
Replacement Value: \$3,921,000
Contents Value: \$723,000
Hazards/Potential Losses:
Earthquake: PGA 18, damages up to 30%
Flood: Zone X, beyond the 500-year flood boundary
Wildfire: none-low, within city area
Landslide: none to low risk, no damages predicted
Dam Failure: Low to none, dam failure events would affect Albuquerque, but this facility lies beyond the inundation zones
Thunderstorm: on average up to 40 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3
Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Uncertain

Facility: DPS District 6
Location: Gallup, McKinley
Why Critical: First responders, disaster critical personnel
Replacement Value: \$2,447,000
Contents Value: \$360,000
Hazards/Potential Losses:
Earthquake: PGA 6, no damages projected
Flood: Flood Zone C, minimal flood hazard
Wildfire: medium risk, non-combustible materials, no damages anticipated
Landslide: none to low, no damages expected
Dam Failure: low to no risk, no dams upstream
Thunderstorm: approximately 50 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Zone I lowest tornado risk, no tornadoes reported in county
Wind: average wind speeds up to 13 mph, Beaufort 4, no damages
Winter Storm: 10-20" of snow per year, average temperatures 24-32°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 75% damage possible

Facility: DPS District 7
Location: Española, Rio Arriba County
Why Critical: Critical First Responders
Replacement Value: \$508,985
Contents Value: \$50,000



Hazards/Potential Losses:

- Earthquake: PGA 18 up to 30% damages projected
- Flood: Zone X, no practical flood risk
- Wildfire: High Risk area, building is 100% masonry, non-combustible, minor damage possible
- Landslide: none to low risk area, no damages predicted
- Dam Failure: Community is at risk from Abiquiu Reservoir, this facility lies beyond the inundation zones
- Thunderstorm: 40-50 thunderstorm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
- Tornado: Facility lies within Zone II (EF2-3), on edge of special wind zone
- Wind: average wind speeds 11-12 mph, Beaufort 3, no damages expected
- Winter Storm: 40-60" of snow annually, average winter temperatures 24-32°F, no damages anticipated
- Drought: No Damages Anticipated
- Extreme Heat: No Damages Anticipated
- Land Subsidence: Moderate, up to 25% damage possible

Facility: DPS Sub-District 7

Location: Taos, Taos County

Why Critical: Critical First Responders

Replacement Value: \$432,000

Contents Value: \$69,000

Hazards/Potential Losses:

- Earthquake: PGA 12, up to 15% damages probable
- Flood: Zone X no appreciable flood hazard
- Wildfire: High-risk area, Frame Construction, 100% damage possible
- Landslide: none to low risk area, no damages predicted
- Dam Failure: Low risk, no dams upstream
- Thunderstorm: 50-60 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
- Tornado: Wind Zone II (EF2-3), up to 60% damage possible
- Wind: average wind speed 11 mph, Beaufort 4, higher gusts likely
- Winter Storm: 20-40 inches normal, 60+ inches likely, Average winter temperatures below 24°F, losses possible
- Drought: No Damages Anticipated
- Extreme Heat: No Damages Anticipated
- Land Subsidence: High, up to 75% damage possible

Facility: DPS District 9

Location: Clovis, Curry County

Why Critical: First responders, critical personnel

Replacement Value: \$805,000

Contents Value: \$128,000

Hazards/Potential Losses:

- Earthquake: PGA 2, no damages predicted
- Flood: Zone X, no damages expected
- Wildfire: no damages expected
- Landslide: none to low risk area, no damages predicted



Dam Failure: no dams upstream
Thunderstorm: 40-50 thunderstorm days annually, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Wind Zone III (EF3+), >60% damages possible
Wind: average wind speeds over 15 mph, Beaufort 4+, higher gusts very likely,
Winter Storm: 10-20" snow average, average winter temps 32-40°F, Damages possible
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Moderate, up to 25% damage possible

Facility: NM DPS Mobilization Center

Location: Albuquerque, Bernalillo County

Latitude and Longitude: 35.084 degrees N, 106.651 degrees W

Why Critical: State Emergency Operations Center for continuity of operations, Critical Disaster Response

Replacement Value: \$1,629,167

Contents Value: \$ 6,000,000

Hazards/Potential Losses:

Earthquake: PGA 14, 10-20% damages

Flood: Zone X, outside 500-year flood

Wildfire: Med risk, fire resistant construction, minimal damage anticipated

Landslide: none to low risk area, no damages predicted

Dam Failure: Low risk, while dam failures will impact the city, the facility lies outside the inundation zones

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage

Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3

Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 75% damage possible

3.1.4 Department of Homeland Security and Emergency Management (DHSEM)

Facility: State Emergency Management Center

Location: Santa Fe, Santa Fe County

Why Critical: State Emergency Operations Center, Critical Disaster Response

Replacement Value: \$1,709,704

Contents Value: \$1,650,000

Hazards/Potential Losses:

Earthquake: PGA 16, 10-20% damages

Flood: Zone X, outside 500-year flood

Wildfire: Med risk, fire resistant construction, minimal damage anticipated

Landslide: none to low risk area, no damages predicted

Dam Failure: none-low risk

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible



Tornado: Med, Zone II (EF2-3) up to 50% damage
Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential
Winter Storm: 20-40" snow, 24-32°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Moderate to high, up to 50% damage possible

3.1.5 Department of Military Affairs

Facility: Oñate Complex

Location: Santa Fe, Santa Fe County

Why Critical: State National Guard Headquarters

Replacement Value: \$48,652,000

Contents Value: \$5,560,000

Hazards/Potential Losses:

Earthquake: PGA 16, 10-20% damages

Flood: Zone X, outside 500-year flood

Wildfire: Med risk, fire resistant construction, minimal damage anticipated

Landslide: low risk area, no damages predicted

Dam Failure: none-low risk

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Uncertain

Facility: Aircraft Maintenance Hanger

Location: Santa Fe, Santa Fe County

Why Critical: Aviation Support for National Guard Disaster Response Activities

Replacement Value: \$10,368,000

Contents Value: \$1,554,000

Hazards/Potential Losses:

Earthquake: PGA 16, 10-20% damages

Flood: Zone X, outside 500-year flood

Wildfire: Low risk, non-combustible construction, minimal damage anticipated

Landslide: none to low risk area, no damages predicted

Dam Failure: none-low risk

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: none-low, average wind speed up to 13 mph, Beaufort 0-3, high gust potential

Winter Storm: 20-40" snow, 24-32°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: Damages to runways possible, damages are gradual

Land Subsidence: Moderate to high, up to 50% damage possible



Facility: National Guard Bernalillo Armory
Location: Albuquerque, Bernalillo County
Why Critical: Regional National Guard Operations
Replacement Value: \$6,941,000
Contents Value: \$1,299,000

Hazards/Potential Losses:

- Earthquake: PGA 18, up to 30% damage possible
- Flood: Flood Zone X, beyond 500-year flood plain
- Wildfire: None –low, within city areas
- Landslide: none to low risk area, no damages predicted
- Dam Failure: Low risk, while dam failures will impact the city, the facility lies outside the inundation zones
- Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
- Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
- Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3
- Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated
- Drought: No Damages Anticipated
- Extreme Heat: No Damages Anticipated
- Land Subsidence: High, up to 75% damage possible

Facility: Roswell Armory
Location: Roswell, Chaves County
Why Critical: Regional National Guard Operations
Replacement Value: \$6,746,000
Contents Value: \$828,000

Hazards/Potential Losses:

- Earthquake: PGA 6, up to 10% damages projected
- Flood: Flood Zone C. Minimal hazard, no damages anticipated
- Wildfire: Low hazard, minimal damages projected
- Landslide: none to low risk area, no damages predicted
- Dam Failure: While dams on the Pecos and Hondo rives have dams, the facility is not within the inundation zones
- Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10
- Tornado: Med, Zone II (EF2-3) up to 50% damage
- Wind: Average wind speeds around 11 mph, high gusts possible, none-light damages predicted
- Winter Storm: less than 10" average snowfall annually, average winter temps between 32 and 40°F
- Drought: No Damages Anticipated
- Extreme Heat: No Damages Anticipated
- Land Subsidence: Moderate to high, up to 50% damage possible

Facility: Colfax Armory
Location: Springer, Colfax County
Why Critical: Regional National Guard Operations



Replacement Value: \$4,728,000

Contents Value: \$937,000

Hazards/Potential Losses:

Earthquake: PGA 6, no damages anticipated

Flood: Flood Zone C, minimal hazard

Wildfire: Low risk area, non-combustible materials, no damage projected

Landslide: moderate risk area, 50% damages possible

Dam Failure: Medium hazard, Eagle Nest Dam could affect this area, 10% damage projected

Thunderstorm: 70+ thunderstorm days per year, high lightning density, the materials used in construction, and lightning shielding of equipment is in place, <20% damages anticipated

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: average wind speeds up to 15, mph, Beaufort 4, gust possible, light damages possible

Winter Storm: up to 40" annual snowfall, winter temperatures average as low as 24°F, damages possible but unlikely

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 50% damage possible

Facility: Belen Armory

Location: Belen, Valencia County

Why Critical: Regional National Guard Operations

Replacement Value: \$4,201,000

Contents Value: \$361,000

Hazards/Potential Losses:

Earthquake: PGA 18, up to 30% damages anticipated

Flood: Flood Zone A, no BFEs, flooding possible, 25% damages likely

Wildfire: med fire risk area, 100% non-combustible materials, low damages expected

Landslide: none to low risk area, no damages predicted

Dam Failure: med risk, dam failures upstream will affect the community, facility lies within the inundation zone, ≥25% damages possible

Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10

Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage

Wind: average wind speeds in area up to 15 mph, Beaufort 4, gusts occur often in area, minimal damages anticipated

Winter Storm: approximately 10" of snow annually, average winter temperatures 32-40°F, no damage anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: High, up to 75% damage possible

Facility: Socorro Armory

Location: Socorro, Socorro County

Why Critical: Regional National Guard Operations

Replacement Value: \$2,081,668 (no up-date available for the 2018 Plan)

Contents Value: \$944,583 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:



Earthquake: PGA 20, possible damages of up to 30%
Flood: Flood Zone X, no damages projected
Wildfire: low risk area, no damages anticipated
Landslide: none to low risk area, no damages predicted
Dam Failure: Socorro lies along the Rio Grande River, and dam failures upstream will go through the town, the armory is approximately 3 miles from the river, minimal if any damages expected
Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds between 14 and 15 mph, Beaufort 4, gusts possible, low damages predicted
Winter Storm: average winter temperatures above 32 degrees, up to 10 inches annual snowfall, minimal damages predicted
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 50% damage possible

Facility: Sandoval Armory

Location: Rio Rancho, Sandoval County

Why Critical: Regional National Guard Operations

Replacement Value: \$14,053,000

Contents Value: \$3,032,000

Hazards/Potential Losses:

Earthquake: PGA 16, Up to 10% damages

Flood: Zone X

Wildfire: Medium risk, grass fires, non-combustible materials, no damage probable

Landslide: low risk area, no damages predicted

Dam Failure: no dams up stream of facility

Thunderstorm: 40-50 t-storm days per year, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10

Tornado: wind zone I, lowest tornado risk, up to EF2, 40 % damages possible

Wind: average wind speeds 13 mph, Beaufort 4, gusts possible, no damages projected

Winter Storm: area receives 20-40 "per year of snow, winter temperatures up to 40°F

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Low to Moderate, up to 35% damage possible

3.1.6 Hospitals/Medical Facilities

Facility: University of New Mexico Hospital

Location: Albuquerque, Bernalillo NM

Why Critical: Only Level 1 Trauma Center in the State

Replacement Value: \$144,262,000

Contents Value: \$ 193,501,000

Hazards/Potential Losses:

Earthquake: PGA 18, damages up to 30%

Flood: Zone X, beyond the 500-year flood boundary



Wildfire: none-low, within city area
Landslide: none to low risk area, no damages predicted
Dam Failure: Low to none, dam failure events would affect Albuquerque, but this facility lies beyond the inundation zones
Thunderstorm: on average up to 40 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3
Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Uncertain

Facility: Tri-Service Building

Location: Albuquerque, Bernalillo County

Why Critical: State Morgue, and location of primary scientific and veterinary laboratories in the state

Replacement Value: \$15,705,000

Contents Value: \$ 8,435,000

Earthquake: PGA 18, damages up to 30%

Flood: Zone X, beyond the 500-year flood boundary

Wildfire: none-low, within city area

Landslide: none to low risk area, no damages predicted

Dam Failure: Low to none, dam failure events would affect Albuquerque, but this facility lies beyond the inundation zones

Thunderstorm: on average up to 40 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage

Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3

Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate, up to 50% damage possible

Facility: New Mexico Behavioral Health Institute

Location: San Miguel County

Why Critical: Only State psychiatric and forensic hospital

Replacement Value: \$117,319,000

Contents Value: \$20,084,000

Hazards/Potential Losses:

Earthquake: PGA 8, any significant shaking could cause damage, 50% projected

Flood: N/A

Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible

Landslide: moderate risk area, damages up to 50% possible

Dam Failure: N/A

Thunderstorm: 50+ t-storm days annually, high lightning density, up to 50% damages

Tornado: wind zone II, but any tornado could cause 100% loss



Wind: no damages anticipated
Winter Storm: 40+ inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: High, up to 50% damage possible

Facility: New Mexico Rehabilitation Center

Location: Chavez County

Why Critical: Inpatient Physical Rehabilitation Facility

Replacement Value: \$13,485,000

Contents Value: \$4,125,000

Hazards/Potential Losses:

Earthquake: PGA 6, up to 10% damages projected

Flood: Flood Zone C. Minimal hazard, no damages anticipated

Wildfire: Low hazard, minimal damages projected

Landslide: none to low risk area, no damages predicted

Dam Failure: While dams on the Pecos and Hondo rivers have dams, the facility is not within the inundation zones

Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10

Tornado: Med, Zone II (EF2-3) up to 50% damage

Wind: Average wind speeds around 11 mph, high gusts possible, none-light damages predicted

Winter Storm: less than 10" average snowfall annually, average winter temps between 32 and 40°F

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate, up to 25% damage possible

Facility: New Mexico Veterans Center

Location: Sierra County

Why Critical: Inpatient nursing facility for veterans

Replacement Value: \$19,357,000

Contents Value: \$ 5,171,000

Hazards/Potential Losses:

Earthquake: PGA 8, 50% damage possible

Flood: N/A

Flood: N/A

Wildfire: low risk area, less than 15% damages possible

Landslide: low risk area, no damages predicted

Dam Failure: N/A

Thunderstorm: High-risk area, equipment could be 100% destroyed

Tornado: wind zone II, but any tornado could cause 100% loss

Wind: no damages anticipated

Winter Storm: less than 10 inches of snow per year, no damages anticipated

Drought: no damages projected

Heat: no damages expected

Land Subsidence: Moderate, up to 25% damage possible



Facility: Fort Bayard Medical Center
Location: Grant County
Why Critical: Inpatient Nursing Care Facility
Replacement Value: \$ (no up-date available for the 2018 Plan)
Contents Value: \$ (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 8, less than 10% damages projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: low risk area, no damages predicted
Dam Failure: N/A
Thunderstorm: High Risk, sensitive equipment could be damaged, up to 50% damages
Tornado: Low risk,
Wind: Medium risk, average wind speed low, but high gusts possible
Winter Storm: average snowfall between 20-40 "per year, minimal damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: Moderate, up to 25% damage possible

Facility: Miners Colfax Medical Center
Location: Colfax County:
Why Critical: Hospital
Replacement Value: \$44,666,000
Contents Value: \$10,690,000

Hazards/Potential Losses:

Earthquake: PGA 6, no damage anticipated
Flood: Zone C, no BFEs, Minimal damages
Wildfire: none-low risk, fire resistant construction
Landslide: low risk area, no damages predicted
Dam Failure: low risk, the city of Springer lies below Eagle Nest Dam along the Cimarron River, but SDC is not near the river
Thunderstorm: 70+ thunderstorm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Wind Zone II (EF2-3) up to 50% damage possible
Wind: average wind speeds 12-13 mph, Beaufort 3-4, no damage anticipated
Winter Storm: as much as 60" of snow annually, average of 24-32°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Low to moderate, up to 25% damage possible

Facility: Sequoyah Adolescent Treatment Center
Location: Bernalillo County
Why Critical: Inpatient adolescent treatment
Replacement Value: \$9,600,000
Contents Value: \$1,031,000

Hazards/Potential Losses:

Earthquake: PGA 18, damages up to 30%



Flood: Zone X, beyond the 500-year flood boundary
Wildfire: none-low, within city area
Landslide: none to low risk area, no damages predicted
Dam Failure: Low to none, dam failure events would affect Albuquerque, but this facility lies beyond the inundation zones
Thunderstorm: on average up to 40 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3
Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 75% damage possible

Facility: Los Lunas Community Program

Location: Valencia County

Why Critical: Program for Developmentally Disabled Children and Adults

Replacement Value: \$41,641,000

Contents Value: \$2,391,000

Hazards/Potential Losses:

Earthquake: PGA 18, up to 30% damages anticipated
Flood: Flood Zone A, no BFEs, flooding possible, 25% damages likely
Wildfire: med fire risk area, 100% non-combustible materials, low damages expected
Landslide: none to low risk area, no damages predicted
Dam Failure: med risk, dam failures upstream will affect the community, facility lies within the inundation zone, ≥25% damages possible
Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds in area up to 15 mph, Beaufort 4, gusts occur often in area, minimal damages anticipated
Winter Storm: approximately 10" of snow annually, average winter temperatures 32-40°F, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 75% damage possible

3.1.7 Radio/Communications Sites

Note: The Department of Homeland Security and Emergency Management along with the Department of Information Technology analyzed existing data to determine which radio and communication sites are critical according to the definition included in this Plan.

Facility: Santa Fe Control (DOIT)

Location: Santa Fe County New Mexico DPS or State Police Complex (for Radio Communications Bureau)

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$120,000



Contents Value: \$384,667 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

- Earthquake: PGA 12, any significant shaking could cause damage, 50% projected
- Flood: N/A
- Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
- Landslide: low risk area, no damages predicted
- Dam Failure: N/A
- Thunderstorm: High-risk area, equipment could be 100% destroyed
- Tornado: wind zone II, but any tornado could cause 100% loss
- Wind: no damages anticipated
- Winter Storm: 40+ inches of snow per year, no damages anticipated
- Drought: no damages projected
- Heat: no damages expected
- Land Subsidence: Uncertain

Facility: Sandia Peak

Location: Bernalillo County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$28,023.00 (no up-date available for the 2018 Plan)

Contents Value: \$95,541 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

- Earthquake: PGA 16, any significant shaking could damage the facility, requiring extensive repairs
- Flood: N/A
- Wildfire: High-risk area, tower itself not at risk, but the equipment is at high risk, possible 50% damage.
- Landslide: moderate risk area, 100% damage possible
- Dam Failure: N/A
- Thunderstorm: High Risk, sensitive equipment could be damaged, up to 50% damages
- Tornado: Low risk, top of mountain peak
- Wind: Medium risk, average wind speed low, but high gusts possible
- Winter Storm: As many as 100" of snow per year, minimal damages anticipated
- Drought: no damages projected
- Heat: no damages expected
- Land Subsidence: none to low

Facility: Davenport

Location: Catron County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$22,284 (no up-date available for the 2018 Plan)

Contents Value: \$68,844 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

- Earthquake: PGA 8, less than 10% damages projected
- Flood: N/A
- Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible



Landslide: moderate risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: High Risk, sensitive equipment could be damaged, up to 50% damages
Tornado: Low risk, top of mountain peak
Wind: Medium risk, average wind speed low, but high gusts possible
Winter Storm: average snowfall between 20-40 "per year, minimal damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: none to low

Facility: High Lonesome
Location: Chaves County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$51,514 (no up-date available for the 2018 Plan)
Contents Value: \$294,855 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 2, no damages projected
Flood: N/A
Wildfire: low risk area, minimal damages anticipated
Landslide: moderate risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: High Risk, sensitive equipment could be damaged, up to 50% damages
Tornado: Medium Risk, Wind Zone II, EF2-3, 100% damage possible
Wind: low average wind speed, no damages anticipated
Winter Storm: average snowfall ≤ 10 ", no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: Moderate, up to 50% damage possible

Facility: La Mosca
Location: Cibola County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$60,764 (no up-date available for the 2018 Plan)
Contents Value: \$33,815 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 10, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: moderate risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: Up to 50 t-storm days per year, high lightning density area, and sensitive equipment could be damaged, up to 50% damages
Tornado: Wind Zone I, but a tornado could cause 100% damage
Wind: no damages anticipated
Winter Storm: up to 40" per year, no damages likely
Drought: no damages projected



Heat: no damages expected
Land Subsidence: Low to moderate, up to 25% damage possible

Facility: Touch-Me-Not
Location: Colfax County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$8,486 (no up-date available for the 2018 Plan)
Contents Value: \$52,705 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 10, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: high-risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: up to 70 t-storm days annually, high density lightning area, sensitive equipment could be damaged, up to 50% damages
Tornado: Wind zone II, 100% damage possible
Wind: average wind speeds nearing 15 mph, gust possible, minimal damages anticipated
Winter Storm: up to 140" snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: low to moderate, up to 25% damage possible

Facility: Tucumcari
Location: Quay County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$155,767 (no up-date available for the 2018 Plan)
Contents Value: \$42,488 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 4, no damages anticipated
Flood: N/A
Wildfire: low risk
Landslide: low to moderate risk area, up to 50% damage possible
Dam Failure: N/A
Thunderstorm: up to 50 t-storm days annually, high lightning density area, sensitive equipment could be damaged, up to 50% damages
Tornado: Wind Zone III, EF3+, 100% damage possible
Wind: average wind speeds up to 18 mph, no damages projected
Winter Storm: up to 20" annually, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: Moderate to high, up to 75% damage possible

Facility: Eureka Mesa
Location: Rio Arriba County
Why Critical: Critical communications Towers and Equipment



Replacement Value: \$21,906 (no up-date available for the 2018 Plan)
Contents Value: \$57,224 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 10, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: high risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: 50-60 t-storm days per year, sensitive equipment could be damaged, up to 50% damages
Tornado: straddles Zone I-II border, (up to EF3) up to 50% damage
Wind: no damages likely
Winter Storm: 100+ inches of snow per year, damages unlikely
Drought: no damages projected
Heat: no damages expected
Land Subsidence: low to moderate, up to 25% damage possible

Facility: Archuleta
Location: Rio Arriba County
Status: No longer exists as per DoIT

Facility: South Mesa
Location: San Juan County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$22,908.00 (no up-date available for the 2018 Plan)
Contents Value: \$60,576 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 6, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: low risk area, less than 15% damages possible
Landslide: high risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: up to 50 thunderstorm days per year, sensitive equipment could be damaged, up to 50% damages
Tornado: Zone I, but any tornado could cause 100% damage
Wind: no damages anticipated
Winter Storm: up to 20 inches annually, no damages projected
Drought: no damages projected
Heat: no damages expected
Land Subsidence: low to moderate, up to 25% damage possible

Facility: Gallinas
Location: San Miguel County
Why Critical: Critical communications Towers and Equipment
Replacement Value: \$12,152 (no up-date available for the 2018 Plan)
Contents Value: \$16,246 (no up-date available for the 2018 Plan)



Hazards/Potential Losses:

Earthquake: PGA 8, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: Uncertain
Dam Failure: N/A
Thunderstorm: 50+ t-storm days annually, high lightning density, up to 50% damages
Tornado: wind zone II, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: 40+ inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: Uncertain

Facility: Tesuque Peak

Location: Santa Fe County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$193,485 (no up-date available for the 2018 Plan)

Contents Value: \$6,165 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 12, any significant shaking could cause damage, 50% projected
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages possible
Landslide: moderate risk area, 50% damage possible
Dam Failure: N/A
Thunderstorm: High-risk area, equipment could be 100% destroyed
Tornado: wind zone II, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: 40+ inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: None to low

Facility: Galisteo

Location: Santa Fe County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$162,538 (no up-date available for the 2018 Plan)

Contents Value: \$4,318,599 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 14, >50% damage possible
Flood: N/A
Wildfire: Low risk
Landslide: low risk area, no damage predicted
Dam Failure: N/A
Thunderstorm: High-risk area, equipment could be 100% destroyed



Tornado: wind zone II, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: 40+ inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: high, up to 75% damage possible

Facility: Caballo

Location: Sierra County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$23,834 (no up-date available for the 2018 Plan)

Contents Value: \$82,849 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 8, 50% damage possible
Flood: N/A
Flood: N/A
Wildfire: low risk area, less than 15% damages possible
Landslide: high risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: High-risk area, equipment could be 100% destroyed
Tornado: wind zone II, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: less than 10 inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: none to low

Facility: Socorro Peak

Location: Socorro County

Why Critical: Critical communications Towers and Equipment

Replacement Value: \$22,500 (no up-date available for the 2018 Plan)

Contents Value: \$50,000 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 18, 10% loss possible
Flood: N/A
Wildfire: medium risk, 15-25% damages possible
Landslide: high risk area, 100% damages possible
Dam Failure: N/A
Thunderstorm: High-risk area, equipment could be 100% destroyed
Tornado: wind zone I, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: less than 10 inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: none to low



Facility: Sierra Grande
Location: Union County
Why Critical: Critical communications Towers and Equipment
Replacement Value:
(no up-date available for the 2018 Plan)

Contents Value: \$20,368 (no up-date available for the 2018 Plan)

Hazards/Potential Losses:

Earthquake: PGA 4 no damages likely
Flood: N/A
Wildfire: High wildfire risk area, equipment could be damaged, 50% damages predicted
Landslide: moderate to high risk area, 100% damage possible
Dam Failure: N/A
Thunderstorm: High-risk area, equipment could be 100% destroyed
Tornado: wind zone II nearing zone III line, but any tornado could cause 100% loss
Wind: no damages anticipated
Winter Storm: less than 20 inches of snow per year, no damages anticipated
Drought: no damages projected
Heat: no damages expected
Land Subsidence: none to low

3.1.8 Department of Transportation Facilities

Facility: Department of Transportation Headquarters
Location: Santa Fe, Santa Fe County
Why Critical: Critical Emergency Operations
Replacement Value: \$33,483,000
Contents Value: \$4,756,000

Hazards/Potential Losses:

Earthquake PGA 14, 10-20% damage possible
Flood: Zone C, minimal hazard
Wildfire: none-low, fire resistant construction
Landslide: none-low, no damage predicted
Dam Failure: none-low
Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: Med, Zone II (EF2-3) up to 50% damage
Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential
Winter Storm: 20-40" snow, 24-32°F average winter temperature, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: Moderate, up to 25% damage possible

Facility: Dept. of Transportation District 1 Headquarters
Location: Deming, Luna County
Why Critical: Critical Emergency Operations
Replacement Value: \$7,965,000



Contents Value: \$1,588,000

Hazards/Potential Losses:

- Earthquake: PGA 8, no damages anticipated
- Flood: Flood Zone X, Beyond the 500 year flood boundary
- Wildfire: low risk, masonry construction
- Landslide: none to low, no damage predicted
- Dam Failure: no risk, no dams upstream
- Thunderstorm: low to medium lightning density, 20-30 thunderstorms per year, up to LAL 5, Hail up to H10, 15-20% damages possible
- Tornado: wind zone 1, EF0-2, up to 40% damages projected
- Wind: average wind speed 13-14 mph, Beaufort 4, Gusts possible, no damages anticipated
- Winter Storm: less than 10" annual snowfall, average winter temperatures above 40°F, and no damages anticipated
- Drought: no damages projected
- Heat: no damages expected
- Land Subsidence: Moderate to high, up to 50% damage possible

Facility: Dept. of Transportation District 2 Headquarters

Location: Roswell, Chaves County

Why Critical: Critical Emergency Operations

Replacement Value: \$7,998,000

Contents Value: \$1,623,000

Hazards/Potential Losses:

- Earthquake: PGA 6, up to 10% damages projected
- Flood: Flood Zone C. Minimal hazard, no damages anticipated
- Wildfire: Low hazard, minimal damages projected
- Landslide: none to low risk area, no damages predicted
- Dam Failure: While dams on the Pecos and Hondo rives have dams, the facility is not within the inundation zones
- Thunderstorm: 40-50 t-storm days per year, area of high lightning density, structures are non-combustible, low damage anticipated, up to LAL 5, Hail up to H10
- Tornado: Med, Zone II (EF2-3) up to 50% damage
- Wind: Average wind speeds around 11 mph, high gusts possible, none-light damages predicted
- Winter Storm: less than 10" average snowfall annually, average winter temps between 32 and 40°F
- Drought: No Damages Anticipated
- Extreme Heat: No Damages Anticipated
- Land Subsidence: Moderate, up to 50% damage possible

Facility: Dept. of Transportation District 3 Headquarters

Location: Albuquerque, Bernalillo County

Why Critical: Critical Emergency Operations

Replacement Value: \$7,629,000

Contents Value: \$908,000

Hazards/Potential Losses:

- Earthquake: PGA 18, damages up to 30%
- Flood: Zone X, beyond the 500-year flood boundary
- Wildfire: none-low, within city area



Landslide: low risk area, no damages predicted
Dam Failure: Low to none, dam failure events would affect Albuquerque, but this facility lies beyond the inundation zones
Thunderstorm: on average up to 40 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible
Tornado: facility lies close to Zone I-II boundary, (up to EF3) up to 50% damage
Wind: average wind speeds <10 mph, gusty conditions exist, Beaufort 3
Winter Storm: snow averages 10-20" winter temperatures average 32-40°F, no damages anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 75% damage possible

Facility: Dept. of Transportation District 4 Headquarters

Location: Las Vegas, San Miguel County

Why Critical: Critical Emergency Operations

Replacement Value: \$8,396,000

Contents Value: \$1,163,000

Hazards/Potential Losses:

Earthquake: PGA 12, up to 10% damage possible

Flood: Zone C, minimal hazard

Wildfire: Medium risk area, masonry building, no damage anticipated

Landslide: moderate low risk area, up to 50% damage possible

Dam Failure: none –low risk, no dams upstream of facility

Thunderstorm: 50-60 t-storm days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Zone II (EF2-3), up to 50% damage

Wind: average wind speeds up to 13 mph, up to Beaufort 4, no damages anticipated,

Winter Storm: up to 60" average snow annually, 24-32°F average winter temperature, response delays

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: Moderate to high, up to 50% damage possible

Facility: Dept. of Transportation District 5 Headquarters

Location: Milan, Cibola County

Why Critical: Critical Emergency Operations

Replacement Value: \$8,970,000

Contents Value: \$1,145,000

Hazards/Potential Losses:

Earthquake PGA 14, 10-20% damage possible

Flood: Zone C, minimal hazard

Wildfire: none-low, fire resistant construction

Landslide: none-low

Dam Failure: none-low

Thunderstorm: 40-50 lightning days per year, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: Med, Zone II (EF2-3) up to 50% damage



Wind: none-low, average wind speed up to 13mph, Beaufort 0-3, high gust potential
Winter Storm: 20-40" snow, 24-32°F average winter temperature, no damage anticipated
Drought: No Damages Anticipated
Extreme Heat: No Damages Anticipated
Land Subsidence: High, up to 50% damage possible

Facility: Dept. of Transportation District 6 Headquarters

Location: Las Vegas, San Miguel County

Why Critical: Critical Emergency Operations

Replacement Value: \$4,726,000

Contents Value: \$910,000

Hazards/Potential Losses:

Earthquake: PGA 10, 10-15% damage possible

Flood: Zone C, no BFEs, Minimal damages

Wildfire: Medium risk, fire resistant construction, no damages expected

Landslide: low risk area, no damages predicted

Dam Failure: none-low risk, no dams upstream of GCF

Thunderstorm: as many as 50 t-storm days annually, up to LAL 5, Hail up to H10, 15-20% damages possible

Tornado: wind zone I, lowest tornado risk, no tornadoes reported in county

Wind: average annual wind speed up to 12 mph, Beaufort 0-3, gusts possible, no damages anticipated

Winter Storm: 10-20 inches of snow on average annually, average winter temperature 24-32°F

Drought: No Damages Anticipated

Extreme Heat: No Damages Anticipated

Land Subsidence: High, up to 75% damage possible



3.2 Hazus Earthquake

3.2.1 Hazus Definitions

The following are definitions related to the Hazus earthquake model.

1. **Building Inventory:** The General Building Stock (GBS) includes residential, commercial, industrial, agricultural, religious, government, and educational buildings.
2. **Critical Facilities:**
 - a. **Essential Facilities:** hospitals, medical clinics, schools, fire stations, and emergency operation facilities
 - b. **High Potential Loss Facilities (HPL):** dams, levees, military installations, nuclear power plants, and hazardous material sites
3. **Transportation and Utility Lifeline Inventory:**
 - a. **Transportation Systems:** highways, railways, light rail, bus, ports, ferry, and airports
 - b. **Utility Systems:** potable water, wastewater, natural gas, crude & refined oil, electric power, and communications
4. **Building Damage:** Estimates damage states to buildings due to ground shaking. Building damage varies from “none, slight, moderate, extensive, and complete” as a continuous function of building deformations. Damage states are specific to each building type. Full descriptions of the damage states for each building type are described in Chapter 5 of the Hazus Earthquake Technical Manual, pages 15-16 through 15-27 (https://www.fema.gov/media-library-data/20130726-1820-25045-6286/hzmmh2_1_eq_tm.pdf)
5. **Debris Generation:** The estimation of the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories, brick/wood and reinforced concrete/steel. This distinction is made because of the different types of material handling equipment required to handle the debris.
 - a. Truck load estimation assumes 25 tons of debris/truck
6. **Displaced households:** The number of displaced households due to loss of habitability. Loss of habitability is calculated directly from damage to the residential occupancy inventory, and from loss of water and power.
7. **Persons seeking short-term public shelter:** These households may need alternative short-term shelter, provided by family, friends, renting apartments or houses, or public shelters provided by relief organizations such as the Red Cross, Salvation Army, and others.
8. **Casualties:** The number of people that will be killed or injured by the earthquake. The casualties are broken down into four severity levels that describe the extent of the injuries. The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.
 - a. **Severity Level 1:** Injuries will require medical attention but hospitalization is not needed.
 - b. **Severity Level 2:** Injuries will require hospitalization but are not considered life-threatening.
 - c. **Severity Level 3:** Injuries will require hospitalization and can become life threatening if not promptly treated.
 - d. **Severity Level 4:** Victims are killed by the earthquake.
9. **Total Economic Loss:** Includes building and lifeline related losses based on the region's available inventory.



10. Building-Related Losses: Includes direct building losses and business interruption losses.
 - a. Direct Building Losses: The estimated costs to repair or replace the damage caused to the building and its contents.
 - b. Business Interruption Losses: The losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.
11. Transportation and Utility Lifeline Losses: Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages.

3.2.2 [Hazus Global Summary Reports](#)

The following are the full Global Summary Reports from the Hazus earthquake analysis for each Preparedness Area.

[Preparedness Area 1 Global Summary Report](#)



Hazus-MH: Earthquake Global Risk Report

Region Name: NMEQ_Preparedness1

Earthquake Scenario: Preparedness Area 1 - Carlsbad

Print Date: October 26, 2017

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 9 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 31,599.55 square miles and contains 73 census tracts. There are over 107 thousand households in the region which has a total population of 288,670 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 128 thousand buildings in the region with a total building replacement value (excluding contents) of 25,957 (millions of dollars). Approximately 93.00 % of the buildings (and 78.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 24,423 and 1,366 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 128 thousand buildings in the region which have an aggregate total replacement value of 25,957 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 58% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 10 hospitals in the region with a total bed capacity of 748 beds. There are 193 schools, 61 fire stations, 39 police stations and 2 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 58 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 25,789.00 (millions of dollars). This inventory includes over 4,030 kilometers of highways, 315 bridges, 23,684 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

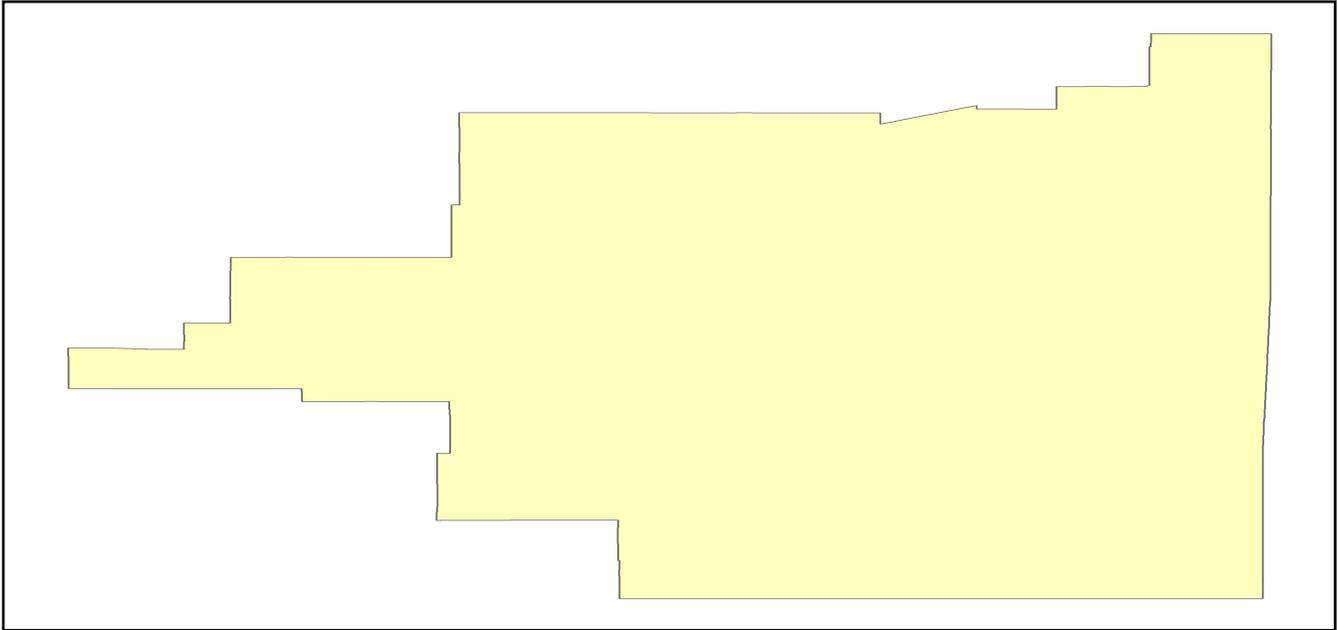
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	315	327.70
	Segments	360	21,573.80
	Tunnels	0	0.00
	Subtotal		21,901.50
Railways	Bridges	5	0.60
	Facilities	0	0.00
	Segments	436	1,235.80
	Tunnels	0	0.00
	Subtotal		1,236.40
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	8	8.40
	Subtotal		8.40
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	13	138.50
	Runways	30	1,138.90
	Subtotal		1,277.40
		Total	24,423.60

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	236.80
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	236.80
Waste Water	Distribution Lines	NA	142.10
	Facilities	6	383.60
	Pipelines	0	0.00
		Subtotal	525.70
Natural Gas	Distribution Lines	NA	94.70
	Facilities	327	342.20
	Pipelines	0	0.00
		Subtotal	436.90
Oil Systems	Facilities	5	0.50
	Pipelines	0	0.00
		Subtotal	0.50
Electrical Power	Facilities	6	633.60
		Subtotal	633.60
Communication	Facilities	64	6.10
		Subtotal	6.10
		Total	1,839.70

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Preparedness Area 1 - Carlsbad
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-104.23
Latitude of Epicenter	32.42
Earthquake Magnitude	5.50
Depth (km)	10.00
Rupture Length (Km)	3.31
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 3,695 buildings will be at least moderately damaged. This is over 3.00 % of the buildings in the region. There are an estimated 184 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

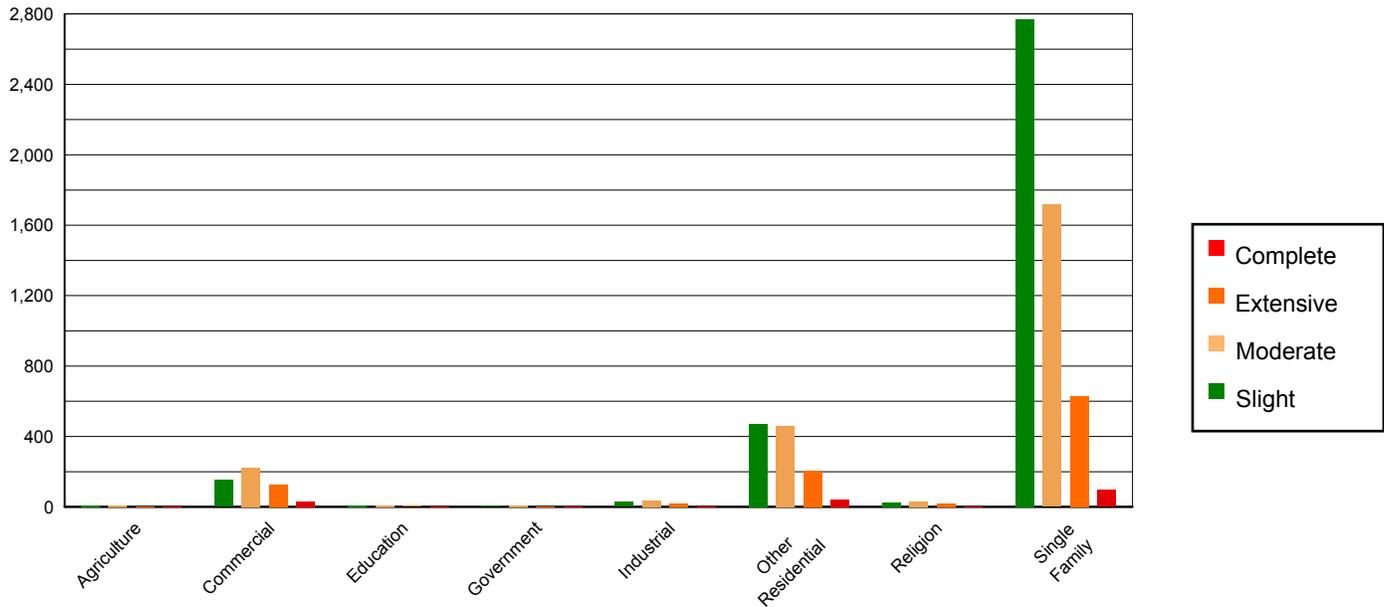


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	576	0.48	9	0.25	8	0.33	4	0.42	1	0.56
Commercial	5,474	4.52	152	4.37	223	8.93	128	12.63	33	17.66
Education	244	0.20	7	0.21	9	0.38	6	0.55	1	0.74
Government	288	0.24	6	0.16	8	0.33	5	0.45	1	0.61
Industrial	1,384	1.14	29	0.82	38	1.53	21	2.05	5	2.81
Other Residential	23,329	19.28	471	13.59	463	18.52	204	20.15	43	23.39
Religion	628	0.52	25	0.72	32	1.27	18	1.75	4	2.30
Single Family	89,049	73.61	2,768	79.87	1,716	68.71	628	62.01	96	51.93
Total	120,972		3,466		2,498		1,012		185	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	70,484	58.26	2471	71.30	1,088	43.57	158	15.66	12	6.74
Steel	1,874	1.55	41	1.18	73	2.91	34	3.37	10	5.41
Concrete	1,633	1.35	43	1.23	65	2.58	37	3.66	8	4.39
Precast	1,495	1.24	29	0.83	56	2.26	50	4.90	14	7.40
RM	22,728	18.79	413	11.92	715	28.64	493	48.67	73	39.23
URM	2,538	2.10	77	2.22	89	3.58	55	5.38	29	15.47
MH	20,219	16.71	392	11.32	411	16.46	186	18.35	40	21.36
Total	120,972		3,466		2,498		1,012		185	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 748 hospital beds available for use. On the day of the earthquake, the model estimates that only 692 hospital beds (93.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 96.00% of the beds will be back in service. By 30 days, 99.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	10	0	0	9
Schools	193	0	0	179
EOCs	2	0	0	2
PoliceStations	39	0	0	36
FireStations	61	0	0	59

Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	360	0	0	360	360
	Bridges	315	0	0	315	315
	Tunnels	0	0	0	0	0
Railways	Segments	436	0	0	436	436
	Bridges	5	0	0	5	5
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	8	2	0	8	8
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	13	0	0	13	13
	Runways	30	0	0	30	30

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	6	0	0	0	0
Natural Gas	327	0	0	0	0
Oil Systems	5	0	0	0	0
Electrical Power	6	0	0	0	0
Communication	64	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	11,842	0	0
Waste Water	7,105	0	0
Natural Gas	4,737	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

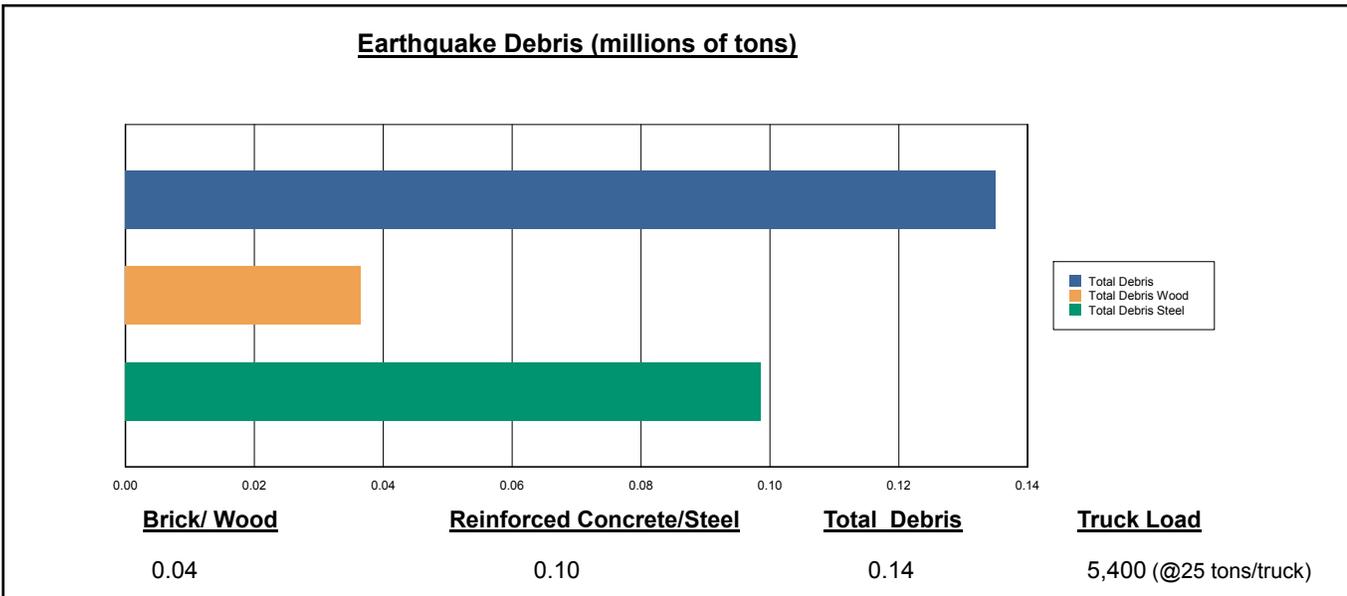
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

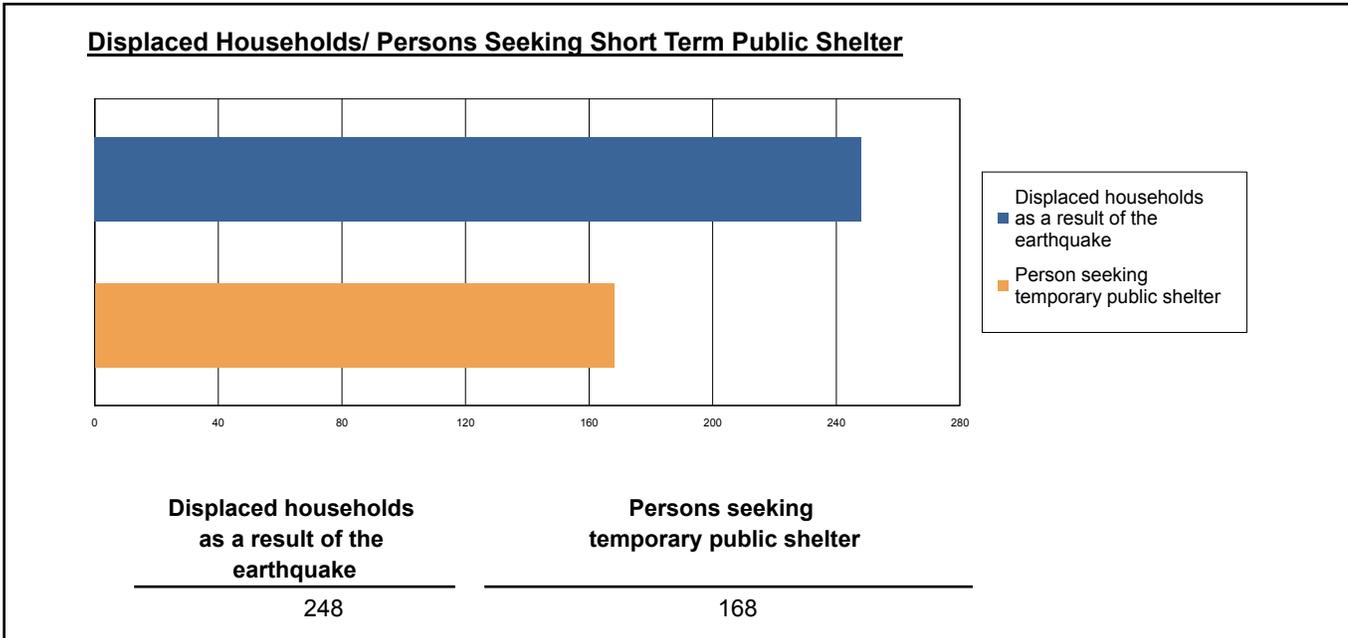
The model estimates that a total of 0.14 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 27.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 5,400 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 248 households to be displaced due to the earthquake. Of these, 168 people (out of a total population of 288,670) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	2	0	0	0
	Other-Residential	19	4	0	1
	Single Family	51	11	1	3
	Total	73	15	2	4
2 PM	Commercial	63	16	2	5
	Commuting	0	0	0	0
	Educational	24	6	1	2
	Hotels	0	0	0	0
	Industrial	12	3	0	1
	Other-Residential	4	1	0	0
	Single Family	12	2	0	1
	Total	115	28	4	8
5 PM	Commercial	45	11	2	3
	Commuting	0	1	1	0
	Educational	1	0	0	0
	Hotels	0	0	0	0
	Industrial	8	2	0	1
	Other-Residential	7	1	0	0
	Single Family	20	4	1	1
	Total	81	20	4	5

Economic Loss

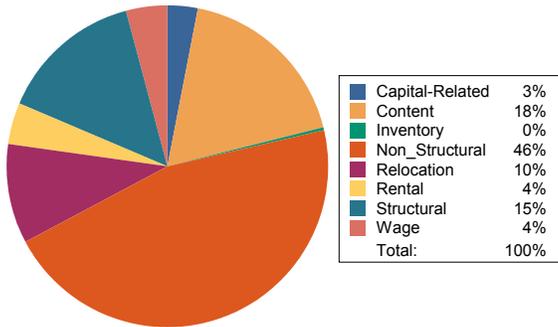
The total economic loss estimated for the earthquake is 347.35 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 343.49 (millions of dollars); 21 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 65 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

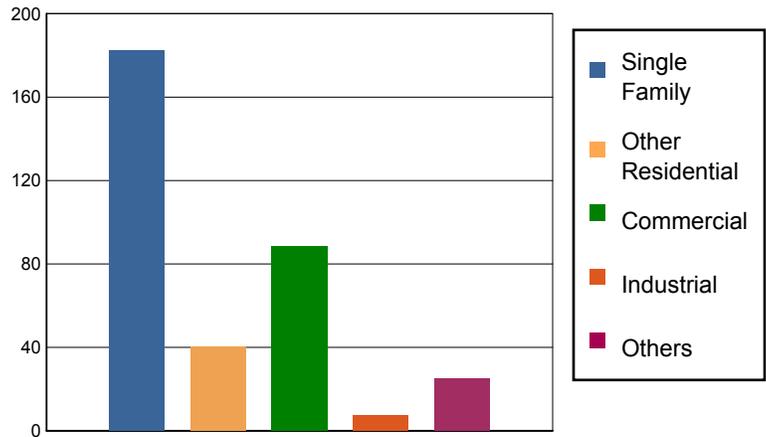


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	2.19	10.88	0.15	0.82	14.03
	Capital-Related	0.00	0.93	9.43	0.10	0.24	10.70
	Rental	5.58	2.97	4.97	0.06	0.45	14.03
	Relocation	19.60	2.33	7.79	0.41	3.76	33.89
	Subtotal	25.18	8.43	33.06	0.72	5.26	72.65
Capital Stock Losses							
	Structural	28.08	5.06	11.63	1.12	4.47	50.36
	Non_Structural	94.64	21.32	28.65	3.17	9.74	157.53
	Content	34.25	5.47	14.80	2.03	5.46	62.01
	Inventory	0.00	0.00	0.46	0.33	0.16	0.95
	Subtotal	156.97	31.85	55.54	6.65	19.84	270.84
	Total	182.15	40.28	88.60	7.36	25.10	343.49

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	21,573.82	\$0.00	0.00
	Bridges	327.66	\$1.11	0.34
	Tunnels	0.00	\$0.00	0.00
	Subtotal	21,901	1.10	
Railways	Segments	1,235.80	\$0.00	0.00
	Bridges	0.55	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	1,236	0.00	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	8.37	\$0.79	9.47
	Subtotal	8	0.80	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	138.46	\$1.96	1.41
	Runways	1,138.92	\$0.00	0.00
	Subtotal	1,277	2.00	
Total		24,423.60	3.90	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	236.80	\$0.00	0.00
	Subtotal	236.85	\$0.00	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	383.60	\$0.00	0.00
	Distribution Lines	142.10	\$0.00	0.00
	Subtotal	525.72	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	342.20	\$0.00	0.00
	Distribution Lines	94.70	\$0.00	0.00
	Subtotal	436.91	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.50	\$0.00	0.00
	Subtotal	0.48	\$0.00	
Electrical Power	Facilities	633.60	\$0.00	0.00
	Subtotal	633.60	\$0.00	
Communication	Facilities	6.10	\$0.00	0.00
	Subtotal	6.14	\$0.00	
	Total	1,839.70	\$0.00	

Appendix A: County Listing for the Region

Chaves,NM

Curry,NM

De Baca,NM

Eddy,NM

Guadalupe,NM

Lea,NM

Lincoln,NM

Quay,NM

Roosevelt,NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Chaves	65,645	4,212	1,322	5,534
	Curry	48,376	3,298	883	4,182
	De Baca	2,022	185	48	234
	Eddy	53,829	3,825	959	4,784
	Guadalupe	4,687	313	86	399
	Lea	64,727	3,954	1,263	5,218
	Lincoln	20,497	2,582	469	3,052
	Quay	9,041	715	236	952
	Roosevelt	19,846	1,242	356	1,599
Total State		288,670	20,326	5,622	25,954
Total Region		288,670	20,326	5,622	25,954

Preparedness Area 2 Global Summary Report



Hazus-MH: Earthquake Global Risk Report

Region Name: NMEQ_Pred2

Earthquake Scenario: Preparedness_Area2_LasVegas

Print Date: October 24, 2017

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 5 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 16,389.95 square miles and contains 13 census tracts. There are over 22 thousand households in the region which has a total population of 53,268 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 31 thousand buildings in the region with a total building replacement value (excluding contents) of 5,220 (millions of dollars). Approximately 95.00 % of the buildings (and 83.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 11,708 and 502 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 31 thousand buildings in the region which have an aggregate total replacement value of 5,220 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 52% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 4 hospitals in the region with a total bed capacity of 563 beds. There are 64 schools, 35 fire stations, 14 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 3 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 12,210.00 (millions of dollars). This inventory includes over 1,906 kilometers of highways, 304 bridges, 4,306 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

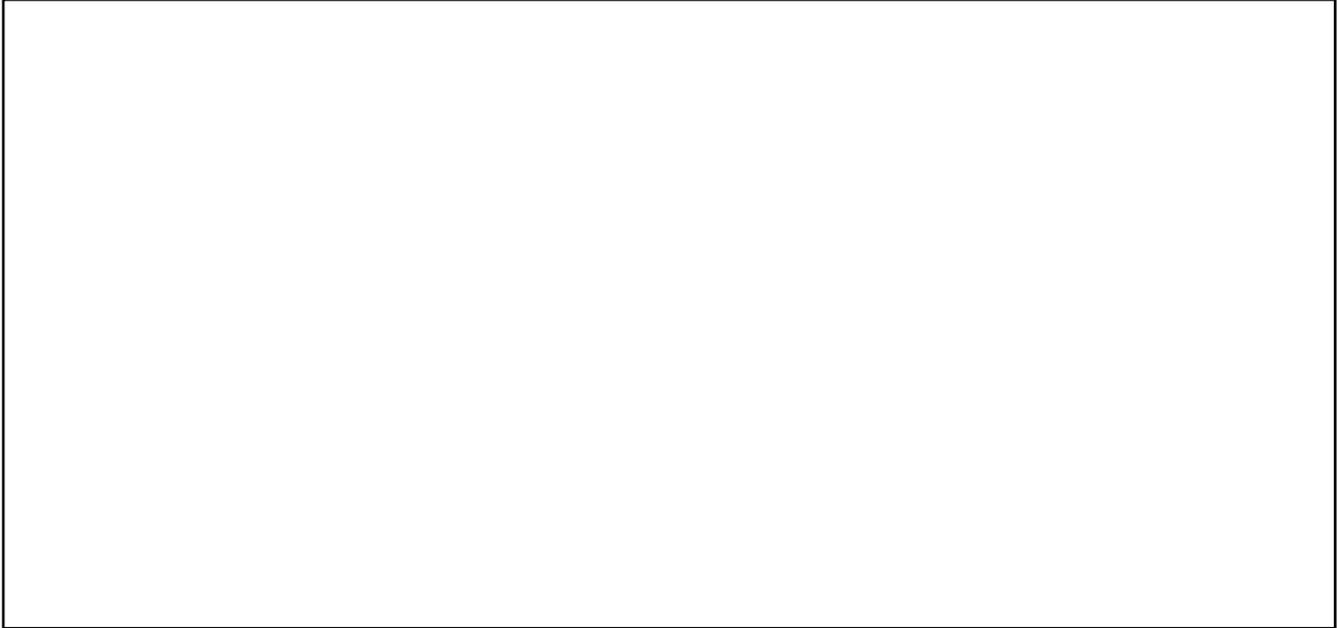
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	304	246.20
	Segments	172	10,732.40
	Tunnels	0	0.00
	Subtotal		10,978.60
Railways	Bridges	4	0.30
	Facilities	2	5.30
	Segments	167	414.60
	Tunnels	0	0.00
	Subtotal		420.20
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	1	1.00
	Subtotal		1.00
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	4	42.60
	Runways	7	265.70
	Subtotal		308.40
		Total	11,708.20

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	43.10
	Facilities	1	32.00
	Pipelines	0	0.00
		Subtotal	75.00
Waste Water	Distribution Lines	NA	25.80
	Facilities	4	255.70
	Pipelines	0	0.00
		Subtotal	281.60
Natural Gas	Distribution Lines	NA	17.20
	Facilities	2	2.10
	Pipelines	0	0.00
		Subtotal	19.30
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	2	211.20
		Subtotal	211.20
Communication	Facilities	12	1.20
		Subtotal	1.20
		Total	588.30

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Preparedness_Area2_LasVegas
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-105.23
Latitude of Epicenter	35.59
Earthquake Magnitude	5.50
Depth (km)	10.00
Rupture Length (Km)	3.31
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 2,746 buildings will be at least moderately damaged. This is over 9.00 % of the buildings in the region. There are an estimated 174 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

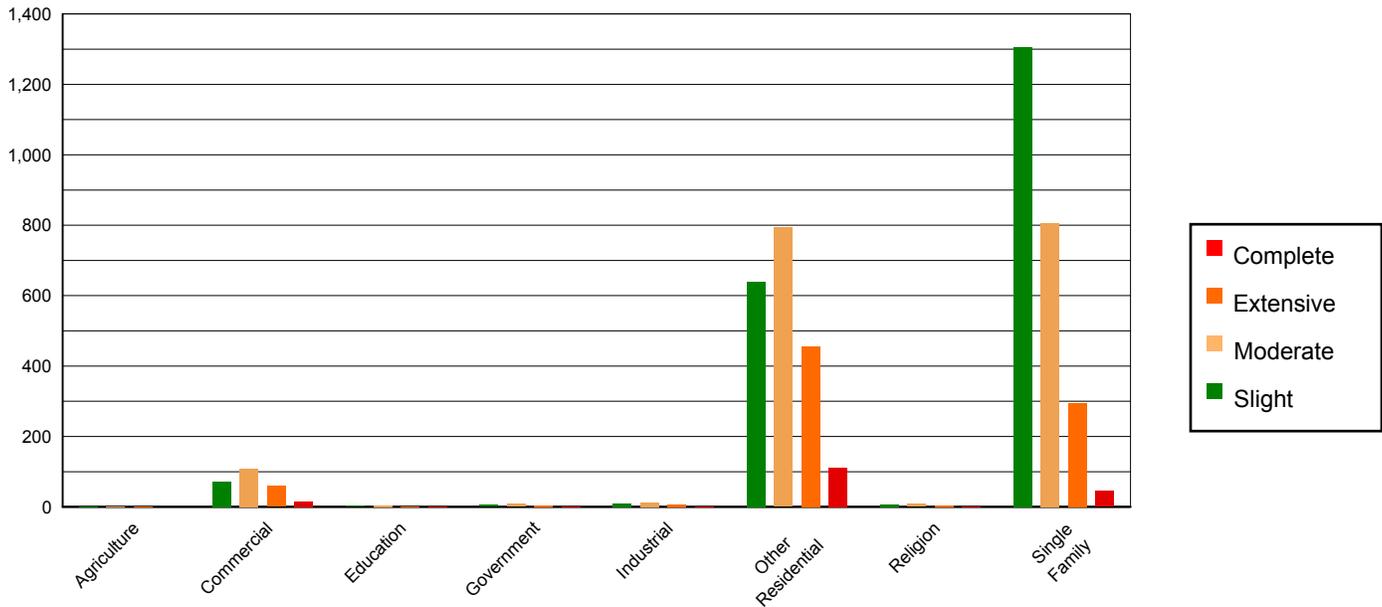


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	73	0.27	3	0.13	3	0.15	1	0.16	0	0.19
Commercial	768	2.87	72	3.52	108	6.18	59	7.15	15	8.45
Education	57	0.21	3	0.14	3	0.19	2	0.23	0	0.25
Government	86	0.32	5	0.27	8	0.47	4	0.54	1	0.60
Industrial	211	0.79	10	0.48	13	0.75	7	0.82	2	0.94
Other Residential	6,812	25.47	640	31.32	793	45.51	457	55.06	111	63.41
Religion	117	0.44	6	0.31	8	0.47	4	0.52	1	0.56
Single Family	18,617	69.62	1,305	63.84	807	46.27	294	35.51	45	25.60
Total	26,742		2,044		1,743		829		174	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	14,683	54.91	1221	59.74	539	30.89	78	9.42	6	3.52
Steel	291	1.09	20	0.97	37	2.13	17	2.04	5	2.84
Concrete	262	0.98	24	1.18	38	2.17	21	2.56	4	2.54
Precast	210	0.78	10	0.51	22	1.27	20	2.40	5	3.05
RM	4,565	17.07	202	9.89	344	19.71	235	28.35	34	19.52
URM	476	1.78	39	1.91	44	2.55	27	3.23	14	8.01
MH	6,255	23.39	527	25.79	720	41.28	431	52.01	106	60.53
Total	26,742		2,044		1,743		829		174	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 563 hospital beds available for use. On the day of the earthquake, the model estimates that only 349 hospital beds (62.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 78.00% of the beds will be back in service. By 30 days, 96.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	4	0	0	2
Schools	64	0	0	47
EOCs	1	0	0	1
PoliceStations	14	0	0	12
FireStations	35	0	0	34

Transportation Lifeline Damage

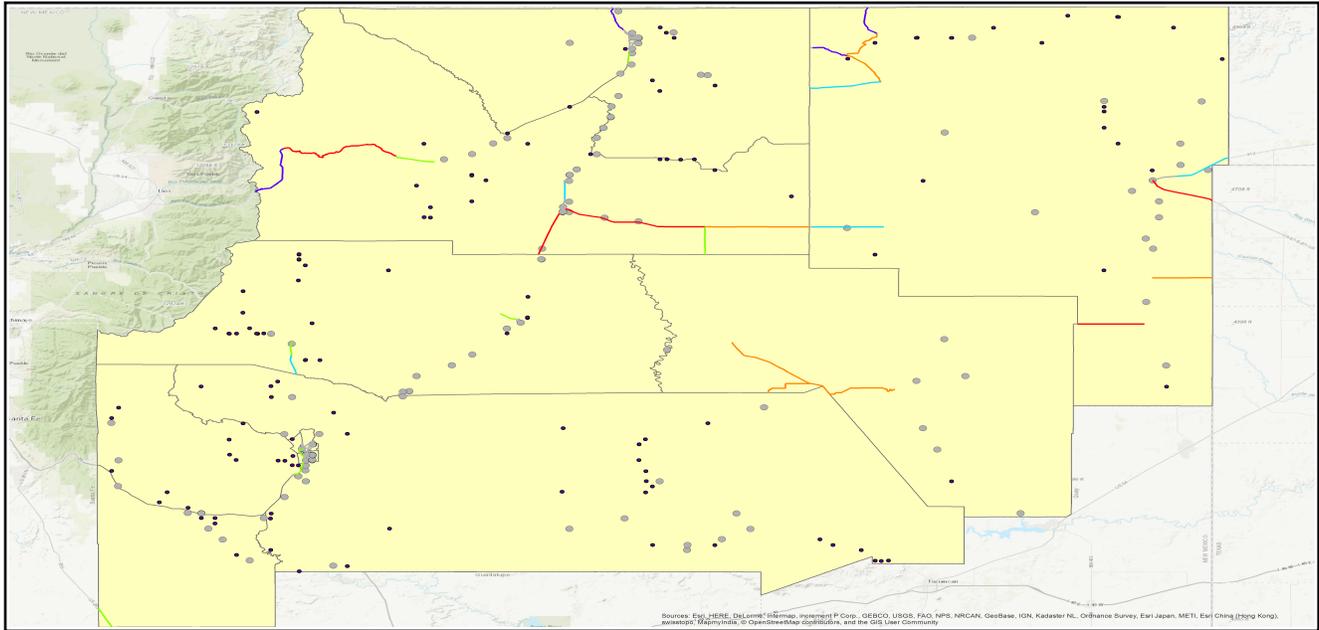


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	172	0	0	172	172
	Bridges	304	0	0	304	304
	Tunnels	0	0	0	0	0
Railways	Segments	167	0	0	167	167
	Bridges	4	0	0	4	4
	Tunnels	0	0	0	0	0
	Facilities	2	1	0	2	2
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	1	1	0	1	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	4	0	0	4	4
	Runways	7	0	0	7	7

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	1	0	0	1	1
Waste Water	4	0	0	0	0
Natural Gas	2	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	2	0	0	0	0
Communication	12	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	2,153	0	0
Waste Water	1,292	0	0
Natural Gas	861	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

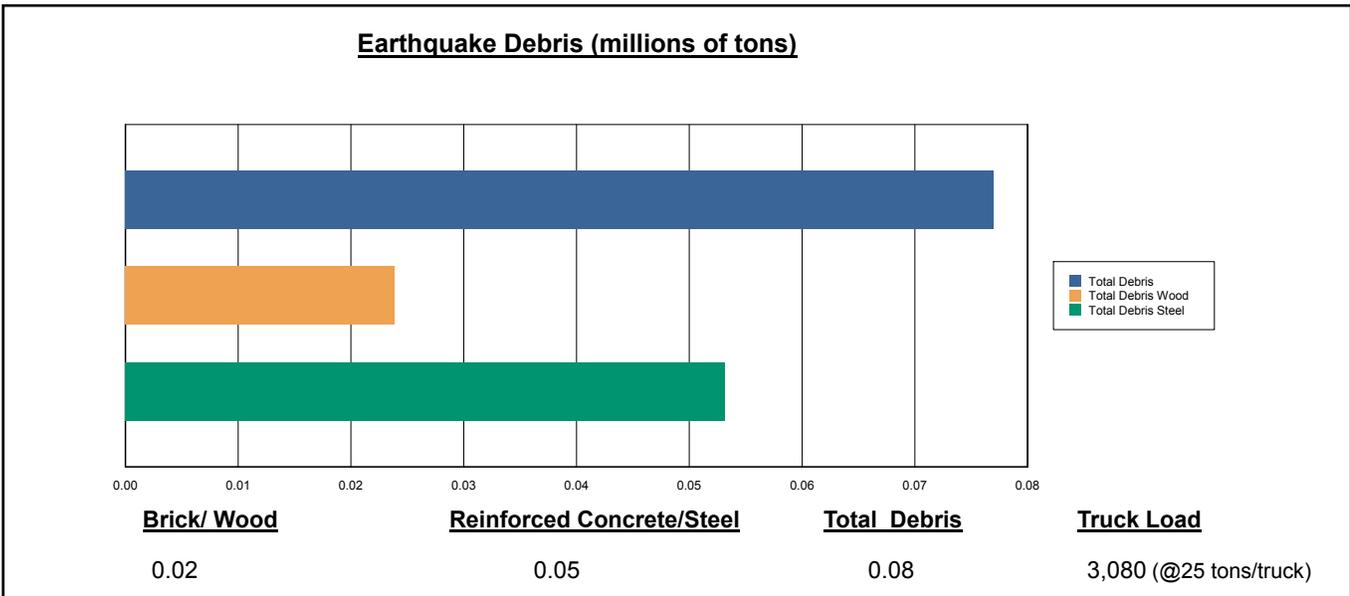
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

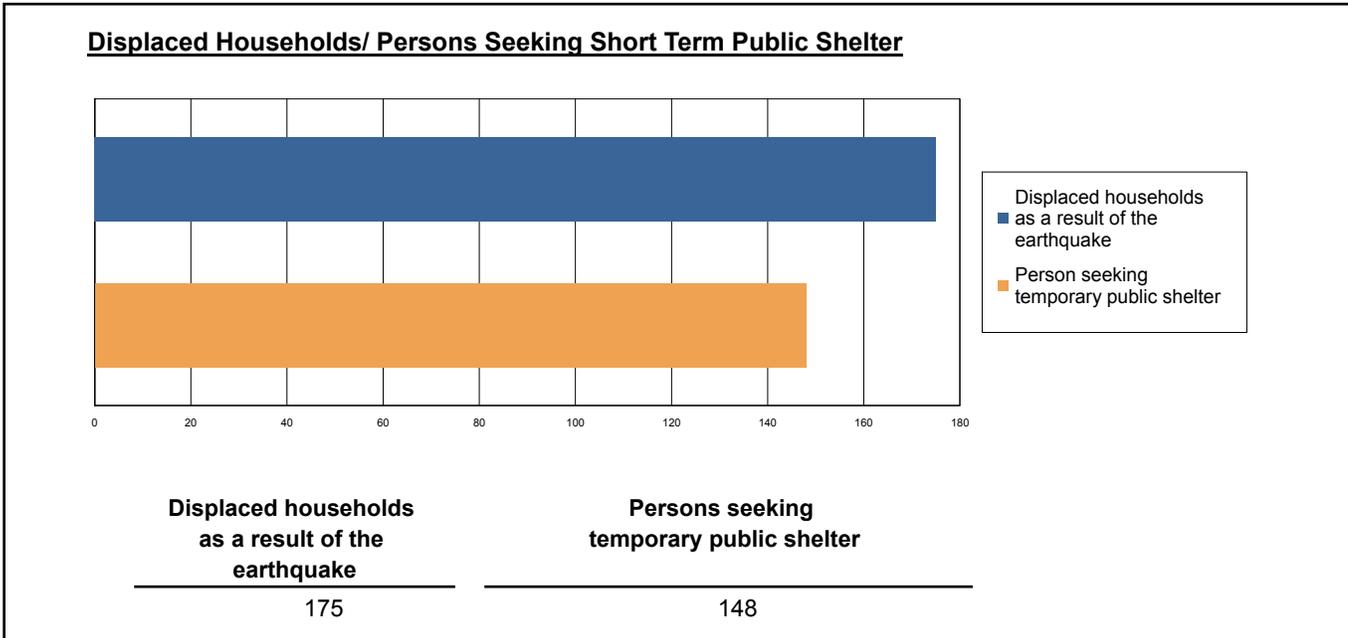
The model estimates that a total of 0.08 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 31.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 3,080 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 175 households to be displaced due to the earthquake. Of these, 148 people (out of a total population of 53,268) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	0	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	0	0	0	0
	Other-Residential	33	6	1	1
	Single Family	22	5	1	1
	Total	55	11	1	2
2 PM	Commercial	31	8	1	2
	Commuting	0	0	0	0
	Educational	19	5	1	1
	Hotels	0	0	0	0
	Industrial	1	0	0	0
	Other-Residential	8	2	0	0
	Single Family	6	1	0	0
	Total	66	16	2	4
5 PM	Commercial	22	6	1	2
	Commuting	0	0	1	0
	Educational	3	1	0	0
	Hotels	0	0	0	0
	Industrial	1	0	0	0
	Other-Residential	12	2	0	0
	Single Family	9	2	0	0
	Total	47	11	2	3

Economic Loss

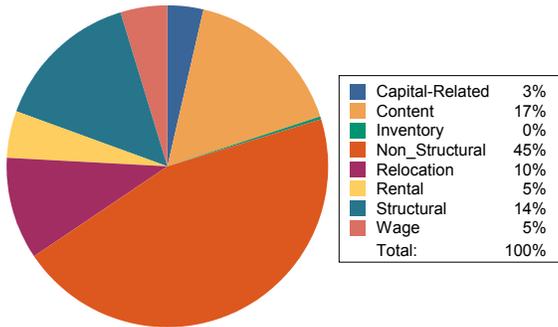
The total economic loss estimated for the earthquake is 182.00 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 177.27 (millions of dollars); 23 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 63 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

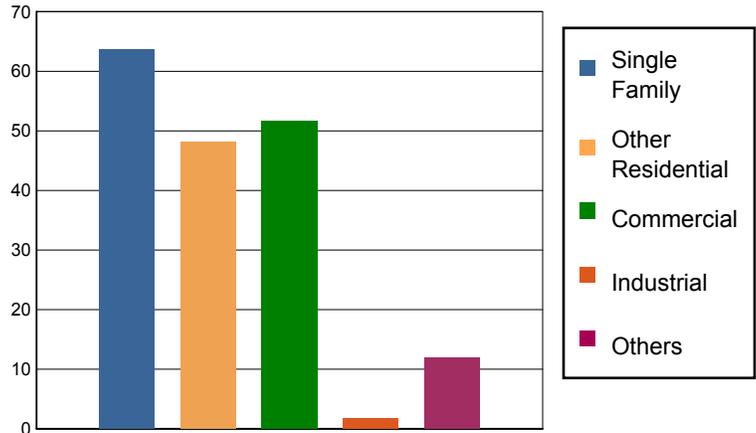


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	1.09	6.71	0.05	0.74	8.58
	Capital-Related	0.00	0.47	5.61	0.03	0.09	6.19
	Rental	2.24	3.08	2.89	0.01	0.31	8.54
	Relocation	7.87	3.69	4.62	0.12	1.82	18.11
	Subtotal	10.10	8.32	19.83	0.20	2.97	41.42
Capital Stock Losses							
	Structural	9.61	7.55	6.56	0.27	1.68	25.68
	Non_Structural	32.25	26.21	16.40	0.80	4.79	80.45
	Content	11.65	6.07	8.66	0.45	2.52	29.34
	Inventory	0.00	0.00	0.28	0.09	0.01	0.37
	Subtotal	53.51	39.82	31.91	1.61	9.00	135.85
	Total	63.62	48.14	51.73	1.81	11.96	177.27

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	10,732.39	\$0.00	0.00
	Bridges	246.21	\$1.90	0.77
	Tunnels	0.00	\$0.00	0.00
	Subtotal	10,979	1.90	
Railways	Segments	414.59	\$0.00	0.00
	Bridges	0.28	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	5.33	\$1.00	18.72
	Subtotal	420	1.00	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	1.05	\$0.38	36.07
	Subtotal	1	0.40	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	42.60	\$1.45	3.40
	Runways	265.75	\$0.00	0.00
	Subtotal	308	1.40	
Total		11,708.20	4.70	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	32.00	\$0.00	0.00
	Distribution Lines	43.10	\$0.00	0.00
	Subtotal	75.04	\$0.00	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	255.70	\$0.00	0.00
	Distribution Lines	25.80	\$0.00	0.00
	Subtotal	281.58	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	2.10	\$0.00	0.00
	Distribution Lines	17.20	\$0.00	0.00
	Subtotal	19.32	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	211.20	\$0.00	0.00
	Subtotal	211.20	\$0.00	
Communication	Facilities	1.20	\$0.00	0.00
	Subtotal	1.15	\$0.00	
	Total	588.29	\$0.00	

Appendix A: County Listing for the Region

Colfax, NM

Harding, NM

Mora, NM

San Miguel, NM

Union, NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Colfax	13,750	1,626	328	1,954
	Harding	695	67	15	83
	Mora	4,881	418	45	463
	San Miguel	29,393	1,873	394	2,267
	Union	4,549	353	96	450
Total State		53,268	4,337	878	5,217
Total Region		53,268	4,337	878	5,217

Preparedness Area 3 Global Summary Report



Hazus-MH: Earthquake Global Risk Report

Region Name: NMEQPred3

Earthquake Scenario: NMEQPred3_LosAlamos

Print Date: September 22, 2017

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 4 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 10,118.02 square miles and contains 69 census tracts. There are over 100 thousand households in the region which has a total population of 235,303 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 113 thousand buildings in the region with a total building replacement value (excluding contents) of 26,143 (millions of dollars). Approximately 94.00 % of the buildings (and 82.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 9,571 and 845 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 113 thousand buildings in the region which have an aggregate total replacement value of 26,143 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 57% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 9 hospitals in the region with a total bed capacity of 558 beds. There are 152 schools, 104 fire stations, 38 police stations and 16 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 3 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 10,416.00 (millions of dollars). This inventory includes over 1,713 kilometers of highways, 247 bridges, 20,590 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

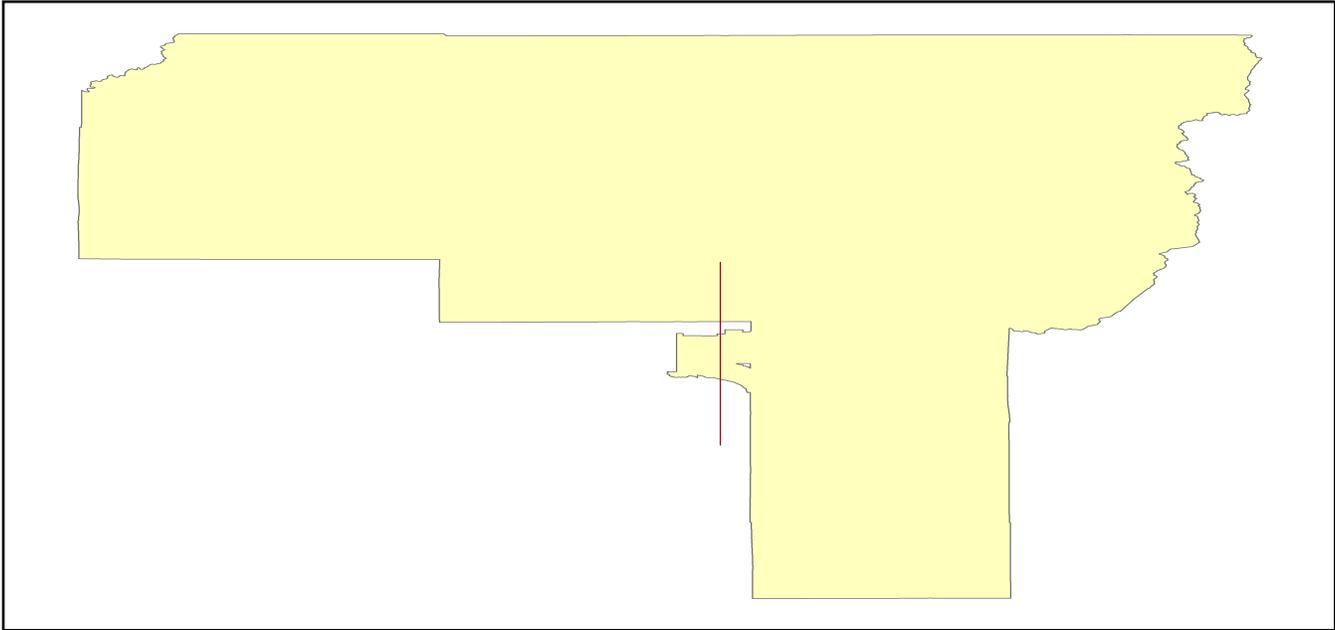
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	247	213.40
	Segments	214	8,884.90
	Tunnels	0	0.00
	Subtotal		9,098.30
Railways	Bridges	0	0.00
	Facilities	2	5.30
	Segments	69	143.10
	Tunnels	0	0.00
	Subtotal		148.40
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	6	6.30
	Subtotal		6.30
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	5	53.30
	Runways	7	265.70
	Subtotal		319.00
		Total	9,572.00

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	205.90
	Facilities	7	223.80
	Pipelines	0	0.00
		Subtotal	429.70
Waste Water	Distribution Lines	NA	123.50
	Facilities	7	447.60
	Pipelines	0	0.00
		Subtotal	571.10
Natural Gas	Distribution Lines	NA	82.40
	Facilities	64	67.00
	Pipelines	0	0.00
		Subtotal	149.30
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	1	105.60
		Subtotal	105.60
Communication	Facilities	16	1.50
		Subtotal	1.50
		Total	1,257.20

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	NMEQPred3_LosAlamos
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-106.31
Latitude of Epicenter	35.89
Earthquake Magnitude	7.30
Depth (km)	10.00
Rupture Length (Km)	71.12
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 20,190 buildings will be at least moderately damaged. This is over 18.00 % of the buildings in the region. There are an estimated 2,223 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

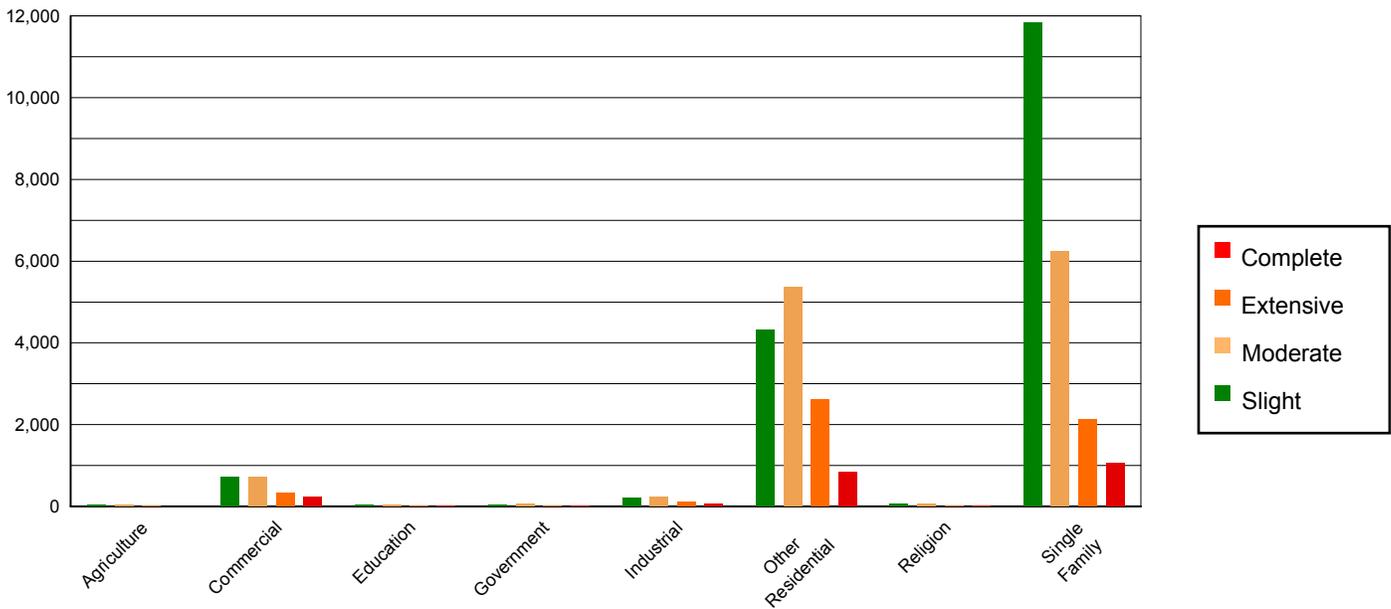


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	132	0.17	34	0.20	30	0.23	12	0.23	5	0.21
Commercial	2,540	3.33	723	4.18	705	5.54	321	6.13	228	10.27
Education	174	0.23	41	0.24	40	0.32	17	0.32	9	0.38
Government	186	0.24	51	0.29	53	0.42	20	0.39	10	0.47
Industrial	703	0.92	219	1.27	231	1.82	105	2.00	58	2.62
Other Residential	10,925	14.32	4,326	25.01	5,368	42.17	2,617	49.95	836	37.61
Religion	256	0.34	61	0.36	58	0.46	28	0.53	27	1.21
Single Family	61,379	80.45	11,840	68.46	6,243	49.05	2,119	40.45	1,051	47.24
Total	76,294		17,296		12,728		5,239		2,224	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	50,144	65.72	10236	59.18	3,867	30.38	724	13.82	123	5.55
Steel	758	0.99	265	1.53	336	2.64	135	2.58	92	4.12
Concrete	794	1.04	230	1.33	230	1.80	103	1.96	78	3.49
Precast	631	0.83	150	0.87	209	1.64	124	2.36	71	3.18
RM	14,069	18.44	2146	12.41	2,623	20.61	1,456	27.79	925	41.61
URM	1,275	1.67	432	2.50	361	2.84	166	3.18	150	6.75
MH	8,624	11.30	3837	22.18	5,101	40.08	2,531	48.31	785	35.30
Total	76,294		17,296		12,728		5,239		2,224	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 558 hospital beds available for use. On the day of the earthquake, the model estimates that only 121 hospital beds (22.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 58.00% of the beds will be back in service. By 30 days, 75.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	9	2	1	2
Schools	152	15	7	12
EOCs	16	2	1	0
PoliceStations	38	4	2	5
FireStations	104	15	7	5

Transportation Lifeline Damage

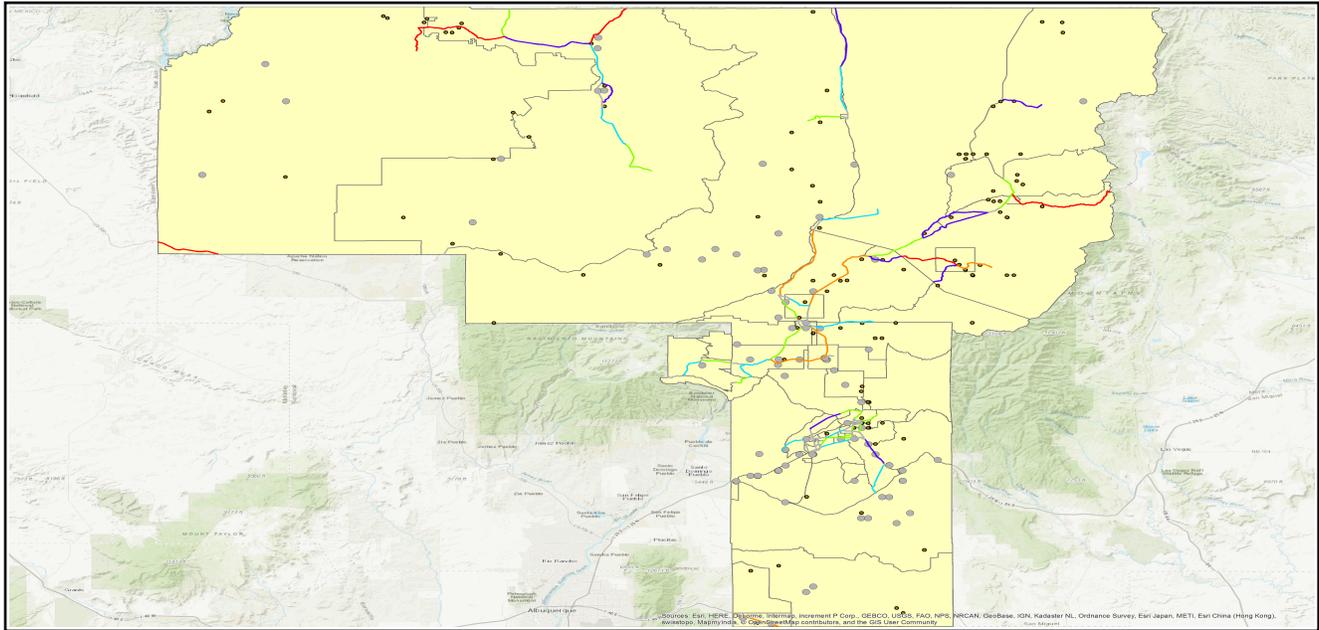


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	214	0	0	214	214
	Bridges	247	5	0	242	246
	Tunnels	0	0	0	0	0
Railways	Segments	69	0	0	69	69
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	2	0	0	2	2
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	6	1	0	5	6
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	5	1	0	5	5
	Runways	7	0	0	7	7

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	7	0	0	4	7
Waste Water	7	0	0	0	0
Natural Gas	64	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	1	0	0	0	0
Communication	16	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	10,295	0	0
Waste Water	6,177	0	0
Natural Gas	4,118	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

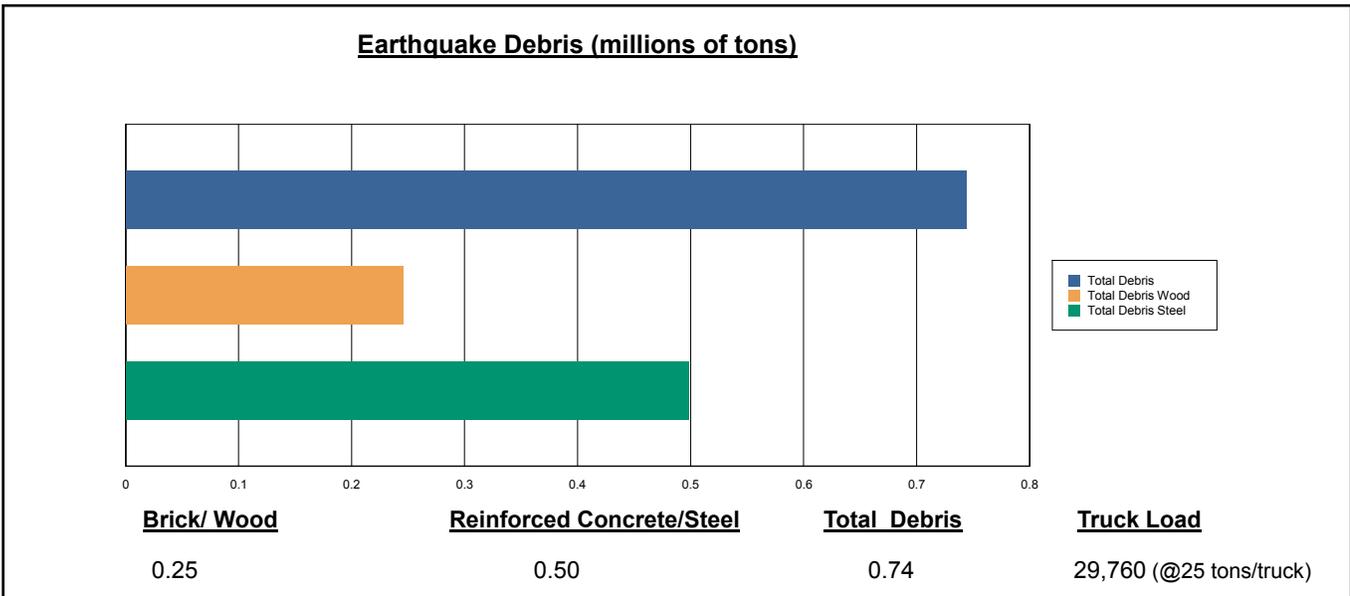
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

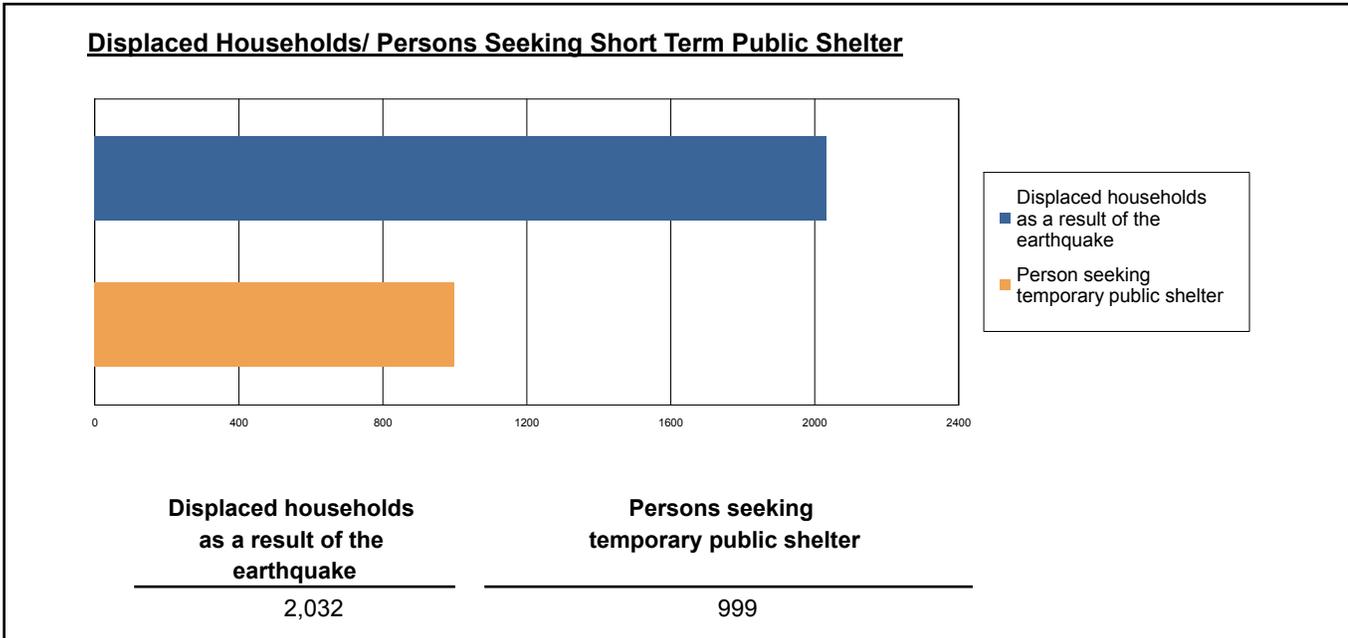
The model estimates that a total of 0.74 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 33.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 29,760 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 2,032 households to be displaced due to the earthquake. Of these, 999 people (out of a total population of 235,303) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	10	3	1	1
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	6	2	0	0
	Other-Residential	209	43	4	7
	Single Family	345	96	16	31
	Total	570	144	20	39
2 PM	Commercial	581	170	28	56
	Commuting	0	0	0	0
	Educational	153	45	8	15
	Hotels	0	0	0	0
	Industrial	44	12	2	4
	Other-Residential	39	8	1	1
	Single Family	64	17	3	5
	Total	882	253	42	81
5 PM	Commercial	404	118	20	38
	Commuting	3	4	7	1
	Educational	10	3	1	1
	Hotels	0	0	0	0
	Industrial	28	7	1	2
	Other-Residential	76	16	1	2
	Single Family	134	37	6	12
	Total	655	185	36	57

Economic Loss

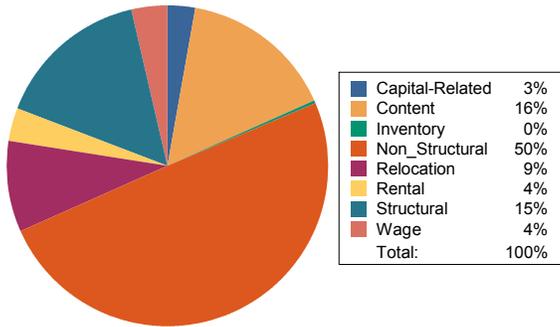
The total economic loss estimated for the earthquake is 2,236.33 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 2,193.96 (millions of dollars); 19 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 67 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

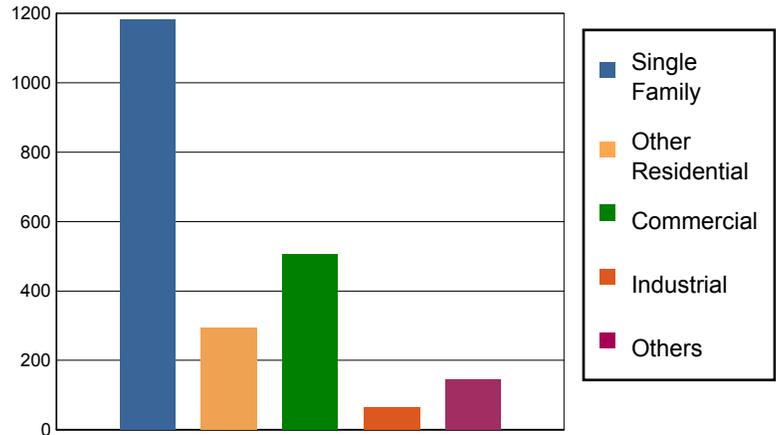


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	8.83	62.49	1.28	6.45	79.05
	Capital-Related	0.00	3.77	56.70	0.77	1.33	62.56
	Rental	31.09	18.58	24.44	0.50	3.48	78.08
	Relocation	106.33	24.92	38.27	2.89	23.40	195.82
	Subtotal	137.42	56.10	181.90	5.44	34.66	415.51
Capital Stock Losses							
	Structural	205.13	44.40	59.77	9.44	20.26	339.00
	Non_Structural	661.69	161.66	179.84	29.37	61.23	1,093.78
	Content	178.18	31.65	83.54	18.78	28.89	341.03
	Inventory	0.00	0.00	1.52	2.99	0.12	4.63
	Subtotal	1,045.00	237.72	324.67	60.57	110.50	1,778.45
	Total	1,182.42	293.82	506.57	66.00	145.15	2,193.96

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	8,884.92	\$0.00	0.00
	Bridges	213.38	\$6.80	3.19
	Tunnels	0.00	\$0.00	0.00
	Subtotal	9,098	6.80	
Railways	Segments	143.08	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	5.33	\$0.54	10.13
	Subtotal	148	0.50	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	6.28	\$1.03	16.42
	Subtotal	6	1.00	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	53.26	\$7.56	14.20
	Runways	265.75	\$0.00	0.00
	Subtotal	319	7.60	
Total		9,572.00	15.90	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	223.80	\$26.43	11.81
	Distribution Lines	205.90	\$0.00	0.00
	Subtotal	429.68	\$26.43	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	447.60	\$0.00	0.00
	Distribution Lines	123.50	\$0.00	0.00
	Subtotal	571.10	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	67.00	\$0.00	0.00
	Distribution Lines	82.40	\$0.00	0.00
	Subtotal	149.33	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	105.60	\$0.00	0.00
	Subtotal	105.60	\$0.00	
Communication	Facilities	1.50	\$0.00	0.00
	Subtotal	1.54	\$0.00	
	Total	1,257.24	\$26.43	

Appendix A: County Listing for the Region

Los Alamos, NM

Rio Arriba, NM

Santa Fe, NM

Taos, NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Los Alamos	17,950	2,515	369	2,885
	Rio Arriba	40,246	2,491	448	2,939
	Santa Fe	144,170	13,623	3,219	16,843
	Taos	32,937	2,871	602	3,474
Total State		235,303	21,500	4,638	26,141
Total Region		235,303	21,500	4,638	26,141

Preparedness Area 4 Global Summary Report



Hazus-MH: Earthquake Global Risk Report

Region Name: NMEQ_4

Earthquake Scenario: Preparedness Area 4 - Farmington

Print Date: February 12, 2018

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 3 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 15,531.25 square miles and contains 57 census tracts. There are over 75 thousand households in the region which has a total population of 228,749 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 85 thousand buildings in the region with a total building replacement value (excluding contents) of 15,412 (millions of dollars). Approximately 95.00 % of the buildings (and 79.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 11,292 and 1,477 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 85 thousand buildings in the region which have an aggregate total replacement value of 15,412 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 50% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 9 hospitals in the region with a total bed capacity of 581 beds. There are 159 schools, 22 fire stations, 22 police stations and 1 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 99 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 12,769.00 (millions of dollars). This inventory includes over 1,739 kilometers of highways, 319 bridges, 18,653 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

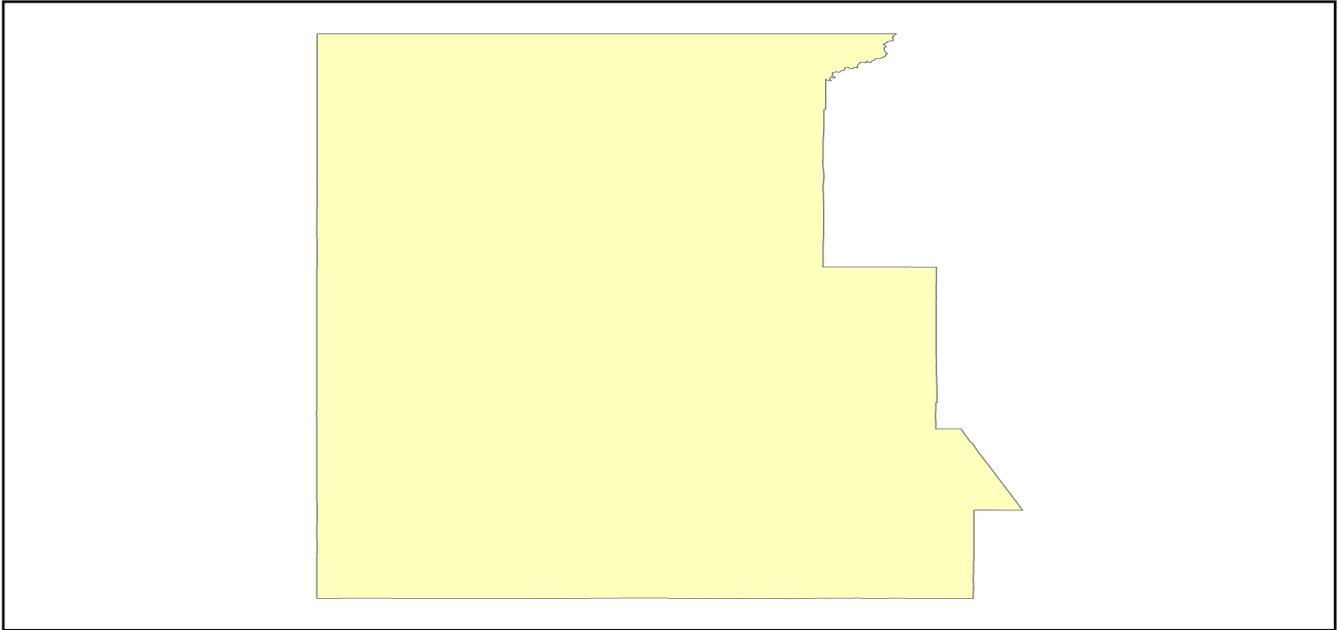
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	319	313.70
	Segments	210	10,238.80
	Tunnels	0	0.00
	Subtotal		10,552.50
Railways	Bridges	2	0.50
	Facilities	1	2.70
	Segments	163	377.80
	Tunnels	0	0.00
	Subtotal		381.00
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	2	2.10
	Subtotal		2.10
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	5	53.30
	Runways	8	303.70
	Subtotal		357.00
		Total	11,292.50

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	186.50
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	186.50
Waste Water	Distribution Lines	NA	111.90
	Facilities	10	639.40
	Pipelines	0	0.00
		Subtotal	751.30
Natural Gas	Distribution Lines	NA	74.60
	Facilities	192	200.90
	Pipelines	0	0.00
		Subtotal	275.50
Oil Systems	Facilities	5	0.50
	Pipelines	0	0.00
		Subtotal	0.50
Electrical Power	Facilities	6	633.60
		Subtotal	633.60
Communication	Facilities	34	3.30
		Subtotal	3.30
		Total	1,850.70

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Preparedness Area 4 - Farmington
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-108.22
Latitude of Epicenter	36.72
Earthquake Magnitude	5.50
Depth (km)	10.00
Rupture Length (Km)	3.31
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 5,916 buildings will be at least moderately damaged. This is over 7.00 % of the buildings in the region. There are an estimated 220 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

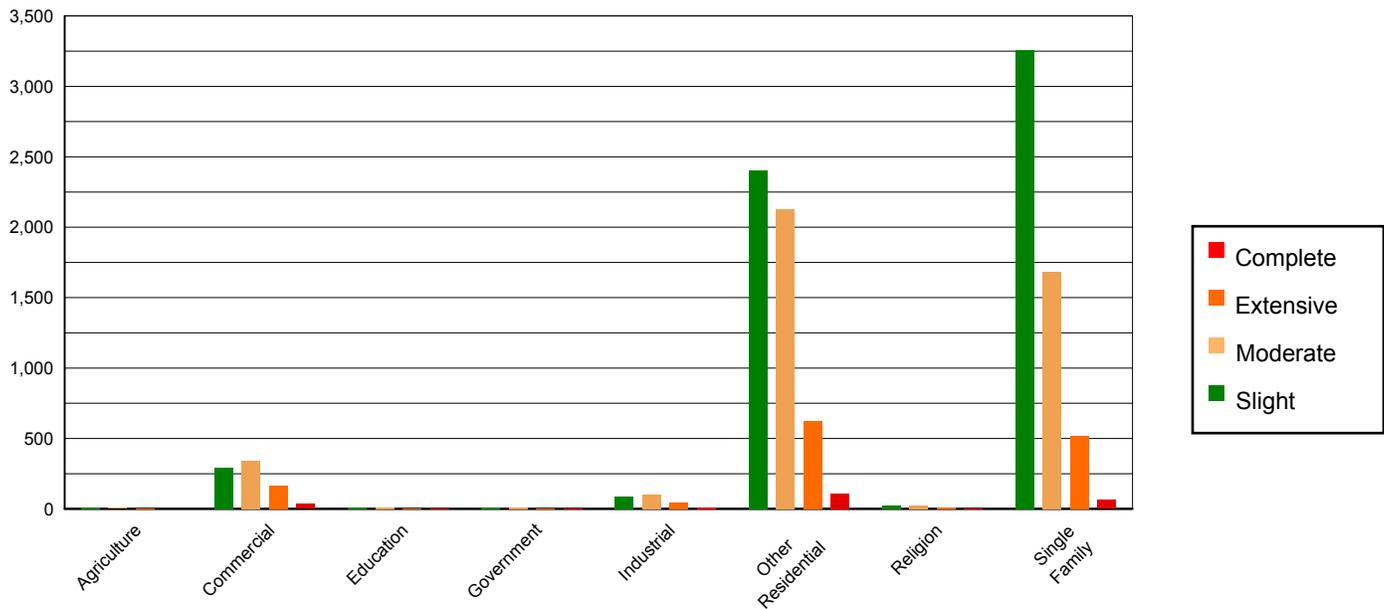


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	85	0.12	10	0.16	8	0.18	3	0.22	1	0.26
Commercial	2,144	2.92	291	4.79	344	7.97	166	12.01	35	16.00
Education	147	0.20	10	0.16	10	0.24	5	0.36	1	0.46
Government	154	0.21	8	0.13	10	0.23	5	0.33	1	0.47
Industrial	597	0.81	86	1.41	101	2.34	47	3.42	10	4.44
Other Residential	20,851	28.34	2,403	39.48	2,129	49.37	626	45.26	107	48.36
Religion	243	0.33	23	0.37	25	0.57	12	0.86	3	1.15
Single Family	49,339	67.07	3,257	53.50	1,686	39.10	519	37.54	64	28.87
Total	73,562		6,087		4,312		1,384		221	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	38,768	52.70	2910	47.80	1,052	24.40	134	9.68	10	4.54
Steel	749	1.02	86	1.41	118	2.73	46	3.30	12	5.30
Concrete	678	0.92	80	1.32	98	2.26	46	3.31	8	3.83
Precast	564	0.77	61	1.00	101	2.35	73	5.29	16	7.12
RM	12,173	16.55	590	9.70	793	18.39	430	31.08	48	21.82
URM	1,242	1.69	126	2.08	119	2.75	58	4.22	25	11.40
MH	19,387	26.35	2234	36.69	2,031	47.11	597	43.11	102	45.99
Total	73,562		6,087		4,312		1,384		221	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 581 hospital beds available for use. On the day of the earthquake, the model estimates that only 479 hospital beds (82.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 90.00% of the beds will be back in service. By 30 days, 98.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	9	0	0	7
Schools	159	0	0	149
EOCs	1	0	0	1
PoliceStations	22	0	0	21
FireStations	22	0	0	21

Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	210	0	0	210	210
	Bridges	319	0	0	319	319
	Tunnels	0	0	0	0	0
Railways	Segments	163	0	0	163	163
	Bridges	2	0	0	2	2
	Tunnels	0	0	0	0	0
	Facilities	1	0	0	1	1
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	2	1	0	2	2
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	5	1	0	5	5
	Runways	8	0	0	8	8

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	10	0	0	0	0
Natural Gas	192	0	0	0	0
Oil Systems	5	0	0	0	0
Electrical Power	6	0	0	0	0
Communication	34	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	9,327	0	0
Waste Water	5,596	0	0
Natural Gas	3,731	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

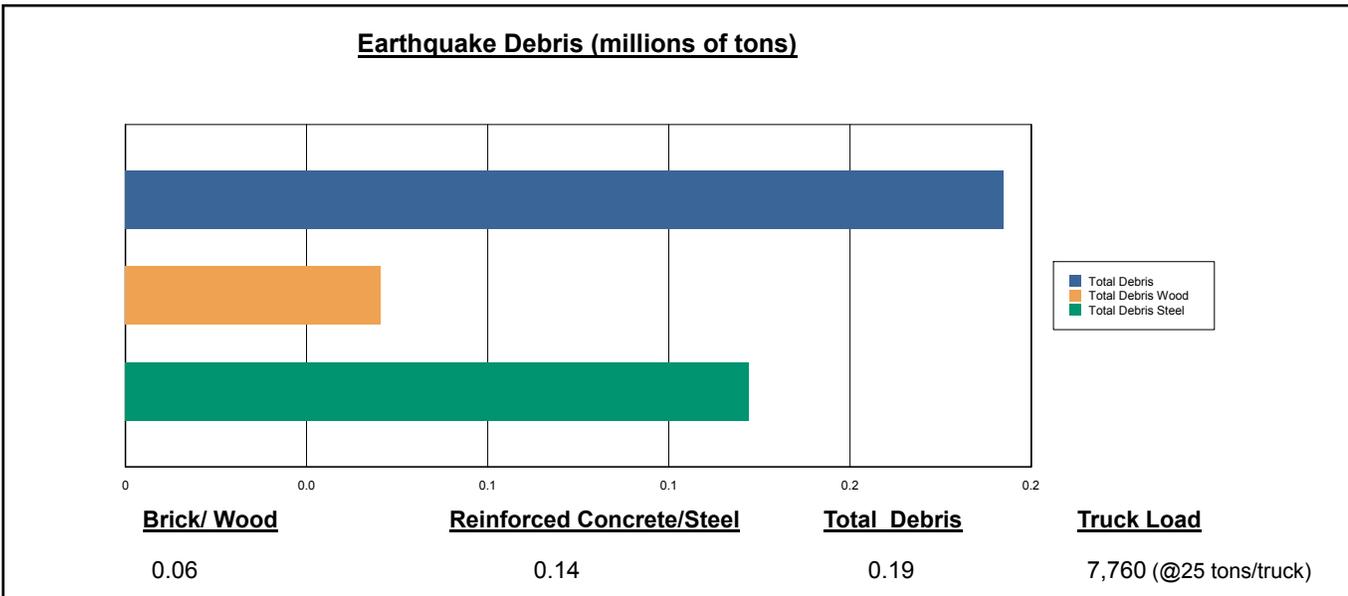
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

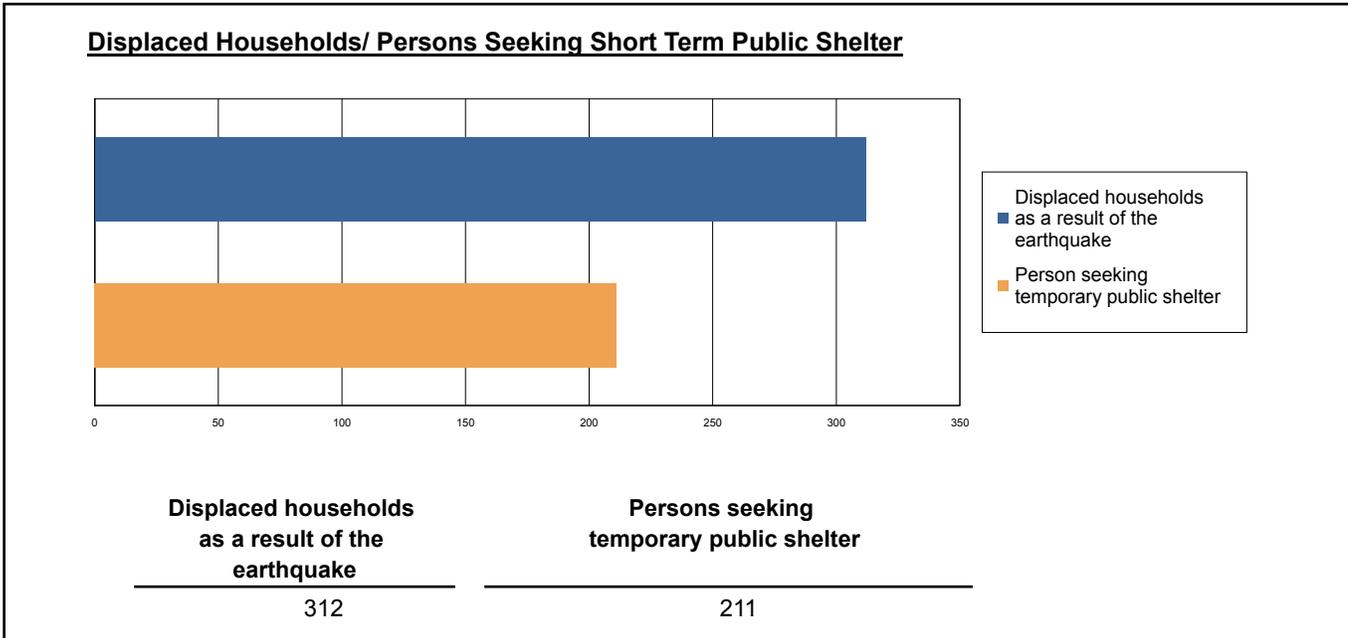
The model estimates that a total of 0.19 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 29.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 7,760 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 312 households to be displaced due to the earthquake. Of these, 211 people (out of a total population of 228,749) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	2	1	0	0
	Other-Residential	50	8	1	1
	Single Family	48	9	1	2
	Total	102	18	2	3
2 PM	Commercial	71	16	2	5
	Commuting	0	0	0	0
	Educational	24	5	1	1
	Hotels	0	0	0	0
	Industrial	18	4	1	1
	Other-Residential	11	2	0	0
	Single Family	11	2	0	0
	Total	134	29	4	8
5 PM	Commercial	51	12	2	3
	Commuting	0	0	0	0
	Educational	1	0	0	0
	Hotels	0	0	0	0
	Industrial	11	2	0	1
	Other-Residential	18	3	0	0
	Single Family	19	3	0	1
	Total	100	21	3	5

Economic Loss

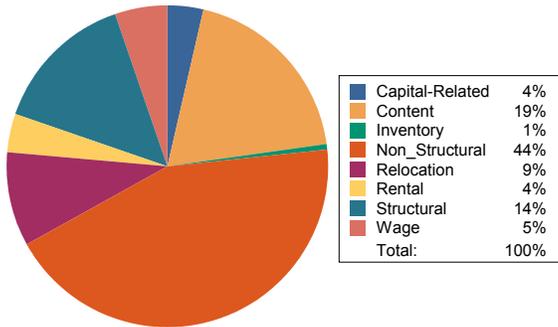
The total economic loss estimated for the earthquake is 537.50 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 532.76 (millions of dollars); 22 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 49 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type (\$ millions)



Earthquake Losses by Occupancy Type (\$ millions)

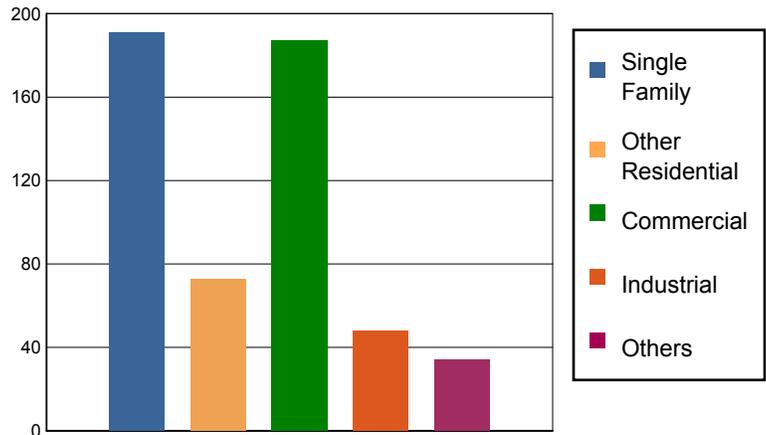


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	2.16	24.08	0.62	1.42	28.28
	Capital-Related	0.00	0.92	17.93	0.69	0.33	19.87
	Rental	5.27	4.66	9.53	0.37	0.56	20.38
	Relocation	18.57	6.47	17.36	2.17	5.40	49.96
	Subtotal	23.84	14.20	68.90	3.85	7.71	118.50
Capital Stock Losses							
	Structural	29.40	11.03	24.14	7.37	5.07	77.01
	Non_Structural	100.51	38.70	59.67	20.34	13.96	233.18
	Content	36.98	8.95	33.25	14.69	7.49	101.35
	Inventory	0.00	0.00	0.95	1.73	0.04	2.72
	Subtotal	166.90	58.67	118.01	44.12	26.56	414.26
	Total	190.73	72.88	186.91	47.97	34.27	532.76

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	10,238.79	\$0.00	0.00
	Bridges	313.67	\$0.36	0.11
	Tunnels	0.00	\$0.00	0.00
	Subtotal	10,552	0.40	
Railways	Segments	377.79	\$0.00	0.00
	Bridges	0.55	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	2.66	\$0.00	0.00
	Subtotal	381	0.00	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	2.09	\$0.39	18.72
	Subtotal	2	0.40	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	53.26	\$3.99	7.49
	Runways	303.71	\$0.00	0.00
	Subtotal	357	4.00	
Total		11,292.50	4.70	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	186.50	\$0.00	0.00
	Subtotal	186.54	\$0.00	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	639.40	\$0.00	0.00
	Distribution Lines	111.90	\$0.00	0.00
	Subtotal	751.28	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	200.90	\$0.00	0.00
	Distribution Lines	74.60	\$0.00	0.00
	Subtotal	275.52	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.50	\$0.00	0.00
	Subtotal	0.48	\$0.00	
Electrical Power	Facilities	633.60	\$0.00	0.00
	Subtotal	633.60	\$0.00	
Communication	Facilities	3.30	\$0.00	0.00
	Subtotal	3.26	\$0.00	
	Total	1,850.69	\$0.00	

Appendix A: County Listing for the Region

Cibola, NM

McKinley, NM

San Juan, NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Cibola	27,213	1,614	324	1,938
	McKinley	71,492	3,434	823	4,257
	San Juan	130,044	7,091	2,124	9,215
Total State		228,749	12,139	3,271	15,410
Total Region		228,749	12,139	3,271	15,410

Preparedness Area 5 Global Summary Report



Hazus-MH: Earthquake Global Risk Report

Region Name: NM_Prep5

Earthquake Scenario: Preparedness Area 5 - Albuquerque

Print Date: January 17, 2018

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 5 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 15,941.63 square miles and contains 209 census tracts. There are over 354 thousand households in the region which has a total population of 904,943 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 340 thousand buildings in the region with a total building replacement value (excluding contents) of 85,398 (millions of dollars). Approximately 94.00 % of the buildings (and 82.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 17,360 and 2,170 (millions of dollars), respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 340 thousand buildings in the region which have an aggregate total replacement value of 85,398 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 63% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 19 hospitals in the region with a total bed capacity of 1,985 beds. There are 348 schools, 41 fire stations, 45 police stations and 2 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 51 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 19,530.00 (millions of dollars). This inventory includes over 2,508 kilometers of highways, 561 bridges, 71,563 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	561	835.50
	Segments	682	15,484.30
	Tunnels	2	0.30
	Subtotal		16,320.10
Railways	Bridges	3	0.20
	Facilities	5	13.30
	Segments	211	631.90
	Tunnels	0	0.00
	Subtotal		645.40
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	10	10.50
	Subtotal		10.50
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	4	42.60
	Runways	9	341.70
	Subtotal		384.30
		Total	17,360.30

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	715.60
	Facilities	2	63.90
	Pipelines	0	0.00
		Subtotal	779.60
Waste Water	Distribution Lines	NA	429.40
	Facilities	7	447.60
	Pipelines	0	0.00
		Subtotal	876.90
Natural Gas	Distribution Lines	NA	286.30
	Facilities	10	10.50
	Pipelines	0	0.00
		Subtotal	296.70
Oil Systems	Facilities	1	0.10
	Pipelines	0	0.00
		Subtotal	0.10
Electrical Power	Facilities	2	211.20
		Subtotal	211.20
Communication	Facilities	58	5.60
		Subtotal	5.60
		Total	2,170.10

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Preparedness Area 5 - Albuquerque
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-106.62
Latitude of Epicenter	35.12
Earthquake Magnitude	7.50
Depth (km)	10.00
Rupture Length (Km)	100.00
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 200,708 buildings will be at least moderately damaged. This is over 59.00 % of the buildings in the region. There are an estimated 68,581 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

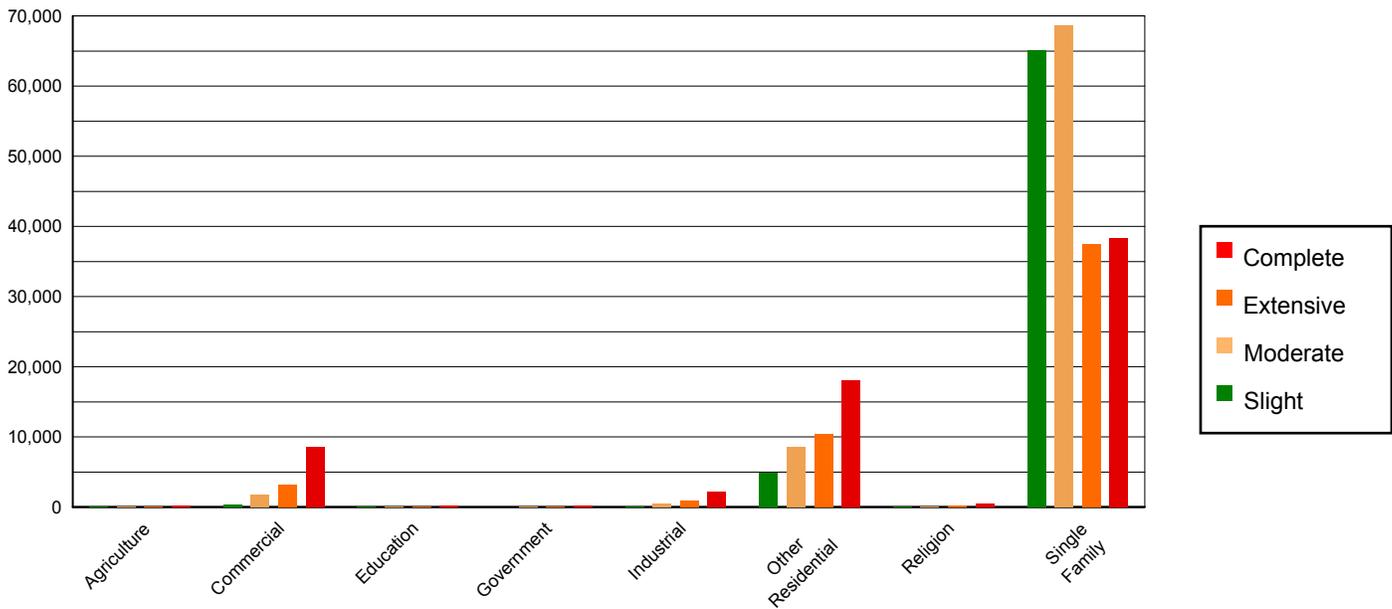


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)								
Agriculture	91	0.13	68	0.10	93	0.12	86	0.16	177	0.26
Commercial	651	0.95	428	0.60	1,713	2.15	3,173	6.06	8,596	12.53
Education	68	0.10	52	0.07	86	0.11	105	0.20	298	0.43
Government	51	0.07	16	0.02	37	0.05	69	0.13	265	0.39
Industrial	165	0.24	117	0.17	460	0.58	850	1.62	2,263	3.30
Other Residential	5,940	8.65	4,867	6.87	8,541	10.71	10,364	19.79	18,103	26.40
Religion	104	0.15	97	0.14	163	0.20	204	0.39	557	0.81
Single Family	61,619	89.71	65,177	92.03	68,667	86.09	37,516	71.64	38,322	55.88
Total	68,688		70,823		79,760		52,368		68,581	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)								
Wood	58,285	84.85	65,238	92.11	62,171	77.95	21,666	41.37	6,050	8.82
Steel	162	0.24	85	0.12	366	0.46	980	1.87	2,922	4.26
Concrete	179	0.26	105	0.15	390	0.49	843	1.61	2,728	3.98
Precast	163	0.24	66	0.09	284	0.36	610	1.17	2,693	3.93
RM	5,150	7.50	2,544	3.59	10,035	12.58	17,998	34.37	33,494	48.84
URM	421	0.61	376	0.53	948	1.19	1,491	2.85	4,495	6.55
MH	4,329	6.30	2,410	3.40	5,565	6.98	8,780	16.77	16,198	23.62
Total	68,688		70,823		79,760		52,368		68,581	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 1,985 hospital beds available for use. On the day of the earthquake, the model estimates that only 90 hospital beds (5.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 6.00% of the beds will be back in service. By 30 days, 18.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	19	18	13	1
Schools	348	122	0	51
EOCs	2	1	0	0
PoliceStations	45	17	0	12
FireStations	41	4	0	18

Transportation Lifeline Damage

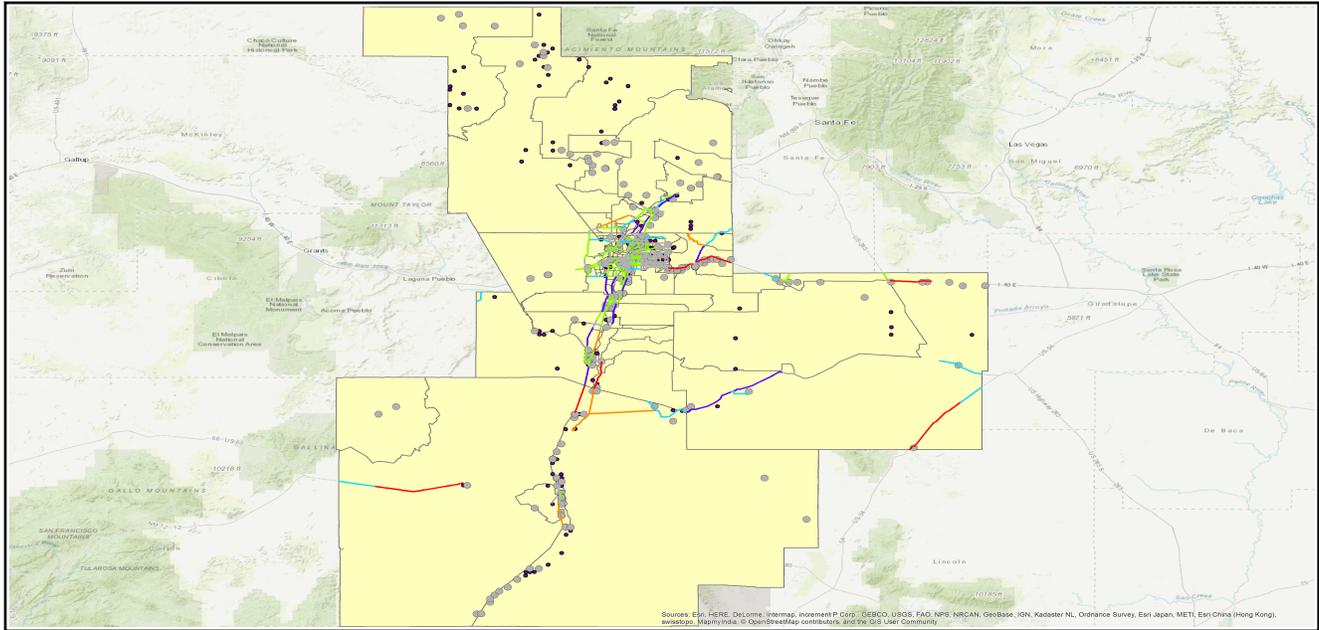


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	682	0	0	682	682
	Bridges	561	143	67	424	455
	Tunnels	2	0	0	2	2
Railways	Segments	211	0	0	211	211
	Bridges	3	0	0	3	3
	Tunnels	0	0	0	0	0
	Facilities	5	5	0	3	5
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	10	8	0	7	10
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	4	1	0	3	4
	Runways	9	0	0	9	9

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	2	2	0	0	2
Waste Water	7	0	0	0	0
Natural Gas	10	0	0	0	0
Oil Systems	1	0	0	0	0
Electrical Power	2	0	0	0	0
Communication	58	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	35,782	0	0
Waste Water	21,469	0	0
Natural Gas	14,313	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

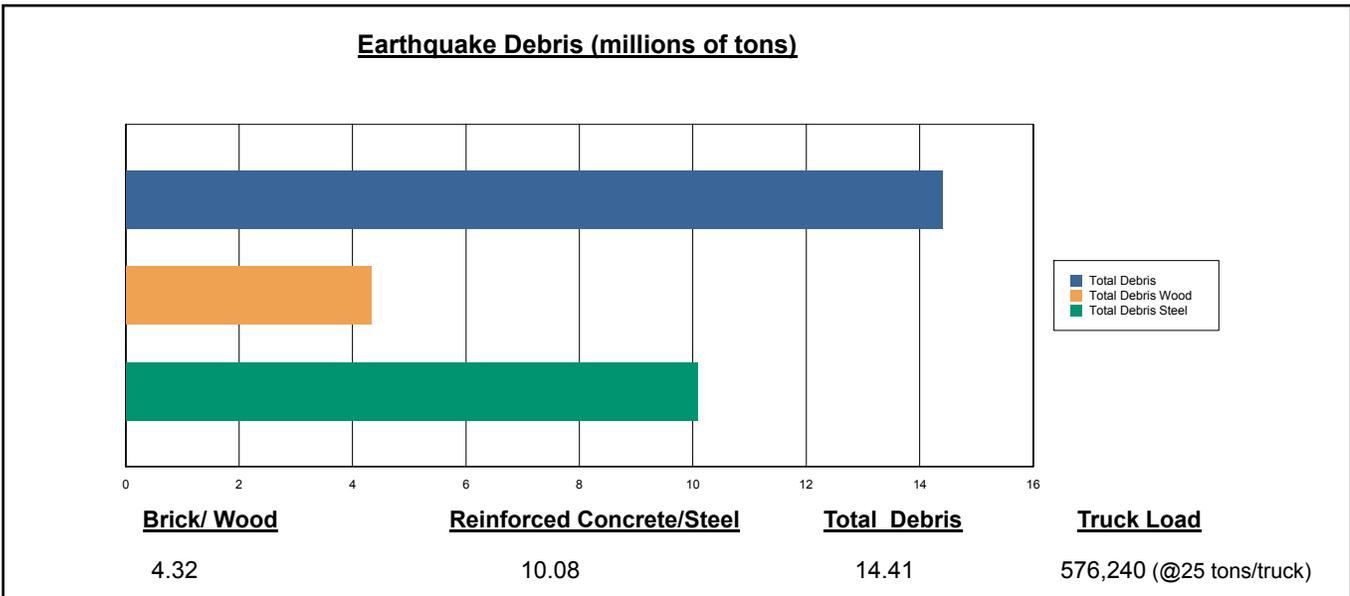
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

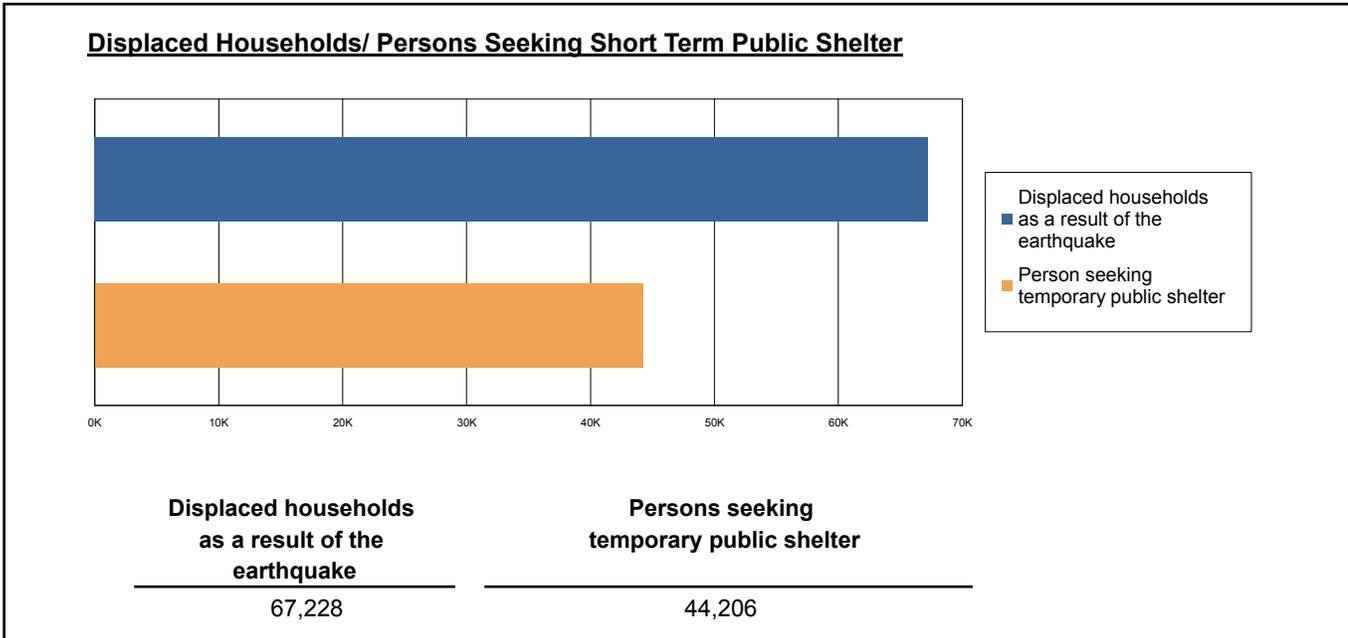
The model estimates that a total of 14.41 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 30.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 576,240 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 67,228 households to be displaced due to the earthquake. Of these, 44,206 people (out of a total population of 904,943) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	286	95	17	33
	Commuting	0	1	1	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	316	103	17	35
	Other-Residential	4,664	1,313	162	307
	Single Family	10,462	3,310	571	1,129
	Total	15,728	4,821	768	1,503
2 PM	Commercial	16,510	5,464	961	1,894
	Commuting	4	5	8	2
	Educational	5,546	1,851	329	643
	Hotels	0	0	0	0
	Industrial	2,344	758	130	253
	Other-Residential	974	273	34	63
	Single Family	2,157	671	117	222
	Total	27,535	9,022	1,579	3,077
5 PM	Commercial	11,665	3,840	679	1,318
	Commuting	65	90	148	29
	Educational	719	242	43	84
	Hotels	0	0	0	0
	Industrial	1,465	474	81	158
	Other-Residential	1,740	489	62	114
	Single Family	4,075	1,267	220	420
	Total	19,729	6,402	1,233	2,123

Economic Loss

The total economic loss estimated for the earthquake is 41,977.57 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 41,823.83 (millions of dollars); 18 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 58 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

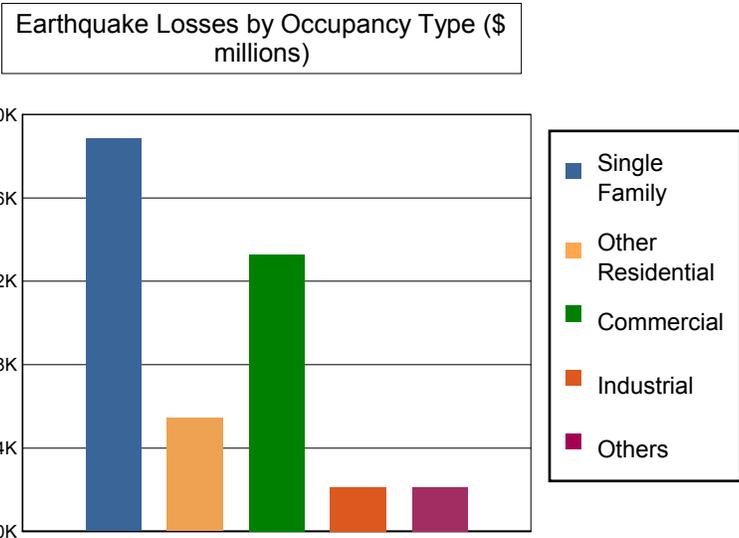
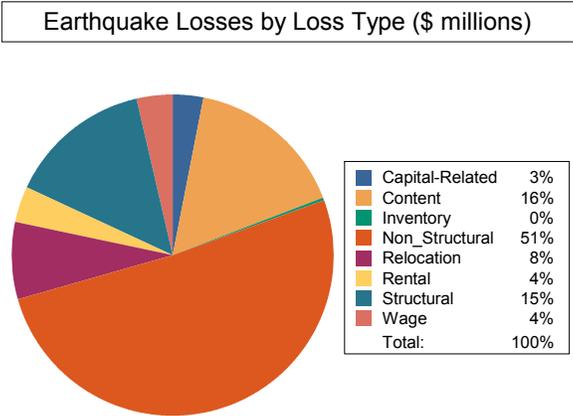


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	113.66	1,254.61	36.86	63.27	1,468.41
	Capital-Related	0.00	48.49	1,174.82	21.68	16.16	1,261.14
	Rental	572.70	355.17	510.16	11.35	37.34	1,486.73
	Relocation	1,915.93	283.97	753.89	54.19	262.80	3,270.77
	Subtotal	2,488.63	801.29	3,693.48	124.08	379.57	7,487.05
Capital Stock Losses							
	Structural	3,301.10	710.98	1,596.16	240.25	280.94	6,129.43
	Non_Structural	10,644.01	3,254.21	5,403.24	1,015.39	1,006.26	21,323.11
	Content	2,411.90	678.87	2,513.23	640.29	461.20	6,705.49
	Inventory	0.00	0.00	64.59	111.07	3.11	178.76
	Subtotal	16,357.00	4,644.06	9,577.22	2,007.00	1,751.50	34,336.78
	Total	18,845.64	5,445.35	13,270.71	2,131.07	2,131.07	41,823.83

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	15,484.33	\$0.00	0.00
	Bridges	835.49	\$116.06	13.89
	Tunnels	0.27	\$0.01	2.20
	Subtotal	16,320	116.10	
Railways	Segments	631.91	\$0.00	0.00
	Bridges	0.20	\$0.01	6.26
	Tunnels	0.00	\$0.00	0.00
	Facilities	13.32	\$6.17	46.36
	Subtotal	645	6.20	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	10.46	\$4.30	41.12
	Subtotal	10	4.30	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	42.60	\$10.36	24.31
	Runways	341.68	\$0.00	0.00
	Subtotal	384	10.40	
Total		17,360.30	136.90	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	63.90	\$16.81	26.30
	Distribution Lines	715.60	\$0.00	0.00
	Subtotal	779.57	\$16.81	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	447.60	\$0.00	0.00
	Distribution Lines	429.40	\$0.00	0.00
	Subtotal	876.93	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	10.50	\$0.00	0.00
	Distribution Lines	286.30	\$0.00	0.00
	Subtotal	296.72	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.10	\$0.00	0.00
	Subtotal	0.10	\$0.00	
Electrical Power	Facilities	211.20	\$0.00	0.00
	Subtotal	211.20	\$0.00	
Communication	Facilities	5.60	\$0.00	0.00
	Subtotal	5.57	\$0.00	
	Total	2,170.08	\$16.81	

Appendix A: County Listing for the Region

Bernalillo, NM

Sandoval, NM

Socorro, NM

Torrance, NM

Valencia, NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Bernalillo	662,564	53,315	12,837	66,152
	Sandoval	131,561	11,042	1,092	12,135
	Socorro	17,866	972	239	1,212
	Torrance	16,383	837	199	1,037
	Valencia	76,569	4,167	692	4,860
Total State		904,943	70,333	15,059	85,396
Total Region		904,943	70,333	15,059	85,396

Preparedness Area 6 Global Summary Report



Hazus-MH: Earthquake Global Risk Report

Region Name: NMEQPred6

Earthquake Scenario: NMEQPred6

Print Date: September 22, 2017

Disclaimer:

*This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.*

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 7 county(ies) from the following state(s):

New Mexico

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 31,977.96 square miles and contains 78 census tracts. There are over 131 thousand households in the region which has a total population of 348,246 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 144 thousand buildings in the region with a total building replacement value (excluding contents) of 25,790 (millions of dollars). Approximately 94.00 % of the buildings (and 81.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 20,882 and 1,088 (millions of dollars), respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 144 thousand buildings in the region which have an aggregate total replacement value of 25,790 (millions of dollars) . Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 51% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 13 hospitals in the region with a total bed capacity of 952 beds. There are 159 schools, 142 fire stations, 47 police stations and 11 emergency operation facilities. With respect to high potential loss facilities (HPL), there are 0 dams identified within the inventory. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 103 hazardous material sites, 0 military installations and 0 nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 21,970.00 (millions of dollars). This inventory includes over 3,220 kilometers of highways, 343 bridges, 27,210 kilometers of pipes.

Table 1: Transportation System Lifeline Inventory

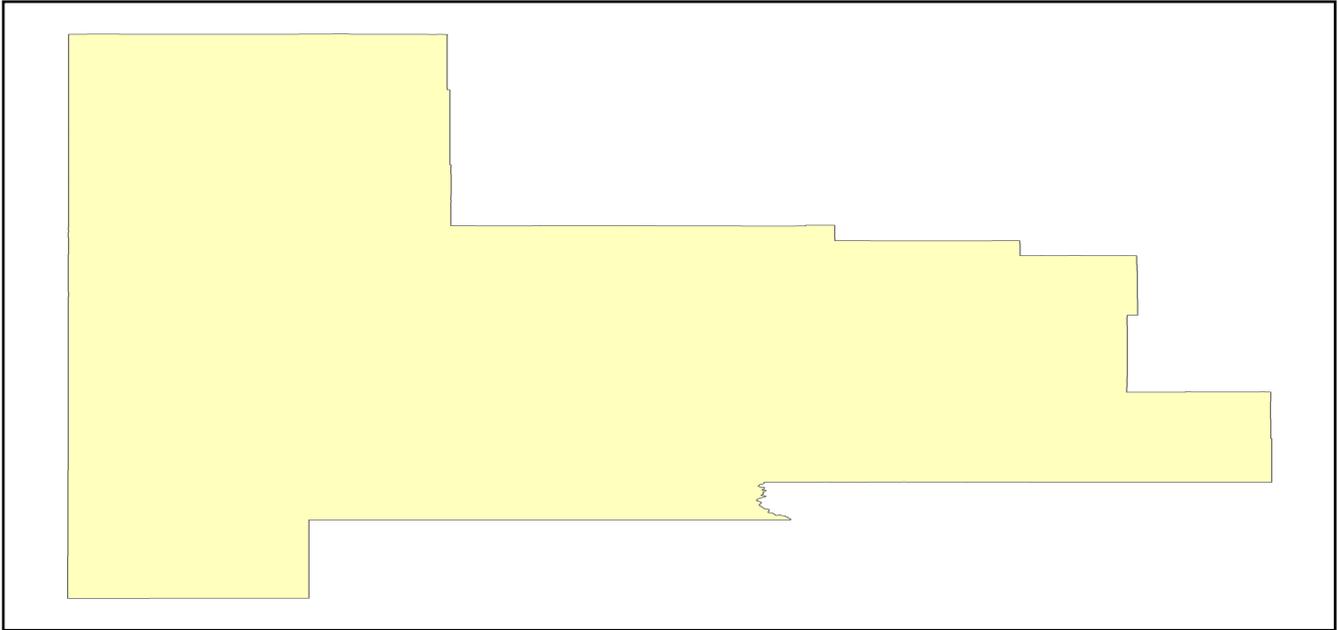
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	343	325.40
	Segments	368	18,745.00
	Tunnels	1	1.80
	Subtotal		19,072.20
Railways	Bridges	6	1.10
	Facilities	2	5.30
	Segments	273	944.40
	Tunnels	0	0.00
	Subtotal		950.80
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	Tunnels	0	0.00
	Subtotal		0.00
Bus	Facilities	4	4.20
	Subtotal		4.20
Ferry	Facilities	0	0.00
	Subtotal		0.00
Port	Facilities	0	0.00
	Subtotal		0.00
Airport	Facilities	9	95.90
	Runways	20	759.30
	Subtotal		855.10
		Total	20,882.30

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	272.10
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	272.10
Waste Water	Distribution Lines	NA	163.30
	Facilities	7	447.60
	Pipelines	0	0.00
		Subtotal	610.80
Natural Gas	Distribution Lines	NA	108.80
	Facilities	4	4.20
	Pipelines	0	0.00
		Subtotal	113.00
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	0.00
Electrical Power	Facilities	6	633.60
		Subtotal	633.60
Communication	Facilities	36	3.50
		Subtotal	3.50
		Total	1,633.00

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	NMEQPred6
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-106.41
Latitude of Epicenter	32.42
Earthquake Magnitude	7.30
Depth (km)	10.00
Rupture Length (Km)	71.12
Rupture Orientation (degrees)	0.00
Attenuation Function	West US, Extensional 2008 - Strike Slip

Building Damage

Building Damage

Hazus estimates that about 17,153 buildings will be at least moderately damaged. This is over 12.00 % of the buildings in the region. There are an estimated 1,364 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage categories by General Occupancy Type

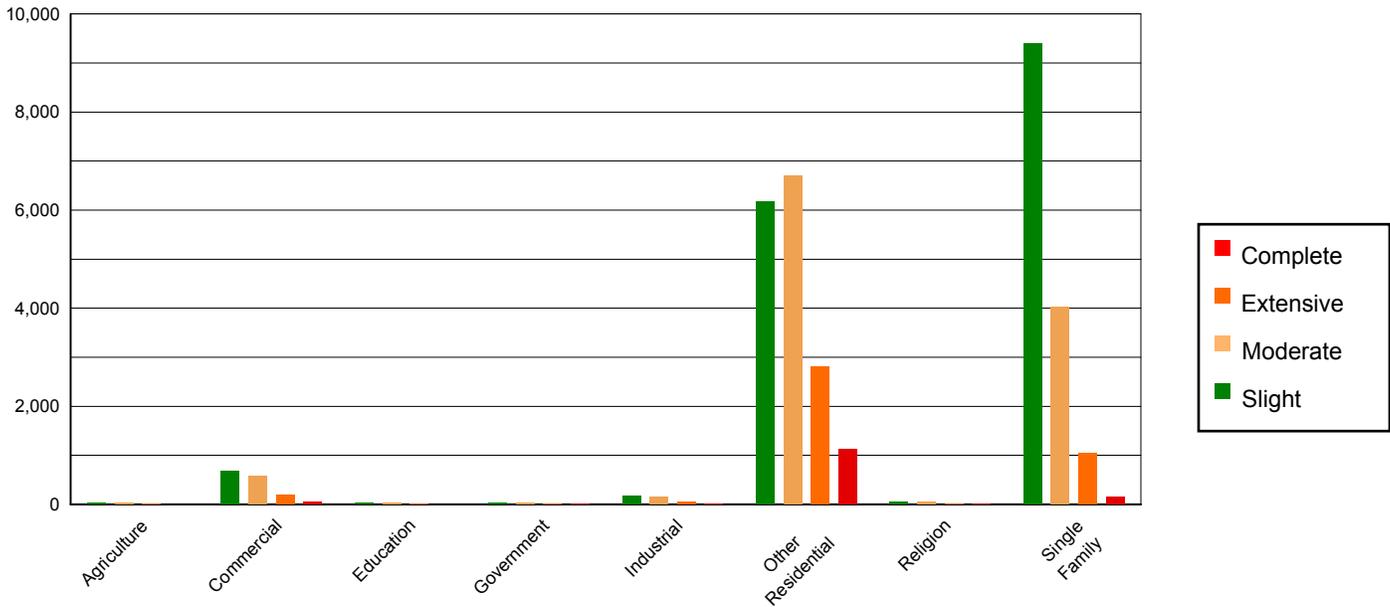


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	274	0.25	41	0.24	32	0.28	12	0.29	3	0.24
Commercial	3,754	3.40	675	4.07	582	5.02	201	4.81	49	3.57
Education	187	0.17	30	0.18	29	0.25	13	0.31	4	0.28
Government	241	0.22	32	0.19	34	0.29	16	0.39	7	0.48
Industrial	933	0.84	183	1.10	165	1.42	60	1.43	16	1.14
Other Residential	27,444	24.84	6,181	37.22	6,689	57.63	2,814	67.29	1,131	82.92
Religion	420	0.38	58	0.35	50	0.43	18	0.42	5	0.38
Single Family	77,218	69.90	9,407	56.65	4,025	34.67	1,048	25.06	150	10.99
Total	110,471		16,607		11,607		4,182		1,364	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	62,683	56.74	7939	47.81	2,024	17.43	203	4.86	16	1.15
Steel	1,129	1.02	247	1.48	282	2.43	92	2.19	28	2.02
Concrete	1,163	1.05	221	1.33	200	1.72	71	1.69	18	1.34
Precast	981	0.89	148	0.89	185	1.59	92	2.20	19	1.43
RM	18,575	16.81	1984	11.95	2,142	18.46	852	20.36	121	8.84
URM	1,785	1.62	421	2.53	320	2.76	118	2.81	42	3.05
MH	24,155	21.87	5647	34.01	6,454	55.60	2,755	65.89	1,121	82.17
Total	110,471		16,607		11,607		4,182		1,364	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 952 hospital beds available for use. On the day of the earthquake, the model estimates that only 250 hospital beds (26.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 77.00% of the beds will be back in service. By 30 days, 93.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	13	0	0	3
Schools	159	9	0	48
EOCs	11	0	0	5
PoliceStations	47	1	0	18
FireStations	142	6	0	54

Transportation Lifeline Damage

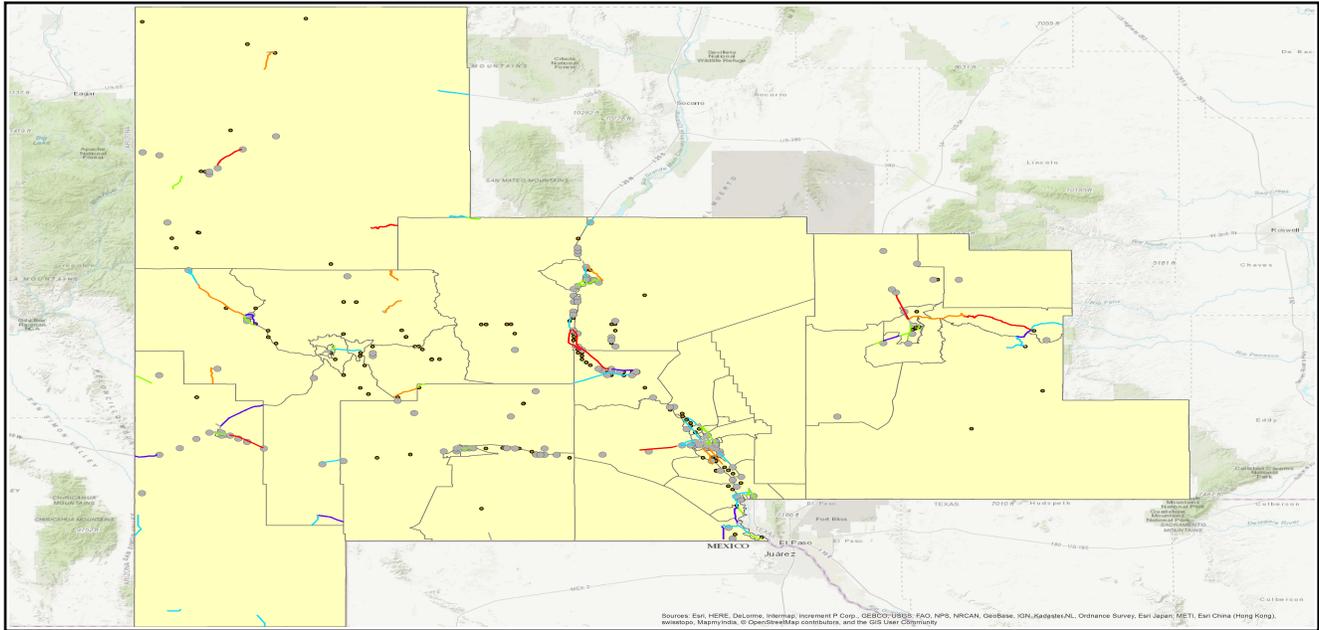


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	368	0	0	368	368
	Bridges	343	2	0	341	341
	Tunnels	1	0	0	1	1
Railways	Segments	273	0	0	273	273
	Bridges	6	0	0	6	6
	Tunnels	0	0	0	0	0
	Facilities	2	0	0	2	2
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	4	0	0	4	4
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	9	0	0	9	9
	Runways	20	0	0	20	20

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	7	0	0	0	0
Natural Gas	4	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	6	0	0	0	0
Communication	36	0	0	0	0

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	13,605	0	0
Waste Water	8,163	0	0
Natural Gas	5,442	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

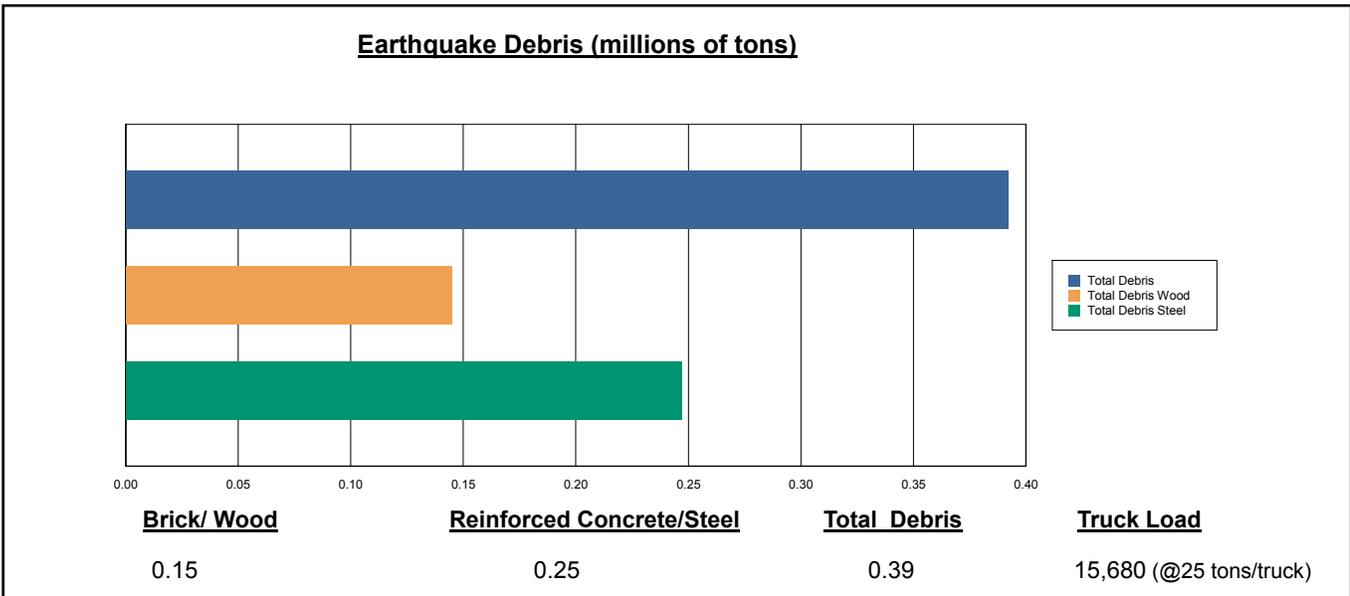
	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	0	0	0	0	0	0
Electric Power		0	0	0	0	0

Induced Earthquake Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

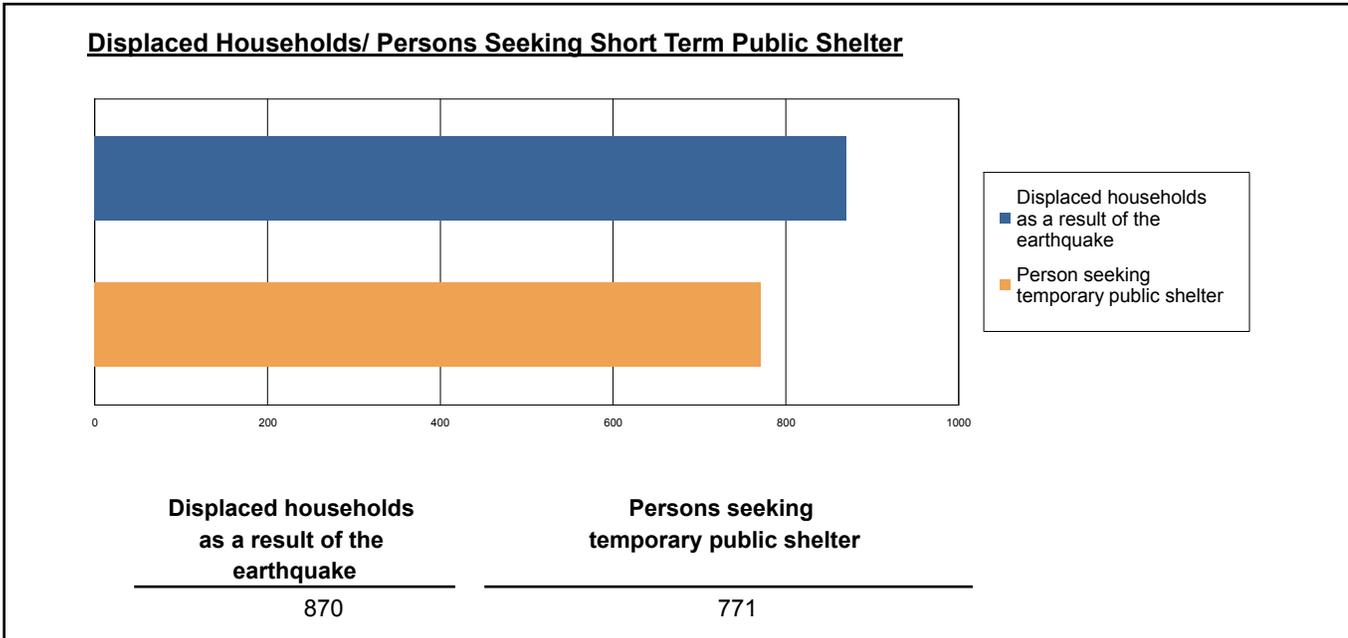
The model estimates that a total of 0.39 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 37.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 15,680 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 870 households to be displaced due to the earthquake. Of these, 771 people (out of a total population of 348,246) will seek temporary shelter in public shelters.



Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	4	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	5	1	0	0
	Other-Residential	315	63	4	7
	Single Family	113	22	3	6
	Total	436	87	7	13
2 PM	Commercial	223	54	8	16
	Commuting	0	0	0	0
	Educational	116	28	4	8
	Hotels	0	0	0	0
	Industrial	34	8	1	2
	Other-Residential	72	14	1	1
	Single Family	26	5	1	1
	Total	471	110	15	29
5 PM	Commercial	166	40	6	12
	Commuting	3	3	6	1
	Educational	15	3	1	1
	Hotels	0	0	0	0
	Industrial	21	5	1	1
	Other-Residential	113	23	1	2
	Single Family	44	8	1	2
	Total	361	83	16	20

Economic Loss

The total economic loss estimated for the earthquake is 852.50 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 844.53 (millions of dollars); 22 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 67 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

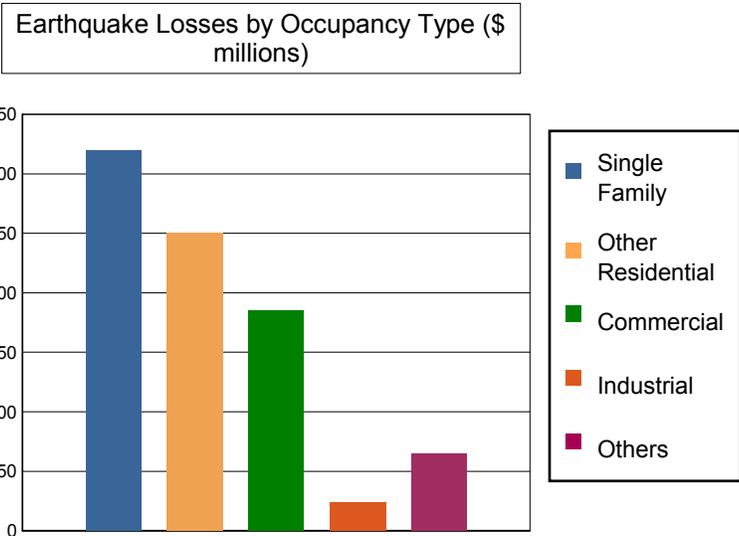
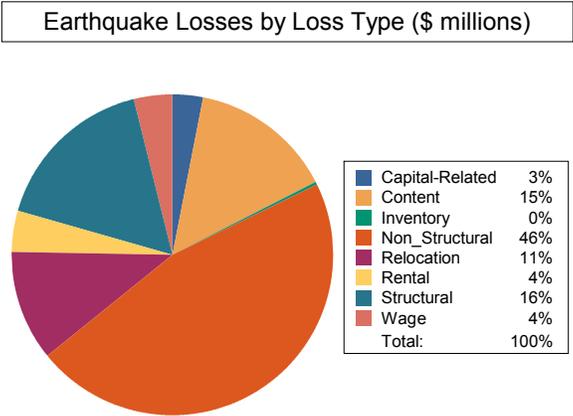


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	2.83	26.37	0.74	3.41	33.35
	Capital-Related	0.00	1.21	22.78	0.44	0.56	24.98
	Rental	10.76	11.09	11.62	0.28	2.03	35.78
	Relocation	37.72	26.42	18.77	1.70	10.77	95.39
	Subtotal	48.48	41.54	79.54	3.16	16.78	189.49
Capital Stock Losses							
	Structural	53.50	45.91	24.63	4.24	10.90	139.18
	Non_Structural	164.90	136.93	54.30	9.51	25.68	391.32
	Content	52.91	25.87	26.21	5.91	11.59	122.50
	Inventory	0.00	0.00	0.72	1.18	0.16	2.05
	Subtotal	271.31	208.71	105.87	20.83	48.33	655.04
	Total	319.78	250.24	185.41	23.99	65.11	844.53

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	18,745.03	\$0.00	0.00
	Bridges	325.39	\$2.63	0.81
	Tunnels	1.76	\$0.00	0.02
	Subtotal	19,072	2.60	
Railways	Segments	944.43	\$0.00	0.00
	Bridges	1.05	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	5.33	\$0.02	0.41
	Subtotal	951	0.00	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Bus	Facilities	4.19	\$0.29	6.91
	Subtotal	4	0.30	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	95.86	\$5.02	5.24
	Runways	759.28	\$0.00	0.00
	Subtotal	855	5.00	
Total		20,882.30	8.00	

Table 13: Utility System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	272.10	\$0.00	0.00
	Subtotal	272.11	\$0.00	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	447.60	\$0.00	0.00
	Distribution Lines	163.30	\$0.00	0.00
	Subtotal	610.82	\$0.00	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	4.20	\$0.00	0.00
	Distribution Lines	108.80	\$0.00	0.00
	Subtotal	113.03	\$0.00	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	0.00	\$0.00	
Electrical Power	Facilities	633.60	\$0.00	0.00
	Subtotal	633.60	\$0.00	
Communication	Facilities	3.50	\$0.00	0.00
	Subtotal	3.46	\$0.00	
	Total	1,633.01	\$0.00	

Appendix A: County Listing for the Region

Catron,NM

Doña Ana,NM

Grant,NM

Hidalgo,NM

Luna,NM

Otero,NM

Sierra,NM

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
New Mexico	Catron	3,725	411	60	472
	Doña Ana	209,233	11,566	2,635	14,201
	Grant	29,514	1,875	573	2,449
	Hidalgo	4,894	309	105	414
	Luna	25,095	1,240	367	1,608
	Otero	63,797	4,612	852	5,464
	Sierra	11,988	874	305	1,179
	Total State		348,246	20,887	4,897
Total Region		348,246	20,887	4,897	25,787

4 APPENDIX D – STATE HAZARD MITIGATION PLANNING TEAM

The following Figure 4-1 State Hazard Mitigation Team describes the agency/organization, contact individual, their associated role, and subject matter expertise of the State Hazard Mitigation Planning Team.



Figure 4-1 State Hazard Mitigation Team

Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
Kristin	Abdill	NM Human Services Dept.	X																	
Ernest	Archuleta	NM Public Regulation Commission	X																	
Jayne	Aubele	Museum of Natural History		X					X										X	
Craig	Bacon	Dept of Homeland Security & Emerg Mgt, Facilities Manager	X																	
Shirley	Baros	UNM, Earth Data Analysis Center	X	X	X	X														
Sue	Bilek	New Mexico Tech, Dept of Earth and Environmental Tech,		X					X											
Wendy	Blackwell	Dept of Homeland Security & Emerg Mgt, State Hazard Mitigation Officer	X	X								X								
Angela	Bordegara y	Inter-State Stream Commission, State Water Planner	X	X		X	X					X					X			
Beth	Boyd	Red Cross	X																	
Doug	Boykin	State Forestry Division	X	X						X	X	X	X	X	X	X	X			X
Wynn	Brannin	Dept of Homeland Security & Emerg Mgt	X																	



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
Troy	Chadwell	NM National Guard	X																	
Veronica	Chavez	Dept of Homeland Security & Emerg Mgt, State Floodplain Coordinator	X																	
Jerry	Clark	FEMA Region VI, Floodplain Mapping	X	X								X								
Gar	Clarke	NM Dept. of Information Technology	X	X	X	X														
Larry	Crumpler	Museum of Natural History		X															X	
Jeffery	Daniels	US Army Corp of Engineers	X	X								X							X	
Dave	DuBois	NM State University, State Climatologist	X	X		X		X			X	X	X			X	X	X		X
Chris	Emory	NM Dept. of Health	X	X	X															
Lorenzo	Espinoza	Dept of Homeland Security & Emerg Mgt, Preparedness Area Coordinator	X																	
Jennifer	Faler	Bureau of Reclamation	X	X			X					X					X			
Brian	Filip	NM Energy, Minerals & Natural Resources Dept.	X	X																X
Royce	Fontenot	NOAA	X	X				X			X	X	X			X	X	X		



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
Donald	Gallegos	US Army Corps of Engineers	X	X				X				X								
Joe	Garcia	NM Dept. of Transportation	X																	
Kevin	Gardner	NM Dept. of Game & Fish	X	X		X		X			X	X	X			X	X	X		X
Kristin	Graham Chaves	Natural Resources Conservation Service	X																	
Kelly	Hamilton	NM State University, Dept. of Agriculture	X																	
Lisa	Hecker	NM Public Education Dept.	X																	
David	Hiegel	FEMA Region VI, National Flood Insurance Program	X	X			X					X					X			
Carmella	Jasso	GSD, Risk Management Division Procurement Manager	X	X	X															
Adam	Jobes	Dept of Homeland Security & Emerg Mgt, Critical Infrastructure Analyst	X	X	X															
Andy	Jochems	NM Bureau of Geology and Mineral Resources		X	X				X											
Mike	Johnson	US Geological Survey, NM Water Science Center	X																	



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
Henry	Jolly	Dept of Homeland Security & Emerg Mgt, Hazmat Coordinator	X																	
Kerry	Jones	National Weather Service	X	X		X		X			X	X	X			X	X	X		X
Brian	Keller	UNM, Earth Data Analysis Center	X	X								X								
Michael	Kesler	NM Environment Dept, Operations & Infrastructure Division	X	X	X	X														
Richard	Knighten	NM Dept of Health, Bureau of Health Emergency Management																		
Dan	Koning	NM Bureau of Geology, New Mexico Tech	X	X					X					X						
Molly	Magnuson	Office of the State Engineer, Water Use Bureau Chief	X	X				X												
Gregory	Manz	NM Dept of Health, Bureau of Health Emergency Management	X																	
Jonathan	Martinez	NM Office of the State Engineer, Acequia Program Manager	X	X			X					X								



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
Donald	Mathiasen	Dept of Homeland Security & Emerg Mgt, National Incident Command System	X																	
Laura	McCarthy	The Nature Conservancy	X																	
Pat	McMurray	NM Regulation & Licensing Dept, Deputy Superintendent		X																
Crystalin	Medrano	USACE	X																	
Chelsea	Morganti	Dept of Homeland Security & Emerg Mgt, Mitigation Specialist	X																	
Seth	Muller	NM Emergency Management Association (Valencia County Director of Emergency Management)	X																	
Vernon	Muller	State Forestry Division, Resource Protection Bureau Chief	X	X																X
Jeff	Murray	US Dept. of Homeland Security, Office of Infrastructure Protection NM	X	X	X															
Mark	Nemeth	US Bureau of		X			X	X												



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
		Reclamation																		
Rick	Padilla	NM Department of Transportation	X																	
Jeff	Pappas	NM Dept. of Cultural Affairs, Historic Preservation Division	X	X			X					X					X			
Bob	Parmenter	National Park Service	X	X																X
Shawn	Penman	UNM, Earth Data Analysis Center, NM Floodplain Managers Association	X	X	X	X						X								
John	Pierson	US Forest Service, District Ranger	X	X																X
Ariane	Pinson	US Army Corps of Engineers	X																	
Kent	Reid	NM Highlands University	X	X		X														X
Susan	Rich	State Forestry Division	X	X																X
Alex	Rinehart	NM Bureau of Geology, NMTech		X											X					
Mark	Rowley	NM Dept. of Public Safety	X	X	X															
Kerri	Roybal	Interstate Stream Commission, Acequia Program	X																	
Vincent	Salazar	Dept of Homeland Security & Emerg Mgt,	X	X	X															



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
		Critical Infrastructure Coordinator																		
Stephen	Scissons	US Army Corps of Engineers	X	X		X	X					X								
Suzette	Shije	NM Indian Affairs Department	X																	
Wayne	Sleep	Natural Resources Conservation Service, Snow Survey Technician	X	X												X				
Karen	Takai	Dept of Homeland Security & Emerg Mgt, Public Information Officer	X																	
Shanene	Thomas	FEMA Region VI, Mitigation Planning Lead	X																	
Charles	Thompson	Office of State Engineer, Dam Safety Bureau Chief	X	X			X					X					X			
Anne	Tillery	US Geological Survey, NM Water Science Center	X	X								X		X						
Richard	Trujillo	NM Department of Transportation	X																	
Beatriz	Vigil	NM Office of the State Engineer, Acequia	X																	



Name, First	Name, Last	Agency/ Organization	Planning Team	Subject Matter Expert	Critical Facilities	Mapping	Dam Failure	Drought	Earth-quake	Expansive Soil	Extreme Heat	Flood	High Wind	Land Slide	Land Subsidence	Severe Winter Storm	Thunderstorm	Tornado	Volcano	Wildland Fire
		Program Manager																		
Jose	Villegas	NM State Police, Santa Fe Police Department Chaplain	X																	
Susan	Walker	Dept of Homeland Security & Emerg Mgt, Preparedness Bureau Chief	X																	
Valli	Wasp	Dept of Homeland Security & Emerg Mgt, Response/Recovery Bureau Chief	X																	
Matt	Zimmerer	NM Bureau of Geology		X															X	



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5 APPENDIX E – ACRONYMS

Acronym	Term
ASCE	American Society of Civil Engineers
BCA	Benefit/Cost Analysis
BD/DR	Business Continuity/Disaster Recovery
BFE	Base Floodplain Elevation
BIA	Bureau of Indian Affairs
BLE	Base-Level Engineering
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe (Railroad)
BWS	Beaufort Wind Scale
CBR	Cost/Benefit Review
CDBG	Community Development Block Grant
CFM	Certified Floodplain Manager
CFOI	Census of Fatal Occupational Injuries
cg	Cloud-to-Ground (lightning)
CMMS	Computerized Maintenance Management System
COE	College of Economics
CRS	Community Rating System (for NFIP)
CWPP	Community Wildfire Protection Plan
DFIRM	Digital Flood Insurance Rate Map
DMA	Disaster Mitigation Act
DMA 2000	Disaster Mitigation Act of 2000
DMA2K	Disaster Mitigation Act of 2000
DOC	Department of Commerce
DOD	Department of Defense
DOI	Department of the Interior
DRMS	NSF Directorate for Social, Behavioral and Economic Science, Division of Social Behavioral and Economic Research, Decision, Risk, and Management Science Program
EAP	Emergency Action Plan
EDA	Economic Development Administration
EF	Enhanced Fujita Scale
EM	Emergency Manager
EOC	Emergency Operations Center



Acronym	Term
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ERC	Energy Release Component
ERP	Enterprise Resource Planning
ESRI	Economic and Social Research Institute
FEMA	Federal Emergency Management Agency
FDRS	Fire Danger Rating System
FHBM	Flood Hazard Boundary Map
FIMA	Federal Insurance and Mitigation Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Studies
FMA	Flood Mitigation Assistance
FRCC	Fire Regime Condition Class
FWS	Fish and Wildlife Service
FY	Fiscal Year
GIS	Geographic Information System
GOES	Geostationary Operational Environmental Satellite
GPS	Global Positioning System
GSD	General Services Department
Hazus	Hazards U.S. Multi-Hazard
HIRA	Hazard Identification and Risk Assessment
HMGP	Hazard Mitigation Grant Program
HMO	Hazard Mitigation Officer
HMP	Hazard Mitigation Plan
HUD	Housing and Urban Development
IA	Individual Assistance
IBC	International Building Code
IFR	Interim Final Rule
KBDI	Keetch-Byram Drought Index
LAL	Lightning Activity Level
LOMR	Letters of Map Revision
LTER	Long Term Ecological Research
MHIRAM	Multi-Hazard Identification and Risk Assessment
MMI	Modified Mercalli Intensity



Acronym	Term
MPG	Mitigation Planning Group
MPH	Miles Per Hour
NCDC	National Climatic Data Center
NCHS	National Centers for Health Statistics
NDFD	National Digital Forecast Database
NEHRP	National Earthquake Hazard Reduction Program
NEPA	National Environmental Policy Act
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NHPA	National Historic Properties Act
NIBS	National Institute of Building Sciences
NIMS	National Incident Management System
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NMDOT	New Mexico Department of Transportation
NMSM	New Mexico School of Mines
NMTEP	The New Mexico Institute of Mining and Technology Emergency Planner
NNMCC	Northern New Mexico Community College
NPS	National Park Service
NRCS	National Resources Conservation Service
NSF	National Science Foundation
NWR	National Wildlife Refuge
NWS	National Weather Service
OCP	Office of Capital Projects
OEM	Office of Emergency Management
PA	Public Assistance
PCD	Planning and Campus Development
PCPI	Per Capita Personal Income
PDA	Preliminary Damage Assessment
PDM	Pre-Disaster Mitigation
PDSI	Palmer Drought Severity Index
PGA	Peak Ground Acceleration
PI	Principle Investigator
PNM	Public Utility Company of New Mexico
POC	Point of Contact
RAOB	RAwinsonde OBservation



Acronym	Term
RGIS	Resource Geographic Information System
RH	Relative Humidity
RHS	Rural Housing Service
ROTC	Reserve Officers Training Corp
RUS	Rural Utilities Service
SBA	Small Business Administration
SC	Spread Component
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SRS	Safety and Risk Services
SSA	Socorro Seismic Anomaly
STAPLE+E	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
TERA	Terminal Effects Research and Analysis
TPI	Total Personal Income
USACE	US Army Corp of Engineers
USDA	US Department of Agriculture
USGS	United States Geological Survey
VEI	Volcanic Explosivity Index
WFAS	Wildland Fire Assessment System
WIPP	Waste Isolation Pilot Plant
WUI	Wildland-Urban Interface



6 APPENDIX F – DEFINITIONS AND TERMS

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

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

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

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

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

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

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

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

Duration: How long a hazard event lasts.

Essential Facility: Elements important to ensure a full recovery of a community or state following a



hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.

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

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

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

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

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

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

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

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

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

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

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



they are displayed on maps.

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

Severity: See magnitude

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL100-107) was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974 (PL 93-288). The Stafford Act is the statutory authority for most federal disaster response activities, especially as they



pertain to FEMA and its programs. It was most recently amended with the enactment of the Disaster Mitigation Act of 2000 (PL 106-390).

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

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

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

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

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



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7 APPENDIX G – REFERENCES

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8 APPENDIX H – DAM FAILURE INFORMATION For Official Use Only

Please contact the Dam Safety Bureau of the New Mexico Office of the State Engineer at 505-827-6122 or nm.damsafety@state.nm.us. Other contacts available at <http://www.ose.state.nm.us/DS/dsIndex.php>.