

## Part 10. San Juan County

San Juan County includes two main municipalities, Monticello and Blanding. San Juan County is located in the southeastern corner of the state. Other jurisdictions that have been included in the risk assessments including Mexican Hat, Bluff, and Montezuma Creek; these jurisdictions are not incorporated municipalities and have not been mapped.



### A. Demographics and Population Growth

The following information involving Population Estimates, Average Annual Rates of Change, and Population and Development Trends is important in understanding the impacts a natural hazard may have on a local community now and in the future (Table 10-1). Monticello and Blanding are the two principal cities in San Juan County. Smaller significant communities include Aneth, Bluff, Eastland, White Mesa, Mexican Hat, Las Sal, Spanish Valley, Holly Village, Oljato, Red Mesa, Monument Valley, Halchita, Goulding, Rainbow Village, and Montezuma Creek. The Navajo Nation and the Ute Mountain Reservations account for 1,231,000 acres (Utah Water Master Plan).

**Table 10-1 San Juan County Population**

Geographic Area	1990	1997	2000	2020	2050	AARC 1990-2000	Rank by 2000 Population
Blanding Annex Area	3,162		3,162	4,991	7,138	0.0	
Monticello Annex Area	1,806	1,859	1,958	2,565	4,009	0.8	
Spanish Valley		126		166	253		
La Sal		201		264	401		
Bluff		192		250	379		
Mexican Hat		78		102	155		
Eastland Service Area		84		112	170		
Balance of Private Lands		1,034		214	508		
White Mesa Reservation		290		384	582		
Navajo Reservation		6,012		8,225	12,405		
Dennehotso Chapter		32		41	56		
Navajo Mtn. Chapter		427		557	787		
Oljato Chapter		1,769		2,333	3,346		
Mexican Water Chapter		329		541	1,037		
Red Mesa Chapter		1,150		1,706	2,854		
Tec Nos Pos Chapter		105		133	182		
Aneth Chapter		2,225		2,914	4,143		
Total San Juan County	12,621	13,284	14,413	17,273	26,000	1.3	16
Balance of San Juan County	7,653	9,293				2.0	

**Table 10-2 Population by County 1980-2030**

MCD/ County	1980	1990	2000	2005	2010	2015	2020	2030	AARC 2000- 2030
Southeast Region	54,124	49,801	54,180	54,559	57,699	62,754	66,489	67,867	0.75%
San Juan County	12,253	12,621	14,413	14,734	15,823	17,441	18,696	19,459	1.01%

Sources: <http://www.governor.state.ut.us/projections/EDPT3.pdf>; U.S. Bureau of the Census; Utah Population Estimates Committee; 2002 Baseline Projections, Governor’s Office of Planning and Budget, UPED Model System. Notes: AARC is average annual rate of change. 1980 and 1990 populations are April 1 U.S. Census modified age, race and sex (MARS) populations; 2000 populations are April 1 U.S. Census summary file 1 (SF1) populations; all others are July 1 populations.

## **B. Economy**

San Juan County has three main land-based economic opportunities that are expected to lead growth. These are agriculture, hunting and fishing, and tourism. Other factors that affect economic enrichment involve mineral production, governmental operations, tribal operation, oil and gas exploration, and wildlife recreation (Scherick 63-71).

Economic growth for the first quarter of 2002 was centered on tourism, construction, and health care. The service production industries accounted for much of the job growth and a drop in unemployment during the first quarter of 2002. The current October 2002 unemployment rate is 7.8 percent, a 1.2 percent drop from October 2001 (San Juan County Trends). The 2000 estimated average house value is \$123,751 (Annual Statistical).

## **C. Transportation and Commuting Patterns**

San Juan County has no public railway, bus, or passenger air transportation. The major U.S Highways include 191 and 491 (formerly known as “The devil’s highway” or route 666). State highway 191 extends from the northern San Juan County line south through Monticello, Blanding, Bluff, and Mexican Water on into Arizona. State highway 491 extends from the Colorado State line west through Monticello. State highway 163 runs perpendicular to US 191, extending from Montezuma Creek west through Bluff, and then southwesterly through Mexican Hat and on to the Arizona state line (Scherick 36).

## **D. Land Use and Development Trends**

The Federal Government owns the majority of land within San Juan County. The Bureau of Land Management administers approximately 41% of the land, the National Park Service and the U.S Forest Service handle 11% and 9%, respectively. State lands make up 8% with State Parks occupying less than 1%. Private land ownership consists of roughly 8% of the land base (Scherick 35). The Navajo nation occupies roughly 23% of San Juan County. Development trends indicate that San Juan County will continue to grow. The service and trade industry have had a large impact on population growth and with the above-mentioned population forecast numbers, the county will continue to create more local tourism opportunities.

## **Risk Assessment**

The risk assessment process revealed that wildfire, flood, dam failure, infestation, severe weather, earthquake, and drought have typically affected this geographic region. Risk assessment maps were completed for the mapped hazards and can be viewed at the end of this section (Refer to Part 6 for an explanation of the risk assessment process). According to this data there are 28 critical facilities in San Juan County (Please refer to Appendix C for a complete list of critical facilities for the entire county). Severe weather, earthquake, and drought are considered to be regional hazards and have been profiled as such (Part 4 Regional Data).

# 1. Wildland Fire

## Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability	X	Highly Likely	
		Likely	
		Possible	
		Unlikely	
Location	See map in Section H. Countywide, URWIN areas around Monticello and Blanding.		
Seasonal Pattern or Conditions	Summer months. Areas affected by drought and/ or heavily overgrown and dry brush and debris. Lightning and human triggers.		
Duration	Wildfires typically last days but can last months, depending on climate and fuel load as well as resources (financial, manpower) to extinguish the fire.		
Analysis Used	Review of plans and data provided by US Forest Service, National Climate Center, FEMA, AGRC, County Hazard Analysis Plans, and DESHS.		

## Description of Location and Extent

A wildfire is an uncontrolled fire spreading through both naturally occurring and non-native vegetative fuels. Often wildfires threaten nearby structures. Wildfires often begin unnoticed and spread quickly. They are usually signaled by dense smoke that fills the area for miles around. Wildfire can cover a large geographic area, can be ignited by natural or human sources, and are hard to predict. According to the local emergency manager, the county had fires in 1994, 1996, 2001, and 2002. They were all isolated but did considerable damage to property and suppression was costly. The Division of Emergency Services and Homeland Security list below five categories to wildfire risk. Wildfire maps provided by DESHS show five categories of wildfire risk:

- Extreme
- High
- Medium
- Low
- Very Low

These ratings cover all of San Juan County and are based on the type and density of vegetation in each area. Additional factors influencing wildfires such as weather conditions, wind speed and direction are not considered in this risk assessment.

## Vulnerability Assessment

The following table includes the number of commercial, and residential structures inside extreme, high and moderate wildfire risk areas within San Juan County. The population within each of the areas is also included (Table 10-3).

**Table 10-3 Households and Population in Wildfire Area**

	Extreme Risk	High Risk	Moderate Risk
Residential Units/Replacement Cost	144/\$11,323,728	65/\$5,111,405	170/\$13,368,290
Population	456	84	328

Table 10-4 details the annual sales of the businesses inside each wildfire risk area, and the assessed value of residential property in each wildfire risk area. Residential loss estimates do not include contents. Including the value of contents would increase the values listed by 50%.

**Table 10-4 Businesses in Wildfire Area**

City Name	Businesses in Extreme/ Annual Sales	Businesses in High/ Annual Sales	Businesses in Moderate/ Annual Sales
Blanding	6/ \$3,900,000	4/ \$900,000	5/ \$6,900,000
Monticello	No known risk	No known risk	47/ \$54,900,000
Montezuma Creek	No known risk	No known risk	1/ \$600,000

Table 10-5 contains the number of acres in each wildfire risk area, within the municipal boundaries of the following cities in San Juan County.

**Table 10-5 Wildfire Risk Area**

	Acres of Extreme	Acres of High	Acres of Moderate
Monticello	90.93	92.16	90.93
Blanding	162.17	109.44	15.79

The following tables list the critical facilities and infrastructure within Extreme, High or Moderate wildfire risk areas (Table 10-6, 10-7). Refer to Table 10-8 for a list of the recorded fire history within the county.

**Table 10-6 Critical Facilities in Wildfire Zones**

Critical Facility	Name	Location
Oil Facility	Gary-Williams Energy Facility	¾ Mile South of Montezuma, Montezuma Creek
Oil Facility	Unocal Lisbon Plant	
Natural Gas Facility	Northwest Pipeline	22 Miles South of hwy 191, Near Moab
School	Monticello High	Monticello
School	Monticello School	Monticello

**Table 10-7 Infrastructure in Wildfire Area**

Item	Length (Miles)	Replacement Cost
Local Roads	230.65	\$461,300,000
State Highways	144.95	\$349,846,962
US Highways	0.00	\$0
US Interstates	0.00	\$0
Power Lines	111.50	\$5,383,220
Gas Lines	45.24	\$10,920,484

**Table 10-8 Historical Wildfires**

<b>Date</b>	<b>Fire Name</b>	<b>Cause</b>	<b>Size</b>
6/8/86	White Mesa	Miscellaneous	E
6/1/87	White Mesa # 2	Incendiary	D
6/18/87	McCracken Mesa	Miscellaneous	E
6/19/87	White Mesa # 4	Incendiary	E
6/23/87	White Mesa # 6	Debris Burn	D
7/4/87	Tank Draw	Equipment	F
8/15/87	Two Mile Creek	Lightning	D
6/15/89	Pehrson	Lightning	E
7/23/90	Horny Toad	Lightning	D
8/9/90	Alfred Frost	Lightning	D
6/14/94	Willow Basin	Equipment	F
6/25/94	Haller (Wheatfield)	Lightning	D
6/29/94	Mustang	Lightning	D
7/14/94	Iron Canyon	Lightning	D
7/14/94	Peters Hill (Iron Canyon)	Miscellaneous	D
3/21/96	Montezuma	Debris Burn	D
6/8/96	Dove Creek	Lightning	D
6/21/96	Eastland	Lightning	D
7/16/97	Wray	Lightning	D
7/17/97	Cajon Mesa	Lightning	E
6/1/98	Aneth Point	Cigarette	D
7/9/99	McCracken	Lightning	E

## 2. Flood

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
	X	Likely	
		Possible	
		Unlikely	
Location	See map in Section H, the San Juan and Colorado Rivers and their respective larger tributaries.		
Seasonal Pattern or Conditions	Spring, Cloudburst Storms and Heavy Snowfall Runoff.		
Duration	Flooding can last anywhere from hours to days and even months.		
Analysis Used	Review of FIS, FIRM, Army Corp of Engineers Flood Study, Hazard Analysis Plans, GIS data, and have worked with local residents of the community.		

### Description of Location and Extent

The WFRC, San Juan County GIS staff members, and Utah DESHS have reviewed the county's most recent FIRM and FIS, EOP, Hazard Analysis Plan, and have worked with local residents of the community to compile all available data to profile the flooding hazard in San Juan County. A rudimentary Flood Hazard Identification Study has also been compiled by the Army Corps of Engineers in 2003 (Appendix E).

The following communities are situated in floodplains and have suffered property damage in the past. McElmo Creek, Comb Wash, Cottonwood Wash, and Montezuma Creek near Bluff, Cottonwood Wash near Blanding, Butler Wash near Bluff, Comb Wash near Bluff and Blanding, White Canyon near Hite, and Lime Creek near Mexican Hat.

Bluff is located in an alluvial fan below Cottonwood Wash, and therefore is in a floodplain area as well as in a shallow ground water zone. Mexican Hat is located near the San Juan River and is also in the floodplain. The city of Blanding resides on or near expansive soils; when water is introduced into these types of soils they expand and damage or destroys foundations in homes and businesses.

Monticello, Bluff, Blanding, and Mexican Hat are likely to experience another flood event in the future. Flash flooding is also possible in San Juan County in gullies, washes and canyons.

### Vulnerability Assessment

Due to the lack of digitized floodplain maps potential dollar loss estimates were unable to be completed during the making of this plan.

### 3. Dam Failure

#### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
		Limited	10-25%
		Critical	25-50%
	X	Catastrophic	More than 50%
Probability		Highly Likely	
		Likely	
	X	Possible	
		Unlikely	
Location	See map in Section H Dam locations are mainly located in the mid-eastern portion of the county.		
Seasonal Pattern or Conditions	Rainy Day Failure happens mainly during heavy precipitation events, can have some warning time. Sunny Day Failure happens with no warning at all can happen at anytime.		
Duration	Hours, Days. Depends on spillway type and area, maximum cfs discharge, overflow or breach type, dam type. Refer to Dam Inventory for more information.		
Analysis Used	Review of BOR inundation maps and plans, FIS, Water Rights, Utah Division of Water Rights and Dam Safety, local input.		

#### Description of Location and Extent

Twenty-eight dams are located in San Juan County with only four dams listed as having a high threat rating. A high threat rating means there is a possibility of life being lost due to dam failure. Two dams are listed, as having a moderate hazard rating, meaning there would be significant downstream property loss if the dam were to fail. The remaining seventeen dams have a low hazard rating; if a dam failure were to occur there would be insignificant property loss, however they should still be monitored (Table 10-9). The classification of a high hazard dam does not mean that the dam has a high probability of failure. Dam safety hazard classifications simply delineate the downstream consequences if a dam were to fail (Table 10-10). Potential dam failure in San Juan County is rated as “possible.” If a dam were to breach in the county, the cities identified in Table 10-10 would be affected.

**Table 10-9 San Juan County Dam Risk**

Dam Name	Hazard Risk
1. Kens Lake	High
2. Lloyds Lake/ Monticello	High
3. Starvation Canyon	High
4. Recapture Creek	High
5. Blanding City #3	Moderate
6. Blanding City #4	Moderate
7. Camp Jackson	Moderate
8. Dry Wash #2	Moderate
9. Gordon	Moderate
10. Keller	Moderate
11. Monticello Lake	Moderate
12. Rattlesnake Ranch #1, Upper	Moderate
13. Rattlesnake Ranch #2, Lower	Moderate
14. Bailey, Upper	Low
15. Bankhead, Lower	Low
16. Blanding Wastewater Winter Storage	Low
17. Dugout	Low
18. Iron Springs	Low
19. Monticello City #1	Low

20. Monticello City #2	Low
21. Monticello City #3	Low
22. Provancha	Low
23. Rio Algom, Lower	Low
24. Rio Algom, Upper	Low
25. Snyder #2	Low
26. White Mesa Tailings #1	Low
27. White Mesa Tailings #2	Low
28. White Mesa Tailings #3	Low

### Monticello

Lloyds Lake is a High hazard dam owned by San Juan Water Conservancy District and was completed in 1984. The reservoir storage at spillway crest is 3,500 acre-feet and the reservoir storage at dam crest is 4,300 acre-feet. The spillway type is an open channel and the maximum dam breach flow would be 86,000 cfs with a 13 square mile drainage basin area. The first downstream town is Monticello 1 mile away.

### Blanding

Starvation Canyon Reservoir is a High hazard dam owned by Blanding City and was completed in 1985. The reservoir storage at spillway crest is 600 acres and the reservoir storage at dam crest is 875 acres. The spillway type is an open channel and the maximum dam breach flow would be 28,000 cfs with a 1 square mile drainage basin area. The first downstream town is Blanding 3 miles away.

Recapture Creek has a High hazard dam rating. It is owned by San Juan Water Conservancy and was completed in 1984. The reservoir storage at spillway crest is 9,319 acre-feet and the reservoir storage at dam crest is 16,000 acre-feet. The spillway type is open channel and the maximum dam breach flow would be 220,000 cfs with a 61 square mile drainage basin area. Recapture Creek does not have a downstream town; the dam water would flow into the San Juan River.

**Table 10-10 Dam Breach Downstream Town**

Dam Name	First Downstream Town	Distance in miles
Bankhead, Lower	La Sal	5
Blanding City #3	Blanding	4
Camp Jackson	Blanding	17
Dry Wash #2	Blanding	14
Gordon	Monticello	5
Kens Lake	Moab	6
Lloyds Lake	Monticello	1
Monticello City #1	Monticello	1
Monticello City #2	Monticello	1

### Vulnerability Assessment

The risk assessment values for dam failure were difficult to analyze due to the quality and age of the dam inundation maps from the Dam Safety Section of Utah Water Rights. The municipalities, roads, critical facilities, and GIS layers were superimposed over the dam identification layers. This analysis reveals the geographic extent of the dams and the critical facilities within the hazard areas. This analysis could not identify potential dollar loss estimates using the available data.

## 4. Infestation

### Hazard Profile

Potential Magnitude		Negligible	Less than 10%
	X	Limited	10-25%
		Critical	25-50%
		Catastrophic	More than 50%
Probability		Highly Likely	
	X	Likely	
		Possible	
		Unlikely	
Location	Agricultural lands, forested areas, areas of extreme drought.		
Seasonal Pattern or Conditions	Summer, drought related		
Duration	Months to years		
Analysis Used	Reviewed information provided by UGS, DESHS, AGRC, Idaho's Forest Health Protections agency, Utah Forestry Fire and State Lands, Utah Forest Service, Utah State University Extension Service, and local input.		

### Description of Location and Extent

San Juan County has experienced infestation problems in the past. The following information has been gathered from surveyors from Boise, Idaho's Forest Health Protection with help from the Forest Health Coordinator from Utah Forestry Fire and State Lands:

In 1998, 14 % of San Juan County was surveyed (or 690,067 out of 5,065,358 total acres). The survey identified 291 acres that were affected by Mountain Pine Beetle Ponderosa, 74 acres affected by Douglas-Fir Beetle, 198 acres affected by the Spruce Beetle, 398 acres affected by Aspen Blight, 354 acres from Sub-Alpine Fir Mortality Complex, and 5 acres from Pinyon Mortality.

In 1999, 8 % of San Juan County was surveyed or 411,622 out of 5,065,358 total acres. The survey identified that 186 acres were affected by Mountain Pine Beetle Ponderosa, 20 acres affected by Douglas-Fir Beetle, 429 acres affected by the Spruce Beetle, 40 acres affected by Fir Engraver Beetle, 1,349 acres from Sub-Alpine Fir Mortality Complex, and 15 from Aspen defoliation.

In 2000, 8 % of San Juan County was surveyed or 417,045 out of 5,065,358 total acres. The survey identified that 243 acres were affected by Mountain Pine Beetle Ponderosa, 77 acres affected by Douglas-Fir Beetle, 407 acres affected by the Spruce Beetle, 140 acres affected by Fir Engraver Beetle, 802 acres from Sub-Alpine Fir Complex, 251 acres from Aspen defoliation, and 461 acres from Needle Disease Ponderosa.

In 2001, 10 % of San Juan County was surveyed or 482,600 out of 5,065,358 total acres. The survey identified that 383 acres were affected by Mountain Pine Beetle Ponderosa, 94 acres affected by Douglas-Fir Beetle, 506 acres affected by the Spruce Beetle, 226 acres affected by Fir Engraver Beetle, 2,287 acres from Sub-Alpine Fir Complex, 295 acres from Aspen Blight, 34 avalanche, and 3,337 acres from Frost Damage Oak.

In 2002, 10 % of San Juan County was surveyed or 499,557 out of 5,065,358 total acres. The survey identified that 191 acres were affected by Mountain Pine Beetle Ponderosa, 219 acres affected by Douglas-Fir Beetle, 82 acres affected by the Spruce Beetle, 31 acres affected by Fir Engraver Beetle, 1,463 acres from Sub-Alpine Fir Complex, and 64 Forest Tent Caterpillar.

During 2002 and 2003, Armyworms and Grasshopper crickets have been a major problem in the entire county of San Juan.

Cutworms have also been a problem within the cities and communities of San Juan County. This type of infestation has a direct correlation to drought and is considered to be one of the secondary threats of drought. San Juan County is located within Climate Division 7. This division experiences a drought almost every two years. Each drought can last five or more years.

Infestation will continue to happen in the future because of Utah's climate. Drought, vegetation, and species diversity are all affected by climate and will continue to be a limited problem for Utah's forestlands and cities and towns.

#### **Vulnerability Assessment**

Potential loss estimates were unable to be completed during the making of this plan due to the lack of digitized datasets related to infestation. Future studies and maps need to be completed to fully understand this hazard.

## F. Hazard History

Identifying past hazard events is key in predicting where future events are likely to occur. The following available relevant information such as date, location, area impacted, and damage costs are identified in the table below (Table 10-11). Due to the frequency and geographic extent of problem soil, and some severe weather events past events have not been recorded and are therefore not identified in the table below.

**Table 10-11 Hazard Histories**

<b>Hazard</b>	<b>Date</b>	<b>Location</b>	<b>Critical Facility/ Area Impacted</b>	<b>Comments</b>
Tornado	May 21, 1947	San Juan County		F0 on the Fujita Scale.
Tornado	May 23, 1947	San Juan County		F0 on the Fujita Scale.
Flash Flood	August 17, 1955	Monticello	Northeast Section of City	Damage to homes and businesses
Flood	August 2, 1956	Monticello		City and some homes were flooded; one motel resulted in \$50,000 in damage.
Flood	July 31, 1965	Monticello		Farmland and crop damage, Johnson Creek Road damaged.
Flood	August 1, 1968	Bluff		Residential and business property damaged. Damage estimated over \$16,000.
Winter Storm	1974	San Juan County		Runoff damage
Winter Storm	1986	Countywide		Road closures and property damage.
Winter Storm	1992	Countywide		Road closures and property damage.
Blizzard	January 1, 1997	Countywide		3 deaths, 50 injuries and \$40 million in property damage.
Winter Storm	April 2, 1997	Countywide		No property damage no loss of life
Winter Storm	October 15, 1998	Countywide		Several thousand dollars of property damage.
Rainstorm	October 30, 1998	Bluff		No significant damage.
Winter Storm	December 19, 1998	Countywide		Several thousand dollars in property damage.
Wildfire	June 16, 1999	Monticello		No property damage or loss of life.
Wildfire	July 17, 2000	Blanding		No property damage or loss of life.
Wildfire	July -August, 2000	Monticello		
Funnel Cloud	August 20, 2000	Mexican Hat		
Funnel Cloud	August 21, 2000	Monticello		

## G. Mitigation Goals, Objectives, Actions

<p><b>Mitigation Strategies Workbook</b> <b>San Juan County</b></p>
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### Valuation

The following table shows possible damage costs of identified hazards based on maps of hazard areas and on records of previous events (Table 10-12).

**Table 10-12**

Type of Hazard	Possible Damage Costs (approx.)
Severe Weather	\$5,000-\$10,000 per event
Flooding	\$10.5 Million (flood hazard area)
Wildfire	\$9 Million (wildfire risk area)
Drought	Requires further study
Landslide	Requires further study
Dam Failure	\$3 Million (rebuild golf course)

### Prioritization

The following table summarizes each of the hazards, rated according to Probability (the likelihood of an event occurring in a given period) and Severity (lives and property that would be affected). None of the hazards were rated as Highly Likely and Catastrophic (Table 10-12).

**Table 10-12**

Type of Hazard	Probability	Severity	Rank
Severe Weather	Highly Likely	Limited	1
Flooding	Possible	Critical	2
Wildfire	Possible	Limited	3
Drought	Highly Likely	Negligible	4
Landslide	Possible	Negligible	5
Dam Failure	Not Likely	Limited	6

# SAN JUAN COUNTY UTAH PORTION OF THE NAVAJO NATION MITIGATION GOALS AND OBJECTIVES

## Wildfire

**Problem Identification:** Provide fire breaks around residences and commercial business that may be of threat from a wildfire. Most of the area does not have a high impact potential from wildfire.

Goal 1-Priority Medium

**Objective 1.1** - Provide fire breaks around residences and commercial business that may be of threat from a wildfire by blanding and other methods.

**Action:** Blade firebreaks as needed

**Time Frame:** Ongoing

**Funding:** Local, Chapter, Tribal and Federal Funds

**Estimated Cost:** 5,000 annually

**Staff:** Local, chapter, tribal and federal agencies

**Background:** Work with chapter officials to determine areas for firebreaks

**Problem Identification:** Specific areas of the Utah strip are susceptible to wildland fire danger.

Goal 2- Priority Low

**Objective 1.2** - Reduce the threat in Navajo Mountain and Aneth/Red Mesa areas.

**Action:** Map potential areas on the Utah Strip that may have wildland fire threat.

**Time Frame:** next fiscal year

**Funding:** Local, Tribal and Federal

**Estimated Cost:** Minimal

**Staff:** Local, tribal and federal agencies

**Background:** Review fire reports from previous years to determine threat areas.

## Landslide

**Problem Identification:** Potential landslides on the Utah portion of the Navajo Nation, particularly those areas that have had prior threats or incidents.

Goal 1- Priority Medium

**Objective 1.1** - Map areas on the Utah portion that have had historical incidents of landslides.

**Action:** Review historical information and reports, interview with citizens.

**Time Frame:** FY2005

**Funding:** Local, Chapter, Tribal and Federal funding.

**Estimated Cost:** 1000.00

**Staff:** County, Chapter, Tribal, and Federal Agencies.

**Background:** Historical information and interviews/

**Problem Identification:** Potential risk of structures in mountainous areas to be damaged by landslides.

## Goal 2-Priority Medium

**Objective 1.2** Reduce potential of landslides on county and state highways.

**Action:** Removal of material, placement of larger culverts, re-routing of existing highways.

**Time Frame:** Undetermined

**Funding:** Local, State, Chapter, Tribal and Federal

**Estimated Cost:** Unknown

**Staff:** Local, State, Chapter, Tribal and Federal

**Background:** Soil surveys and other engineer surveys, historical incidents.

### Earthquake

**Problem Identification:** Unknown number of seismically unsafe structures around the Utah portion of the Navajo Nation. The risk based on historical incidents has not been high.

## Goal 1- Priority Low

**Objective 1.1** - Public Awareness

**Action:** Conduct public awareness campaign.

**Time Frame:** Ongoing

**Funding:** Federal and state grants, local sources.

**Estimated Cost:** Unknown

**Staff:** Agency personnel and volunteers.

**Background:** Contact DESHS earthquake program specialist. Enhance earthquake instructions in school.

## Goal 2- Priority Low

**Objective 1.2** - Community Emergency Response Teams (CERT)

**Action:** Assist with the organize Community Emergency Response Teams by Navajo Nation, if it is determined to be a local priority.

**Time Frame:** Ongoing

**Funding:** Federal, Tribal, and State grants.

**Estimated Cost:** Unknown

**Staff:** Tribal, State and local personnel.

**Background:** Navajo Nation Department of Emergency Management, Utah Chapters, and Utah.

### Flood

**Problem Identification:** Identify and map areas that are prone to flood based on historical reports and incidents and encourage flood loss reduction measures

## Goal 1- Priority High

**Objective 1.1** - Identify flood prone areas on the Utah portion of the Navajo Nation.

**Action:** Mapping of potential flood areas.

**Time Frame:** FY2005

**Funding:** unknown

**Estimated Cost:** \$5000.00

**Staff:** Local, Chapter, Tribal and State

**Background:** Contact DESHS flood map specialist.

**Problem Identification:** Reduce impact on State and County Highways from Flooding.

Goal 2- Priority High

**Objective 1.2** - Reduce or eliminate flooding impacts on State and County highways based on historical incidents/

**Time Frame:** Ongoing

**Funding:** State, Local, and Federal...

**Estimated Cost:** Unknown.

**Staff:** County and State

**Background:** County Road and UDOT, NNOT and Engineers.

**Problem Identification:** Many reservoirs have been filled in and/or broken through out the years and have not been repaired.

Goal 3- Priority Medium

**Objective 1.3** - Repair numerous reservoirs throughout the Utah portion of the Navajo Nation.

**Action:** Repair and/or clean out reservoirs.

**Time Frame:** Ongoing

**Funding:** State, Federal, and Tribal

**Estimated Cost:** Unknown.

**Staff:** Federal, Chapter and Tribal

**Background:** Chapter and Farm Service Agency Personnel

**Problem Identification:** Reduce economic loss due to flooding

**Goal 4 – Priority High**

**Objective 1.1** Promote flood insurance throughout the County

**Action:** Create outreach document promoting flood insurance and include in local newspaper(s), libraries, and other public buildings.

**Time Frame:** 1 year

**Funding:** Minimal

**Estimated Cost:** Unknown

**Staff:** County and City Floodplain Administrators, State Floodplain Manager, DES

**Background:** General public is usual not aware they can purchase flood insurance.

**Drought**

**Problem Identification:** Water Storage

Goal 1- Priority High

**Objective 1.1** - Develop more water storage tanks and systems for culinary and agriculture use on the Utah portion of the Navajo Nation.

**Action:** Conduct feasibility study.

**Time Frame:** Unknown

**Funding:** Unknown

**Estimated Cost:** Unknown

**Staff:** County, Chapter, Tribal, Federal (IHS)

**Background:** Chapter, Tribal, and Farm Service Agency personnel.

**Problem Identification:** Water storage for animals.

Goal 2- Priority Medium

**Objective 1.2** - Develop more reservoirs on the Utah portion of the Navajo Nation.

**Action:** Develop new reservoir.

**Time Frame:** Ongoing

**Funding:** State and Federal grants

**Estimated Cost:** Unknown

**Staff:** NRCS, UACD, USU Extension, etc.

**Background:** NRCS, Chapter, USU Extension, Tribal

**Problem Identification:** Lack of public awareness of efficient water usage.

Goal 3- Priority High

**Objective 1.3** - Education

**Action:** Use several ways in educating the public on efficient water usage.

**Time Frame:** Ongoing

**Funding:** State and Federal grants, federal program, NTUA

**Estimated Cost:** Unknown

**Staff:** NRCS, UACD, USU Extension, IHS and NTUA.

**Background:** Research problem areas. Create programs to make the public aware. Use newsletters and the newspapers. Hold field trips.

### **Insect Infestation**

**Problem Identification:** Infestations of Army Cut-Worms and other insects on the Utah portion of the Navajo Nation.

Goal 1- Priority Medium

**Objective 1.1** - Have government agencies develop better control methods on federal grounds.

**Action:** Improve control methods on reservation lands/.

**Time Frame:** 5 years

**Funding:** Federal government.

**Estimated Cost:** Unknown

**Staff:** APHIS, Tribal other federal and state agencies.

**Background:** Educate land owners to control methods and more into their lifecycles.

### **Severe Weather**

**Problem Identification:** Wind damage to property and resulting loss of power to areas on the Utah portion of the Navajo Nation, prepare residents to have 72 hours kits and provide for residents and animals in the event of severe weather, such as high winds, winter storms, mud from rains and snow storms, etc.

Goal 1- Priority Medium

**Objective 1.1** - Reduce power outages.

**Action:** Improve infrastructures to minimize power outages.

**Time Frame:** Ongoing

**Funding:** Multiple groups.

**Estimated Cost:** Unknown

**Staff:** Private people and local utilities (UPL and NTUA)

**Background:** Contact utilities on current situation. Gather data on power outage, and frequency of outages.

**Problem Identification:** Education for residents.

Goal 2- Priority High

**Objective 1.2 – Provide education to resident of the Utah portion of the Navajo Nation.**

**Action:** Provide education to residents including 72-hour kits, etc.

**Time Frame:** Ongoing

**Funding:** County, State, Tribal, and Federal

**Estimated Cost:** 5000.00

**Staff:** Chapters, County, Tribal, Federal, and USU Extension

**Background:** CERT Teams, Health Officials, and Newsletters

**Problem Identification:** Snowstorms, summer thunderstorms, hail, and high winds over southeastern Utah have a dramatic effect on regional commerce, transportation, and daily activity and are a major forecast challenge for local meteorologists.

**Goal 3 – Priority High**

**Objective 1.1** Protect County from adverse affects of severe weather

**Action 1:** County participates in the Storm Ready program.

**Time Frame:** 2 Year

**Funding:** State and Federal

**Estimated Cost:** Unknown

**Staff:** City and County Emergency Management

**Background:** Set up within the county emergency management and encourage all cities to participate, all requirements of the National Weather Service Storm Ready program.

**Problem Soils**

**Problem Identification:** Wind Erosion

Goal 1- Priority Medium

**Objective 1.1** - Reduce damage to crops, grazing lands, etc. from wind erosion.

**Action:** Improve conditions to reduce soil erosion.

**Time Frame:** Ongoing

**Funding:** USDA government programs.

**Estimated Cost:** Unknown

**Staff:** NRCS, UACD, USU Extension

**Background:** Unknown

**Rockslide**

**Goal 1**

Minimize safety risk and property damage to Bluff Town due to Rockslide

**Objective 1.1:** Develop an Emergency rockslide reaction plan

**Action:** Coordinate with emergency response.

**Timeframe:** 1 year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Low

## **Wildfire**

### **Goal 1**

Protect Lives and Property from Wildfire

**Objective 1.1:** Maintain adequate fire breaks between wildfire zones and residences

**Action:** Thin Tamarisk/undergrowth along river bottom.

**Timeframe:** 1 Year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Medium

## **HAZMAT Spill**

### **Goal 1**

Protect Lives and Property from Hazardous Material Spillage

**Objective 1.1:** Prevent a vehicle transporting hazardous material from flipping over on US 191 in Bluff by the sharp corner near Bluff Elementary School, forcing an evacuation of the school and several residences in town and re-routing traffic through town.

**Action:** Post Better signage;

**Timeframe:** 1 Year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Medium

**Action:** Erect cement protective railings around corner;

**Timeframe:** 1 Year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Medium

**Action:** Develop an emergency HAZMAT response plan.

**Timeframe:** 1 Year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Medium

**Action:** Coordinate with UDOT, county HAZMAT team.

**Timeframe:** 1 Year

**Funding:** Federal Grant; amount unknown

**Staff:** Bluff Fire Department

**Priority:** Medium

### **Goal 2**

Protect Lives and Property from Hazardous Waste Tailings

**Objective 2.1:** Prevent White Mesa Uranium Mill contaminates from entering the town's sole source of drinking water by Working to prevent additional radioactive waste from being stored at White Mesa Mill.

**Action:** Garner Continuing support of community in these efforts.

**Timeframe:** Ongoing

**Funding:** None

**Staff:** Bluff Service Area

**Priority:** Low

## **H. Maps**

All of the following maps have been created for the Pre-Disaster Mitigation Plan using the best available data at the time of the creation of this plan. Because data was obtained from federal and other external sources SEUALG, WFRC and its staff members cannot accept responsibility for any errors, omissions, or positional accuracy; therefore there are no warranties, which accompany the maps.

Map 10.1.1 Wildfire Risk

Map 10.3.1 Dam Hazard