

Grand County, UT

Risk-assessment baseline packet

County FIPS: 49019 Release: 2026-10 Data as of: 2026-09-30 Storm Events data through: 2026-06-30

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Summary

Plan status as of 2026-09-30: Approved, expires 2028-12-13. Plan: Grand County UT Hazard Mitigation Plan 2023 (FEMA plan 109287), approved 2023-12-14. Since the plan was approved on 2023-12-14: no new hazard declaration and 108 NOAA Storm Events records; details under "What changed since your last plan". Highest expected annual loss (FEMA National Risk Index, modeled total; see B1-a): Inland Flooding (\$3,134,611 a year), Lightning (\$1,083,549) and Avalanche (\$456,669). The tables that follow are organized by the items of FEMA's Local Mitigation Plan Review Tool, Element B (B1-a to B2-c); each heading says which item its tables support.

TERMS USED

EAL: expected annual loss: FEMA's modeled average yearly loss from a hazard.
NRI: FEMA's National Risk Index (version 1.20, December 2025).
NFIP: National Flood Insurance Program.
RL, SRL: repetitive loss and severe repetitive loss: flood-insured properties with repeated claims (definitions in B2-c).
FMA, HMGP: Flood Mitigation Assistance and Hazard Mitigation Grant Program, FEMA mitigation grants.
PA: FEMA Public Assistance: disaster aid to governments and some nonprofits.
Zone-level: NOAA logged the event for a National Weather Service forecast zone, which may include parts of neighboring counties.
County-coded: NOAA logged the event to this county.
FIPS: the federal code for a place; 49019 is this area.
D0 to D4: U.S. Drought Monitor categories, from abnormally dry (D0) to exceptional drought (D4).
F/EF, EFU: Fujita and Enhanced Fujita tornado ratings; EFU is an unrated tornado.
kt, CONUS: knots (1 kt is about 1.15 mph); the contiguous United States.
CFR: Code of Federal Regulations.
A4-a, E1-a: other items of FEMA's Local Mitigation Plan Review Tool (sources, and changes since the last plan).
Dollars: nominal (as reported, labeled with the year), not adjusted for inflation.

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Plan clock

Status:	Approved, expires 2028-12-13	Plan:	Grand County UT Hazard Mitigation Plan 2023 (FEMA plan 109287)
Approved:	2023-12-14	Days to expiry:	805

What changed since your last plan (approved 2023-12-14)

New federal declarations:	none	Storm Events records since approval:	108 records (data through 2026-06-30)
Repetitive loss now:	FMA RL 0, SRL 0 (44 CFR 77.2); any definition: 1	Repeat-flood change:	this release sets the baseline count.

Sources: 1, 2, 4, 6 (numbered list at the end)

Plan status for every jurisdiction listed in this county

Source: 1

Jurisdiction	Type	Status	Plan	Approved	Expires	Days to expiry <i>negative = days since expiry</i>
Grand County	County	Approved, expires 2028-12-13	Grand County UT Hazard Mitigation Plan 2023 (FEMA plan 109287)	2023-12-14	2028-12-13	805
Castle Valley town	Town	Expired on 2025-12-02	Castle Valley Town, UT Hazard Mitigation Plan 2020 (FEMA plan 106929)	2020-12-03	2025-12-02	-302
Moab city	City	Approved, expires 2028-12-13	Grand County UT Hazard Mitigation Plan 2023 (FEMA plan 109287)	2023-12-14	2028-12-13	805

State plan status and tribal plans in this state: see the state page.

Supports FEMA checklist item B1-a: hazard identification

Hazards NRI does not cover (local data needed)

- dam failure (incl. upstream dams)
- levee failure
- flash flood as its own subtype
- ice jams
- debris flows
- erosion (riverine and coastal)
- land subsidence and sinkholes
- expansive soils

The 18 National Risk Index hazards, ranked by expected annual loss (EAL)

Sources: 5, 6

Rank by EAL	Hazard	NRI risk rating	EAL rating	EAL buildings modeled dollars per year	EAL agriculture modeled dollars per year	Cost of expected deaths and injuries FEMA's dollar value per year, not property damage	EAL total (see note) modeled dollars per year	Storm Events records, 1996 to 2026-06-30 count	Why this hazard can be left out NRI Not Applicable, no declaration and no Storm Events record since 1996	Storm Events coverage note
1	Inland Flooding	Very Low	Very Low	\$2,559,880	\$23,025	\$551,706	\$3,134,611	94		
2	Lightning	Relatively High	Relatively High	\$7,120	n/a	\$1,076,429	\$1,083,549	7		
3	Avalanche	Relatively Moderate	Relatively Low	\$3	n/a	\$456,667	\$456,669	3		
4	Heat Wave	Very Low	Very Low	\$13	\$293	\$160,806	\$161,112	4		
5	Earthquake	Very Low	Very Low	\$87,087	n/a	\$14,051	\$101,138			Storm Events does not record earthquakes.
6	Wildfire	Very Low	Very Low	\$76,983	\$16	\$3,738	\$80,738	45		
7	Drought	Relatively Low	Relatively Low	n/a	\$62,406	n/a	\$62,406	161		
8	Winter Weather	Relatively Low	Relatively Low	\$3,883	\$8	\$21,469	\$25,360	535		
9	Landslide	Relatively Low	Relatively Low	\$2,514	n/a	\$21,041	\$23,555	13		
10	Strong Wind	Very Low	Very Low	\$8,651	\$35	\$13,836	\$22,521	98		Includes 41 High Wind and 5 Strong Wind records (NOAA non-thunderstorm wind types, outside NRI's Strong Wind definition).
11	Tornado	Very Low	Very Low	\$9,231	\$202	\$10,435	\$19,868	3		
12	Hail	Very Low	Very Low	\$2,975	\$116	\$1,006	\$4,098	23		

Rank by EAL	Hazard	NRI risk rating	EAL rating	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL total (see note) <i>modeled dollars per year</i>	Storm Events records, 1996 to 2026-06-30 <i>count</i>	Why this hazard can be left out <i>NRI Not Applicable, no declaration and no Storm Events record since 1996</i>	Storm Events coverage note
13	Ice Storm	Very Low	Very Low	\$2,109	n/a	\$655	\$2,764	0		No recorded events in Storm Events since 1996 (data through 2026-06-30).
14	Cold Wave	Very Low	Very Low	under \$1	\$474	\$37	\$511	61		Includes 52 Frost/Freeze records (outside NRI's Cold Wave definition; counted in this table and in B1-d, not in the B1-e descriptor).
15	Volcanic Activity	No Rating	No Expected Annual Losses	\$0	n/a	\$0	\$0	0		No recorded events in Storm Events since 1996 (data through 2026-06-30).
	Hurricane	Not Applicable	Not Applicable					0	NRI rates hurricane Not Applicable for this county, and no counted federal declaration for this county names it (EM-3223-UT names it but is not counted as a local occurrence; see B1-d).	No recorded events in Storm Events since 1996 (data through 2026-06-30).

Total = buildings + agriculture + population equivalence; FEMA values each expected death (or 10 injuries) at \$13.7 million (2024 dollars).

NRI risk rating combines expected annual loss with social vulnerability and community resilience; EAL rating rates expected annual loss alone. Both compare this county with all U.S. counties.

Local data needed: state and local volcanic activity records (Storm Events records this hazard only in part).

Not applicable to this county per NRI, with no federal declaration and no Storm Events record since 1996: coastal flooding and tsunami. That is the evidence for leaving them out of the plan.

The state hazard mitigation plan also lists hazards for this county; FEMA asks the plan to explain any hazard it leaves out.

Supports FEMA checklist item B1-b: hazard location

Affects the whole county (national data give no location within it): Cold Wave, Drought, Hail, Heat Wave, Ice Storm, Lightning, Strong Wind and Winter Weather.

Inland Flooding: The FEMA Flood Insurance Rate Map (FIRM) is the required location source for flooding. See the FEMA Flood Map Service Center (<https://msc.fema.gov>) for this county.

Hazards that vary within the county: highest-rated census tracts

Source: 5

Hazard	Highest-rated census tracts <i>NRI risk rating, score 0 to 100</i>
Avalanche	tract 2 (Relatively Low, 76.0); tract 3.02 (Relatively Low, 76.0); tract 3.01 (Relatively Low, 74.9)
Earthquake	tract 2 (Relatively Low, 65.0); tract 3.02 (Relatively Low, 54.1); tract 3.01 (Very Low, 35.2)
Hurricane	no tract has a National Risk Index rating for this hazard
Landslide	tract 3.02 (Relatively Moderate, 98.9); tract 3.01 (Relatively Low, 87.0); tract 2 (Very Low, 76.6)
Tornado	tract 2 (Very Low, 24.0); tract 3.02 (Very Low, 15.0); tract 3.01 (Very Low, 10.8)
Volcanic Activity	no tract has a National Risk Index rating for this hazard
Wildfire	tract 3.02 (Relatively Moderate, 92.2); tract 3.01 (Relatively Moderate, 90.1); tract 2 (Relatively Low, 78.6)

Up to 3 census tracts per hazard, highest National Risk Index rating first, then highest score; a tract number is the Census tract number (for example 2 is Census Tract 2). FEMA's Resilience Analysis and Planning Tool maps the National Risk Index for every tract: <https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool>

Supports FEMA checklist item B1-c: hazard extent

Extent: scale, observed range and worst recorded event per hazard

Sources: 6, 7

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Avalanche	none (count and damage only)	3 records, 2005 to 2019 (3 zone-level)		No damage reported in 3 records.		Countywide (zone-level records).	
Cold/Wind Chill, Extreme Cold/Wind Chill	wind chill	9 records, 1998 to 2025 (9 zone-level)	1 day to 16 days (median 4 days); 5 with a recorded value	16 consecutive days, 2005-12-04 to 2005-12-19, zone-level		Countywide (zone-level records).	
Frost/Freeze (outside NRI's Cold Wave definition)	crop damage	52 records, 2003 to 2025 (52 zone-level)		No crop damage reported in 52 records.		Countywide (zone-level records).	

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Drought	U.S. Drought Monitor scale (D0 to D4)	161 records, 2002 to 2026 (161 zone-level)	31 days to 1,493 days (median 184 days); 13 with a recorded value	1493 days (about 49.0 months), 2002-05-01 to 2006-06-01, a run of 50 consecutive Storm Events drought records, zone-level		Countywide (zone-level records).	Storm Events enters a drought at D2 or worse east of the Rockies and D3 or worse from the Rockies west (NWS Instruction 10-1605); NRI drought counts D3 and D4 only.
Earthquake	Modified Mercalli (local data)	0					Storm Events does not record earthquakes; the USGS earthquake catalog is the source.
Hail	hail size (inches)	26 records, 1968 to 2025	0.75 in to 1.75 in (median 1 in); 26 with a recorded value	1.75 in hail, 1997-09-20; same size also recorded on 1968-08-14, 1976-06-10	Hail, 2000-09-21, \$10,000 property; crops not reported (2000 dollars)	Event records naming jurisdictions in the plan: Moab city (11 records), Castle Valley town (2 records).	
Excessive Heat, Heat	heat index (in event narratives)	4 records, 2020 to 2022 (4 zone-level)	1 day to 5 days (median 3 days); 4 with a recorded value	5 consecutive days, 2021-06-14 to 2021-06-18, zone-level		Countywide (zone-level records).	
Hurricane, Tropical Storm, Tropical Depression	Saffir-Simpson	0					Storm Events files every zone of a storm's episode under the storm's type; flooding from the storm is filed as Flood or Flash Flood records.
Ice Storm	Sperry-Piltz ice scale (local data)	0					
Flash Flood, Flood, Lakeshore Flood	damage and flood days (flood depth: FIRM)	94 records, 1997 to 2025		Flash Flood, 2022-10-02, \$26,000,000 property; \$0 crops (2022 dollars)		Event records naming jurisdictions in the plan: Moab city (47 records), Castle Valley town (22 records).	Flood depth: see the FEMA Flood Insurance Rate Map. Storm Events damage is often \$0 or blank for floods, major ones included; FEMA Public Assistance by declaration (B1-d) shows which floods cost the most.
Debris Flow	none (count and damage only)	13 records, 2013 to 2024		Debris Flow, 2021-08-01, \$25,000 property; \$0 crops (2021 dollars)		Event records naming jurisdictions in the plan: Moab city (8 records), Castle Valley town (4 records).	
Lightning	annualized frequency (the measure FEMA's Local Mitigation Planning Handbook names)	7 records, 1996 to 2021		Lightning, 1999-05-29, damage not reported, 1 direct death	Lightning, 2000-07-09, \$100,000 property; crops not reported (2000 dollars)	Event records naming jurisdictions in the plan: Moab city (4 records).	Storm Events lists lightning with damage or casualties.
High Wind and Strong Wind (outside NRI's Strong Wind definition)	wind speed (kt and mph)	46 records, 1998 to 2026 (46 zone-level)	48 kt (55 mph) to 78 kt (90 mph) (median 53 kt (61 mph)); 45 with a recorded value	78 kt (90 mph) measured gust, High Wind, 2006-04-05; NWS zone UTZ028	Strong Wind, 2003-04-02, \$100,000 property; crops not reported (zone total, 2003 dollars)	Countywide (zone-level records).	
Thunderstorm Wind	wind speed (kt and mph)	56 records, 1969 to 2025	50 kt (58 mph) to 85 kt (98 mph) (median 52 kt (60 mph)); 55 with a recorded value	85 kt (98 mph) measured, Thunderstorm Wind, 2002-07-23	Thunderstorm Wind, 2021-07-14, \$50,000 property; \$0 crops (2021 dollars)	Event records naming jurisdictions in the plan: Moab city (7 records).	

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Tornado	Enhanced Fujita (Fujita before Feb 2007)	4 records, 1970 to 2006	F/EF0 to F/EF2 (median F/EF0); 4 with a recorded value	F2 tornado, 1970-06-10, 33 yd wide, damage not recorded (pre-1996 record)	Tornado, 2000-04-18, \$1,000 property; crops not reported (2000 dollars)	Event records naming jurisdictions in the plan: Moab city (3 records).	Before 1996 a tornado is listed once, under the county where it began, with its whole path's rating and length; from 1996 on, each county lists its own segment. Length is not used to rank tornadoes (see Methods).
Volcanic Ash, Volcanic Ashfall	Volcanic Explosivity Index (local data)	0					
Wildfire	acres burned (local data)	45 records, 1999 to 2025 (30 zone-level)		Wildfire, 2024-10-13, \$0 property; \$3,000,000 crops (2024 dollars); NWS zone UTZ028		No event record names a jurisdiction in the plan. Zone-level records (30) apply countywide.	
Winter Storm, Heavy Snow, Blizzard, Lake- Effect Snow, Winter Weather, Sleet	none in data (snowfall: local data)	535 records, 1997 to 2026 (535 zone- level)		No damage reported in 535 records.		Countywide (zone-level records).	

In event narratives only (local data needed): wind chill, temperature, heat index, ice thickness, acres burned and snow depth; any physical measure of avalanche, debris flow, lightning and volcanic ash, volcanic ashfall.

Storm Events records are more complete after 1996; before 1996 only Tornado (from 1950), Hail and Thunderstorm Wind (from 1955) exist. Zone-level records from zones that no NWS zone-county file places in this county (mostly before 2020) are not counted here (the Methods page explains the zone matching).

Dollars are nominal (as reported), labeled with the year; not adjusted for inflation.

Supports FEMA checklist item B1-d: previous occurrences

Federal declarations for this county: 4 declarations covering 1 separate hazard incident counted in this packet (declarations for the same incident count once; non-natural and evacuation-only declarations are not counted).

Federal disaster declarations for this county

Sources: 1, 2, 3

Declared	Incident began	FEMA number	Type	Title	Mapped hazard	County Public Assistance <i>federal share obligated, nominal dollars</i>	Notes
2020-04-04	2020-01-20	DR-4525-UT	Major disaster	COVID-19 Pandemic	Non-natural, not counted	\$162,613.18	
2020-03-13	2020-01-20	EM-3478-UT	Emergency	COVID-19	Non-natural, not counted	no Public Assistance recorded	same incident as DR-4525
2005-09-05	2005-08-29	EM-3223-UT	Emergency	Hurricane Katrina Evacuation	Hurricane: evacuation support, not a local hazard event; not counted	no Public Assistance recorded	
1977-01-20	1977-01-20	EM-3024-UT	Emergency	Drought	Drought	no Public Assistance recorded	

County Public Assistance: applicants the FEMA record places in this county, including any state agencies FEMA files there; statewide rows are listed on the state page; federal share obligated, nominal dollars.

Previous occurrences by hazard, with explicit no-event rows

Sources: 2, 6, 7

Hazard	Storm Events records, all years on file <i>(years in the Period column)</i>	Since plan approval <i>records</i>	In the 12 months before plan approval <i>records</i>	Last 5 years <i>records</i>	Declared incidents, all years <i>separate disasters</i>	Declared since approval <i>separate disasters</i>	Period	Statement
Avalanche	3	0	0	0	0	0	1996 to 2026-06-30	
Cold Wave	61	8	3	17	0	0	1996 to 2026-06-30	Includes 52 Frost/Freeze records.
Drought	161	8	2	25	1	0	1996 to 2026-06-30	
Earthquake	0	0	0	0	0	0		Storm Events does not record earthquakes; the USGS earthquake catalog is the source.
Hail	26	13	0	14	0	0	1955 to 2026-06-30	
Heat Wave	4	0	0	1	0	0	1996 to 2026-06-30	
Hurricane	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Ice Storm	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Inland Flooding	94	5	6	23	0	0	1996 to 2026-06-30	
Landslide	13	1	0	3	0	0	1996 to 2026-06-30	
Lightning	7	0	0	0	0	0	1996 to 2026-06-30	
Strong Wind	102	23	6	40	0	0	1955 to 2026-06-30	Includes 41 High Wind and 5 Strong Wind records.
Tornado	4	0	0	0	0	0	1950 to 2026-06-30	
Volcanic Activity	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Wildfire	45	7	1	8	0	0	1996 to 2026-06-30	
Winter Weather	535	43	32	99	0	0	1996 to 2026-06-30	

Notable Storm Events records

Sources: 1, 6, 7

Date	Event type	Magnitude or extent	Damage <i>nominal dollars</i>	Deaths, injuries <i>direct only</i>	Location	Flags	Why listed
2024-10-13	Wildfire		\$0 property; \$3,000,000 crops (zone total, 2024 dollars)	0, 0	NWS zone UTZ028 (LA SAL & ABAJO MOUNTAINS), zone-level	new since last plan; within last 5 years	B1-c worst recorded: Wildfire
2024-06-21	Flash Flood		\$0 property; \$0 crops (2024 dollars)	2, 0	MOAB to POTASH	new since last plan; within last 5 years	deaths or injuries recorded
2022-10-02	Flash Flood		\$26,000,000 property; \$0 crops (2022 dollars)	0, 0	POTASH	within last 5 years	B1-c worst recorded: Flash Flood, Flood, Lakeshore Flood
2021-08-01	Debris Flow		\$25,000 property; \$0 crops (2021 dollars)	0, 0	MOAB		B1-c worst recorded: Debris Flow
2021-06-14	Excessive Heat		\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone UTZ027 (GRAND FLAT AND ARCHES), zone-level		B1-c worst recorded: Excessive Heat, Heat
2019-01-25	Avalanche		\$0 property; \$0 crops (zone total, 2019 dollars)	1, 0	NWS zone UTZ028 (LA SAL & ABAJO MOUNTAINS), zone-level		deaths or injuries recorded
2014-09-28	Flash Flood		\$20,000 property; \$0 crops (2014 dollars)	1, 0	HARLEY DOME		deaths or injuries recorded
2006-04-05	High Wind	78 kt (90 mph) measured gust	\$2,000 property; crops not reported (zone total, 2006 dollars)	0, 0	NWS zone UTZ028 (LA SAL & ABAJO MOUNTAINS), zone-level		B1-c worst recorded: High Wind and Strong Wind
2002-07-23	Thunderstorm Wind	85 kt (98 mph) measured	damage not reported	0, 0	HARLEY DOME		B1-c worst recorded: Thunderstorm Wind
2002-05-01	Drought		damage not reported	0, 0	NWS zone UTZ027 (GRAND FLAT AND ARCHES), zone-level		B1-c worst recorded: Drought
1999-05-29	Lightning		damage not reported	1, 0	CISCO		B1-c worst recorded: Lightning
1970-06-10	Tornado	F2, 33 yd wide	damage not recorded (pre-1996 record)	0, 0	location not recorded		B1-c worst recorded: Tornado

The full list is in the Excel file, sheet "B1-d Storm Events history" (1,055 rows).

Location is the place NOAA recorded, as written in its data; it need not be a jurisdiction in this plan.

2 Fire Management declarations (1994-08-06 to 1994-08-06) FEMA filed as Statewide with no county; each names one local fire. Listed on the state page.

Local data needed: state-declared emergencies, from your state emergency management agency (federal data do not include them).

Tribal and special-area declarations in this state are listed on the state page.

Supports FEMA checklist item B1-e: probability of future events

Probability: FEMA annualized frequency and descriptor per hazard

Sources: 5, 6

Hazard	FEMA annualized frequency (modeled) <i>unit per row</i>	Unit	In plain terms	Descriptor	Descriptor basis	NRI events or days in its record period (hail, wind and tornado are area-weighted, so can be fractional)	NRI period	Location	Note
Avalanche	0.0333	events per year	about 1 in 30 years	Possible	FEMA annualized frequency (modeled)	1	1994 to 2023 (30 years)	see B1-f	
Cold Wave	0.0177	event-days per year	about 0.0177 days per year	Likely	Storm Events event-days in 4 of 30 years, 1996 to 2025 (13.3%)	0.335	2005-11-12 to 2024-11-12 (19 years)	countywide	
Drought	105	event-days per year	about 105 days per year	Likely	Storm Events event-days in 20 of 30 years, 1996 to 2025 (66.7%)	2,667	2000 to 2025 (25.25 years; D3 and D4 only)	countywide	
Earthquake	0.00263	annual probability at a location	chance a given location in the county has at least minor-damage shaking in a year: 0.263%			not shown	modeled	see B1-f	No descriptor (Storm Events does not record earthquakes).
Hail	0.0963	events per year	about 1 in 10 years	Possible	FEMA annualized frequency (modeled)	3.7 (modeled)	1986 to 2023 (38 years)	countywide	
Heat Wave	0.868	event-days per year	about 0.868 days per year	Likely	Storm Events event-days in 3 of 30 years, 1996 to 2025 (10%)	13.5	2005-11-12 to 2024-11-12 (19 years)	countywide	
Hurricane		events per year					1851 to 2024 (Atlantic)	see B1-f	Not Applicable in NRI for this county; no descriptor.
Ice Storm	0.0149	event-days per year	about 0.0149 days per year		Storm Events event-days in 0 of 30 years, 1996 to 2025 (0%)	0	1946-12-31 to 2014-02-12 (67 years)	countywide	No Storm Events ice storm record, 1996 to 2025
Inland Flooding	2.54	event-days per year	about 2.54 days per year	Likely	Storm Events event-days in 23 of 30 years, 1996 to 2025 (76.7%)	71	1996 to 2023 (28 years)	see B1-f	
Landslide	2.44	events per year (modeled)	about 2.44 per year	Highly likely	FEMA annualized frequency (modeled)	not shown	modeled	see B1-f	
Lightning	48.3	days per year with a strike	about 48.3 days per year	Highly likely	FEMA annualized frequency (modeled)	not shown	1995 to 2023 (29 years; CONUS)	countywide	
Strong Wind	0.194	events per year	about 1 in 5 years	Likely	FEMA annualized frequency (modeled)	8	1986 to 2023 (38 years)	countywide	
Tornado	0.116	events per year	about 1 in 9 years	Likely	FEMA annualized frequency (modeled)	not shown	1950 to 2023 (EF2+); 1986 to 2023 (EF0-1)	see B1-f	

Hazard	FEMA annualized frequency (modeled) <i>unit per row</i>	Unit	In plain terms	Descriptor	Descriptor basis	NRI events or days in its record period (hail, wind and tornado are area-weighted, so can be fractional)	NRI period	Location	Note
Volcanic Activity	0.0001	annual probability	about 1 in 10,000 years	Unlikely	FEMA annualized frequency (modeled)	not shown	modeled	see B1-f	
Wildfire	0.00117	annual probability at a location	chance a given location in the county burns in a year: 0.117%	Likely	Storm Events records in 13 of 30 years, 1996 to 2025 (43.3%)	not shown	modeled	see B1-f	
Winter Weather	10.1	event-days per year	about 10.1 days per year	Highly likely	Storm Events event-days in 29 of 30 years, 1996 to 2025 (96.7%)	192	2005-11-12 to 2024-11-12 (19 years)	countywide	

FEMA annualized frequency (modeled) is the National Risk Index v1.20 (December 2025) estimate of how often a hazard affects this county in a year; it is not recorded events divided by years, and its unit differs by hazard (events, event-days, or days with a lightning strike per year). For earthquake, wildfire, coastal flooding and tsunami the value is the chance (or number of events) at a location in the county, not across the county, so no "1 in N years" is given and the descriptor comes from Storm Events where it has a record (none for earthquake). The Methods page gives each hazard's method, from FEMA's National Risk Index Technical Documentation v1.20.

Descriptor scale used in this packet (defined per unit)

Sources: 5, 6

Unit	Descriptor	Definition
events per year	Highly likely	1 or more per year
events per year	Likely	about once in 1 to 10 years
events per year	Possible	about once in 10 to 100 years
events per year	Unlikely	less than once in 100 years
annual probability	Likely	10% to under 100% chance in a given year
annual probability	Possible	1% to under 10% chance in a given year
annual probability	Unlikely	under 1% chance in a given year
event-days (share of years)	Highly likely	event-days recorded in 90% or more of years
event-days (share of years)	Likely	event-days recorded in 10% to under 90% of years
event-days (share of years)	Possible	event-days recorded in some years but under 10% of years
lightning strike-days	Highly likely	cloud-to-ground strikes on 1 or more days per year

Intensity bands: historical frequency (Storm Events)

Source: 6

Hazard	Band	Years	Events <i>county-coded records</i>	Years in period	Events per year <i>events / years</i>
Hail	1.00-1.99 in	1996 to 2025	17	30	0.567
Hail	2.00 in+	1996 to 2025	0	30	0
Thunderstorm Wind (counted as NRI Strong Wind)	50-64 kt	1996 to 2025	48	30	1.6
Thunderstorm Wind (counted as NRI Strong Wind)	65 kt+	1996 to 2025	4	30	0.133
Thunderstorm Wind (counted as NRI Strong Wind)	unmeasured or below 50 kt	1996 to 2025	0	30	0
Tornado	EF0-1	1996 to 2025	3	30	0.1
Tornado	EF2-3	1996 to 2025	0	30	0
Tornado	EF4-5	1996 to 2025	0	30	0
Tornado	unrated (EFU)	1996 to 2025	0	30	0

The bands show how often events of each severity were recorded in this county, to profile how severe events have been (FEMA's probability item asks for the range of intensities).

Hail smaller than 1 inch is not counted: on 2010-01-05 the National Weather Service raised its severe-hail threshold from 3/4 inch to 1 inch, so smaller reports became less common after 2009 (NWS Service Change Notice 09-52). NRI hail frequency uses a 0.75 inch threshold.

Optional: future conditions. Not a required item in the 2025 FEMA Local Mitigation Planning Policy Guide; some states ask for it. The federal Climate Mapping for Resilience and Adaptation (CMRA) site gives county exposure to future climate conditions (<https://resilience.climate.gov/>).

Supports FEMA checklist item B1-f: hazards that vary across jurisdictions

Range of census tract risk within the county

Source: 5

Hazard	Tracts <i>rated of all</i>	NRI risk score, 0 to 100			Tracts by rating
		Min	Median	Max	
Avalanche	3 of 3	74.9	76.0	76.0	Relatively Low 3
Cold Wave	1 of 3	16.4	16.4	16.4	Very Low 1, No Rating 2
Drought	2 of 3	82.9	88.7	94.6	Relatively Moderate 1, Relatively Low 1, No Rating 1
Earthquake	3 of 3	35.2	54.1	65.0	Relatively Low 2, Very Low 1
Hail	3 of 3	20.2	24.5	31.7	Very Low 3
Heat Wave	3 of 3	51.4	56.1	75.9	Relatively Moderate 2, Relatively Low 1
Hurricane	0 of 3				Not Applicable 3
Ice Storm	3 of 3	6.9	10.1	21.6	Very Low 3
Inland Flooding	3 of 3	60.6	69.3	93.0	Relatively High 1, Relatively Moderate 2
Landslide	3 of 3	76.6	87.0	98.9	Relatively Moderate 1, Relatively Low 1, Very Low 1
Lightning	3 of 3	99.8	99.9	100.0	Very High 3

Hazard	Tracts <i>rated of all</i>	NRI risk score, 0 to 100			Tracts by rating
		Min	Median	Max	
Strong Wind	3 of 3	23.5	27.3	42.2	Relatively Low 3
Tornado	3 of 3	10.8	15.0	24.0	Very Low 3
Volcanic Activity	0 of 3				No Rating 3
Wildfire	3 of 3	78.6	90.1	92.2	Relatively Moderate 2, Relatively Low 1
Winter Weather	3 of 3	70.7	76.0	87.5	Relatively High 1, Relatively Moderate 2

Cold Wave: Agriculture is 93% of NRI's expected annual loss for this hazard in the county, so the tract range mostly reflects where crop and livestock value is.

Drought: Agriculture is all of NRI's expected annual loss for this hazard in the county, so the tract range mostly reflects where crop and livestock value is.

Rated tracts only: No Rating (score 0.0), Not Applicable and Insufficient Data tracts are counted but not used for the minimum, median and maximum.

The score ranks a tract against all U.S. tracts (100 = highest). The rating is FEMA's category for the tract's risk value, computed differently, so the two can disagree.

Frequency data for cold wave, drought, hail, heat wave, ice storm, lightning, strong wind and winter weather are county-wide or coarse (49 km grid or NWS zone), the same for every jurisdiction; the tract range mostly reflects where buildings and people are (crop and livestock value where a line above names agriculture).

This county has 3 census tracts; the minimum, median and maximum come from those 3.

Each jurisdiction (starting figures from federal data)

Sources: 1, 3, 4, 6

Jurisdiction	Type	Plan status	Repetitive loss	Public Assistance to this jurisdiction	Event records naming this place
			<i>FMA RL and SRL (44 CFR 77.2); repeat-flood, any definition</i>	<i>FEMA records matched by applicant name; federal share obligated, nominal dollars</i>	<i>all years; since its plan</i>
Grand County	County	Approved, expires 2028-12-13	FMA RL 0, SRL 0; any 0	no Public Assistance recorded	0 total; 0 since its plan
Castle Valley town	Town	Expired on 2025-12-02	FMA RL 0, SRL 0; any 0	no Public Assistance recorded	28 total; 6 since its plan
Moab city	City	Approved, expires 2028-12-13	FMA RL 0, SRL 0; any 1	no Public Assistance recorded	80 total; 15 since its plan

Repetitive-loss counts are for whole NFIP communities, which can extend beyond this county (see the note in B2-c).

County Public Assistance in B1-d also includes applicants filed under the county that are not jurisdictions in this plan (for example state agencies, special districts and nonprofits), so the jurisdiction rows add up to less.

Supports FEMA checklist items B2-a and B2-b: vulnerability and potential impacts

Local data needed

The table below gives county-level starting figures; the plan describes impacts for each jurisdiction and its own assets.

- Critical facilities and lifelines per hazard
- A problem statement per jurisdiction per hazard
- Changes in development in hazard-prone areas since the last approval, or a statement of none (E1-a)
- Future assets

County-level starter: exposure, expected annual loss and damage since the plan

Sources: 1, 2, 3, 5, 6, 7

Hazard	Building exposure <i>modeled dollars</i>	Agriculture exposure <i>modeled dollars</i>	Population exposed <i>people</i>	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL as % of exposure <i>buildings; agriculture where noted</i>	Storm Events damage since 2023-12-14 <i>county-coded records, property plus crops, nominal dollars</i>	Zone-level damage since plan <i>property plus crops, reported for the zone</i>	Public Assistance since plan <i>nominal dollars; see note</i>	Note
Avalanche	\$1,529,874	n/a	5	\$3	n/a	\$456,667	0.000168%				
Cold Wave	\$10,664,844	\$2,148,698	26	under \$1	\$474	\$37	under 0.0001%		\$0		
Drought	n/a	\$3,870,566	n/a	n/a	\$62,406	n/a	1.61% (agriculture)		\$0		NRI has no building exposure for this hazard; agriculture shown
Earthquake	\$3,980,124,484	n/a	9,669	\$87,087	n/a	\$14,051	0.00219%				
Hail	\$2,339,638,940	\$9,229,687	9,604	\$2,975	\$116	\$1,006	0.000127%	\$0			
Heat Wave	\$2,339,638,940	\$9,098,436	9,604	\$13	\$293	\$160,806	under 0.0001%				
Hurricane											Not Applicable in NRI for this county
Ice Storm	\$2,339,638,940	n/a	9,604	\$2,109	n/a	\$655	under 0.0001%				
Inland Flooding	\$2,339,168,830	\$836,100	478	\$2,559,880	\$23,025	\$551,706	n/a (see note)	\$33,000			NRI counts the full building value of any census block with some flood loss; this is not the value of buildings in the floodplain. Use local FIRM overlays for B2-a/B2-b.
Landslide	\$52,368,968	n/a	153	\$2,514	n/a	\$21,041	0.0048%	\$0			
Lightning	\$2,339,638,940	n/a	9,604	\$7,120	n/a	\$1,076,429	0.000304%				
Strong Wind	\$2,339,638,940	\$9,229,687	9,604	\$8,651	\$35	\$13,836	0.00037%	\$0	\$0		
Tornado	\$2,339,638,940	\$9,229,687	9,604	\$9,231	\$202	\$10,435	0.000395%				

Hazard	Building exposure <i>modeled dollars</i>	Agriculture exposure <i>modeled dollars</i>	Population exposed <i>people</i>	EAL buildings <i>modeled dollars per year</i>	EAL agriculture <i>modeled dollars per year</i>	Cost of expected deaths and injuries <i>FEMA's dollar value per year, not property damage</i>	EAL as % of exposure <i>buildings; agriculture where noted</i>	Storm Events damage since 2023-12-14 <i>county-coded records, property plus crops, nominal dollars</i>	Zone-level damage since plan <i>property plus crops, reported for the zone</i>	Public Assistance since plan <i>nominal dollars; see note</i>	Note
Volcanic Activity	\$0	n/a	0	\$0	n/a	\$0					building exposure is 0 in NRI
Wildfire	\$421,705,212	\$4,624,680	2,267	\$76,983	\$16	\$3,738	0.0183%		\$4,950,000		
Winter Weather	\$2,339,638,940	\$9,229,687	9,604	\$3,883	\$8	\$21,469	0.000166%		\$0		

Totals since 2023-12-14 (Storm Events through 2026-06-30): 27 county-coded records, 27 with a damage value recorded (including \$0), \$33,000; 81 zone-level records, 79 with a damage value recorded (including \$0), \$4,950,000 reported for the zone; Public Assistance: no counted declaration since the plan.

FEMA does not split Public Assistance by hazard. A declaration mapped to several hazards is listed under each of them with its full amount, so the per-hazard column does not add up to the total; the unit total counts each declaration once.

NRI computes earthquake exposure on its own basis, so it exceeds the county building value in B2-a.

Supports FEMA checklist item B2-a: vulnerability (county context)

County context

Source: 5

Measure	Value
Population	9,604
Building value (total, not at risk)	\$2,339,638,940
Agriculture value (total, not at risk)	\$9,229,687
NRI risk rating (all hazards)	Very Low
Expected annual loss, buildings and agriculture, all hazards	\$2,847,024
Expected annual loss, population equivalence, all hazards (NRI values each statistical life at \$13.7M; a modeled value of expected deaths and injuries, not property damage)	\$2,331,875
Social vulnerability rating	Relatively Low
Community resilience rating	Relatively Moderate
NRI version	December 2025

FEMA's all-hazard expected annual loss adds buildings, agriculture and population equivalence; this table gives the property part and the population-equivalence part as separate rows.

Social vulnerability: higher means people are more likely to be harmed and slower to recover. Community resilience: lower means the community is less able to recover. High social vulnerability and low resilience both raise the NRI risk rating.

Supports FEMA checklist item B2-c: repetitive loss properties

Repetitive loss in this county, both definitions

Sources: 1, 4

Definition	Properties	Severe repetitive loss	Properties
Repetitive loss, FMA definition (44 CFR 77.2)	0	Severe repetitive loss, FMA definition (44 CFR 77.2)	0
Repetitive loss, NFIP insurance definition	1	Severe repetitive loss, NFIP insurance definition	0

The state NFIP coordinator's list, the source FEMA's Handbook names, often uses the NFIP insurance definition (second row).

Repeat-flood properties: county total and NFIP communities

Sources: 1, 4

Scope	RL, FMA <i>properties</i>	SRL, FMA <i>properties</i>	RL, NFIP <i>properties</i>	SRL, NFIP <i>properties</i>	Any category <i>properties</i>	Mitigated <i>properties</i>	Currently insured <i>properties</i>
County total	0	0	1	0	1	0	1
of which: Moab city	0	0	1	0	1	0	1

Repeat-flood properties by jurisdiction in the plan (NFIP community)

Sources: 1, 4

Jurisdiction	NFIP community ID	RL, FMA <i>properties</i>	SRL, FMA <i>properties</i>	RL, NFIP <i>properties</i>	SRL, NFIP <i>properties</i>	Any category <i>properties</i>	Mitigated <i>properties</i>	Currently insured <i>properties</i>
Grand County	490232	0	0	0	0	0	0	0
Castle Valley town	490110	0	0	0	0	0	0	0
Moab city	490072	0	0	1	0	1	0	1

Counts by occupancy group for each jurisdiction are in the Excel file, sheet "B2-c Jurisdictions".

Jurisdiction rows are whole NFIP communities and need not add up to the county total: a community that extends into another county is counted in full on each jurisdiction row, while the county table counts only its part in this county.

County repeat-flood properties by occupancy group

Sources: 1, 4

Occupancy group	RL, FMA <i>properties</i>	SRL, FMA <i>properties</i>	RL, NFIP <i>properties</i>	SRL, NFIP <i>properties</i>	Any category <i>properties</i>	Mitigated <i>properties</i>	Currently insured <i>properties</i>
single-family residential	0	0	0	0	0	0	0
2 to 4 unit residential	0	0	0	0	0	0	0
other residential	0	0	0	0	0	0	0
non-residential	0	0	1	0	1	0	1
not reported	0	0	0	0	0	0	0

FEMA's occupancy groups have no institutional class; institutional properties are counted in non-residential or other residential in the table by occupancy group.

FMA RL and FMA SRL are the Flood Mitigation Assistance definitions (44 CFR 77.2), the ones the FEMA Local Mitigation Planning Policy Guide cites. NFIP repetitive loss (the FEMA insurance definition) is 2 or more claims over \$1,000 in 10 years, and a property can leave that group once it is mitigated. Also shown: NFIP severe repetitive loss, any category, mitigated and currently insured. The Methods page gives the OpenFEMA field details.

Counts are aggregates of FEMA's public NFIP Multiple Loss Properties file (FEMA's data date 2026-08-02; file version 2026-08-04). No property is identified. County assignment is FEMA's geocode.

In this county 0 properties are FMA repetitive loss but not NFIP repetitive loss, and 1 property is NFIP repetitive loss but not FMA repetitive loss.

Exact counts; no count suppression.

Sources

Tables cite these sources by number. The full list, for the plan's bibliography (FEMA review item A4-a):

1. FEMA, OpenFEMA HazardMitigationPlanStatuses v1, version 2026-09-29T134039Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/HazardMitigationPlanStatuses> (API)
2. FEMA, OpenFEMA DisasterDeclarationsSummaries v2, version 2026-09-29T162832Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v2/DisasterDeclarationsSummaries> (API)
3. FEMA, OpenFEMA PublicAssistanceFundedProjectsSummaries v1, version 2026-09-29T150754Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/PublicAssistanceFundedProjectsSummaries> (API)
4. FEMA, OpenFEMA NfipMultipleLossProperties v1, version 2026-08-04T164045Z, pulled 2026-09-30, <https://www.fema.gov/api/open/v1/NfipMultipleLossProperties> (API)
5. FEMA, FEMA National Risk Index 1.20.0 (December 2025), county and census tract tables, version 1.20.0, pulled 2026-09-30, https://www.fema.gov/about/reports-and-data/openfema/nri/v120/NRI_Table_Counties.zip (download, 25 MB), https://www.fema.gov/about/reports-and-data/openfema/nri/v120/NRI_Table_CensusTracts.zip (download, 635 MB)
6. NOAA NCEI, NOAA NCEI Storm Events Database, details files (csvfiles v1.0), version c20260918, pulled 2026-09-30, <https://www.ncei.noaa.gov/pub/data/swdi/stormevents/csvfiles/>
7. NOAA National Weather Service, NWS county-public forecast zones correlation file, version bp03mr20 to bp16ap26 (11 files; newest bp16ap26), pulled 2026-09-30, <https://www.weather.gov/gis/ZoneCounty>
8. U.S. Census Bureau, Census 2024 Gazetteer, 2020 place by county, CT county-to-cousub crosswalk, version 2024-gazetteer, pulled 2026-09-30, https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_counties_national.zip, [https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_cousubs_national.zip](https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_cousubs_national.zip), [https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_place_national.zip](https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_place_national.zip), [https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_unsd_national.zip](https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_unsd_national.zip), [https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_elsd_national.zip](https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_elsd_national.zip), [https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gazetteer/2024_Gaz_scsd_national.zip](https://www2.census.gov/geo/docs/maps-data/data/gazetteer/2024_Gaz_scsd_national.zip), https://www2.census.gov/geo/docs/reference/codes2020/national_place_by_county2020.txt, https://www2.census.gov/geo/docs/reference/ct_change/ct_cou_to_cousub_crosswalk.xlsx (used to match place names and codes; no table prints its values)

What this packet is and what the plan adds

This packet is the federal data for the plan's risk assessment (the summary on page 1 says how it is organized); the plan and FEMA's review decide whether each item is met.

The plan adds what only the community has: local data on assets, critical facilities, development and each jurisdiction's impacts; local hazard history, including state-declared emergencies; the mitigation strategy; and adoption.

How the federal data are built: National Risk Index values are FEMA's model, not counts of events. Storm Events is more complete from 1996; zone-level records are placed by forecast zone, not by location in the county. Public Assistance for a jurisdiction is matched by applicant name. The Methods page gives every rule and the known edge cases.

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Cite this: Hazard Plain (2026). Grand County, UT: risk-assessment baseline packet, release 2026-10 (data as of 2026-09-30; County FIPS 49019). Automated baseline. <https://hazardplain.org/ut/49019/> Built from FEMA OpenFEMA, the FEMA National Risk Index and NOAA NCEI Storm Events; source versions in the packet's Sources list.

Corrections: to report an error, name the packet, the table and what your records show. Contact: contact@hazardplain.org