

McKenzie County, ND

Risk-assessment baseline packet

County FIPS: 38053 **Release:** 2026-10 **Data as of:** 2026-09-30 **Storm Events data through:** 2026-06-30

Hazard Plain is an independent product built from public federal data. It is not a FEMA document and is not reviewed or endorsed by FEMA or any state agency.

Summary

Plan status as of 2026-09-30: Expired on 2026-03-21. Plan: McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371), approved 2021-03-22.

Update: FEMA tracker shows a plan awaiting revisions.

Since the plan was approved on 2021-03-22: 5 new hazard declarations (3 incidents) and 118 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): Cold Wave (\$4,861,753 a year), Inland Flooding (\$2,576,444) and Hail (\$1,156,529).

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; 38053 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:	Expired on 2026-03-21	Plan:	McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371)
Approved:	2021-03-22	Days since expiry:	193
Update underway:	FEMA tracker shows a plan awaiting revisions		

Until a new plan is approved, FEMA mitigation project grants (HMGP, FMA) need a FEMA exception (44 CFR 201.6(a)(3)).

What changed since your last plan (approved 2021-03-22)

New federal declarations:

5 new hazard declarations (3 incidents): DR-4613-ND (Severe Storm, Straight-Line Winds, and Flooding), DR-4660-ND (Severe Winter Storm and Flooding), FM-5540-ND (Bear Den Fire), FM-5541-ND (Elk Horn Fire), DR-4852-ND (Wildfires and Straight-Line Winds)

Repetitive loss now:

FMA RL 0, SRL 0 (44 CFR 77.2); any definition: 0

Storm Events records since approval:

118 records (data through 2026-06-30)

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 negative = days since expiry	Update underway
McKenzie County	County	Expired on 2026-03-21	McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371)	2021-03-22	2026-03-21	-193	FEMA tracker shows a plan awaiting revisions
Alexander city	City	Expired on 2026-03-21	McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371)	2021-03-22	2026-03-21	-193	FEMA tracker shows a plan awaiting revisions
Arnegard city	City	Expired on 2026-03-21	McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371)	2021-03-22	2026-03-21	-193	FEMA tracker shows a plan awaiting revisions
Watford City city	City	Expired on 2026-03-21	McKenzie County, ND Hazard Mitigation Plan 2021 (FEMA plan 107371)	2021-03-22	2026-03-21	-193	FEMA tracker shows a plan awaiting revisions

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 <i>NRI Not Applicable, no declaration and no Storm Events record since 1996</i>	Storm Events coverage note
1	Cold Wave	Relatively Moderate	Relatively High	\$2,123	\$426,391	\$4,433,239	\$4,861,753	27		Includes 1 Frost/Freeze record (outside NRI's Cold Wave definition; counted in this table and in B1-d, not in the B1-e descriptor).
2	Inland Flooding	Very Low	Very Low	\$2,571,288	\$1,014	\$4,142	\$2,576,444	8		
3	Hail	Relatively Moderate	Relatively Moderate	\$973,469	\$73,597	\$109,463	\$1,156,529	179		
4	Tornado	Relatively Low	Relatively Low	\$369,277	\$2,647	\$476,266	\$848,190	14		
5	Strong Wind	Relatively Low	Relatively Moderate	\$97,022	\$23,484	\$657,047	\$777,553	173		Includes 56 High Wind records (a NOAA non-thunderstorm wind type, outside NRI's Strong Wind definition).
6	Winter Weather	Relatively High	Relatively High	\$193,805	\$139	\$274,799	\$468,743	92		
7	Wildfire	Relatively Low	Relatively Low	\$402,913	\$255	\$34,718	\$437,886	2		
8	Ice Storm	Relatively Moderate	Relatively Moderate	\$248,646	n/a	\$72,163	\$320,809	0		No recorded events in Storm Events since 1996 (data through 2026-06-30).
9	Lightning	Relatively Low	Relatively Low	\$11,306	n/a	\$113,297	\$124,603	0		No recorded events in Storm Events since 1996 (data through 2026-06-30).

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
10	Heat Wave	Very Low	Very Low	\$2,178	under \$1	\$77,927	\$80,105	1		
11	Drought	Relatively Low	Relatively Low	n/a	\$39,204	n/a	\$39,204	25		
12	Earthquake	Very Low	Very Low	\$9,255	n/a	\$1,149	\$10,405			Storm Events does not record earthquakes.
13	Landslide	Very Low	Very Low	\$1,444	n/a	\$325	\$1,769	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-3247-ND 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 lightning and landslide records (Storm Events records these hazards only in part).

Not applicable to this county per NRI, with no federal declaration and no Storm Events record since 1996: avalanche, coastal flooding, tsunami and volcanic activity. 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>
Earthquake	tract 9624 (Very Low, 11.9); tract 9625 (Very Low, 10.9); tract 9623.01 (Very Low, 7.8)
Hurricane	no tract has a National Risk Index rating for this hazard
Landslide	tract 9623.02 (Relatively Low, 90.5); tract 9623.01 (Relatively Low, 89.4); tract 9625 (Relatively Low, 87.8)
Tornado	tract 9624 (Relatively High, 76.2); tract 9623.01 (Relatively Moderate, 73.2); tract 9401 (Relatively Moderate, 62.6)
Wildfire	tract 9401 (Relatively Moderate, 95.4); tract 9623.01 (Relatively Moderate, 95.2); tract 9623.02 (Relatively Moderate, 94.5)

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 9624 is Census Tract 9624). 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
Cold/Wind Chill, Extreme Cold/Wind Chill	wind chill	26 records, 1996 to 2025 (26 zone-level)	1 day to 6 days (median 2 days); 24 with a recorded value	6 consecutive days, 2021-02-10 to 2021-02-15, zone-level		Countywide (zone-level records).	
Frost/Freeze (outside NRI's Cold Wave definition)	crop damage	1 record, 1997		No crop damage reported in 1 record.	Frost/Freeze, 1997-11-27, \$15,000 property; crops not reported (1997 dollars)	No event record names a jurisdiction in the plan.	
Drought	U.S. Drought Monitor scale (D0 to D4)	25 records, 2021 to 2026 (25 zone-level)	30 days to 428 days (median 260 days); 3 with a recorded value	428 days (about 14.1 months), 2021-03-16 to 2022-05-17, a run of 15 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.

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Earthquake	Modified Mercalli (local data)	0					Storm Events does not record earthquakes; the USGS earthquake catalog is the source.
Hail	hail size (inches)	225 records, 1963 to 2026	0.75 in to 4.5 in (median 1 in); 225 with a recorded value	4.5 in hail, 1996-09-04; same size also recorded on 1964-07-04, 1995-08-18	Hail, 1995-08-18, \$2,000,000 property; crops not recorded (1995 dollars)	Event records naming jurisdictions in the plan: Watford City city (37 records), Alexander city (23 records), Arnegard city (13 records).	
Excessive Heat, Heat	heat index (in event narratives)	1 record, 2011 (1 zone-level)	4 days; 1 with a recorded value	4 consecutive days, 2011-07-16 to 2011-07-19, 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)	8 records, 2003 to 2019 (1 zone-level)		Flood, 2019-03-21, \$4,000,000 property; \$0 crops (2019 dollars)		Event records naming jurisdictions in the plan: Alexander city (1 record). Zone-level records (1) apply countywide.	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)	0					
Lightning	annualized frequency (the measure FEMA's Local Mitigation Planning Handbook names)	0					Storm Events lists lightning with damage or casualties.
High Wind and Strong Wind (outside NRI's Strong Wind definition)	wind speed (kt and mph)	56 records, 1999 to 2026 (56 zone-level)	35 kt (40 mph) to 72 kt (83 mph) (median 51 kt (59 mph)); 56 with a recorded value	72 kt (83 mph) measured gust, High Wind, 2021-01-13; NWS zone NDZ017	High Wind, 1999-10-31, \$2,250,000 property; \$4,910,000 crops (zone total, 1999 dollars)	Countywide (zone-level records).	
Thunderstorm Wind	wind speed (kt and mph)	144 records, 1965 to 2026	50 kt (58 mph) to 87 kt (100 mph) (median 55 kt (63 mph)); 132 with a recorded value	87 kt (100 mph) estimated gust, Thunderstorm Wind, 2025-07-29	Thunderstorm Wind, 2015-06-30, \$250,000 property; \$0 crops (2015 dollars)	Event records naming jurisdictions in the plan: Watford City city (35 records), Alexander city (13 records), Arnegard city (11 records).	
Tornado	Enhanced Fujita (Fujita before Feb 2007)	24 records, 1952 to 2025	F/EF0 to F/EF2 (median F/EF0); 20 with a recorded value	EF2 tornado, 2018-07-09, 0.53 mi within this county, 400 yd wide, \$3,500,000 property; \$0 crops (2018 dollars), 1 direct death, 28 direct injuries		Event records naming jurisdictions in the plan: Watford City city (3 records), Arnegard city (2 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).

Hazard	Scale	Records <i>count and years</i>	Observed range	Worst recorded event	Most damaging (when different)	How it applies to jurisdictions	Note
Wildfire	acres burned (local data)	2 records, 2006 to 2024 (2 zone-level)		Wildfire, 2024-10-05, \$7,000,000 property; \$5,000,000 crops (2024 dollars); NWS zone NDZ017		Countywide (zone-level records).	
Winter Storm, Heavy Snow, Blizzard, Lake- Effect Snow, Winter Weather, Sleet	none in data (snowfall: local data)	92 records, 1996 to 2025 (92 zone-level)		Blizzard, 2022-04-23, \$3,000,000 property; \$0 crops (2022 dollars); NWS zone NDZ017		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 debris flow and lightning.

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: 24 declarations covering 19 separate hazard incidents 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>	Flags	Notes
2024-12-24	2024-10-05	DR-4852-ND	Major disaster	Wildfires and Straight-Line Winds	Wildfire (primary); also designated: Strong Wind	\$734,637.93	new since last plan; within last 5 years	
2024-10-06	2024-10-05	FM-5541-ND	Fire management	Elk Horn Fire	Wildfire	no Public Assistance recorded	new since last plan; within last 5 years	same incident as DR-4852
2024-10-06	2024-10-05	FM-5540-ND	Fire management	Bear Den Fire	Wildfire	no Public Assistance recorded	new since last plan; within last 5 years	same incident as DR-4852
2022-07-13	2022-04-22	DR-4660-ND	Major disaster	Severe Winter Storm and Flooding	Inland Flooding; Winter Weather	\$2,906,526.06	new since last plan; within last 5 years	
2021-09-01	2021-06-07	DR-4613-ND	Major disaster	Severe Storm, Straight-Line Winds, and Flooding	Inland Flooding; Strong Wind	\$52,226.59	new since last plan	
2020-10-02	2020-06-29	DR-4565-ND	Major disaster	Severe Storms and Flooding	Inland Flooding	\$195,662.95	in the 12 months before plan approval	
2020-04-01	2020-01-20	DR-4509-ND	Major disaster	COVID-19 Pandemic	Non-natural, not counted	\$937,752.04	in the 12 months before plan approval	
2020-03-13	2020-01-20	EM-3477-ND	Emergency	COVID-19	Non-natural, not counted	no Public Assistance recorded		same incident as DR-4509
2019-06-12	2019-03-21	DR-4444-ND	Major disaster	Flooding	Inland Flooding	\$391,514.91		

Declared	Incident began	FEMA number	Type	Title	Mapped hazard	County Public Assistance	Flags	Notes
						<i>federal share obligated, nominal dollars</i>		
2013-07-12	2013-05-17	DR-4128-ND	Major disaster	Severe Storms and Flooding	Inland Flooding	\$336,727.99		
2011-05-20	2011-04-29	DR-1986-ND	Major disaster	Severe Winter Storm	Winter Weather	\$773,748.39		
2011-05-10	2011-02-14	DR-1981-ND	Major disaster	Flooding	Inland Flooding	\$55,433.67		
2010-02-26	2010-01-20	DR-1879-ND	Major disaster	Severe Winter Storm	Winter Weather	\$404,624.79		
2009-03-24	2009-03-13	DR-1829-ND	Major disaster	Severe Storms and Flooding	Inland Flooding	\$113,260		
2005-11-21	2005-10-04	DR-1616-ND	Major disaster	Severe Winter Storm and Record and/or Near Record Snow	Winter Weather	\$19,923.85		
2005-09-13	2005-08-29	EM-3247-ND	Emergency	Hurricane Katrina Evacuation	Hurricane: evacuation support, not a local hazard event; not counted	no Public Assistance recorded		
2004-04-02	2004-01-23	EM-3196-ND	Emergency	Snow	Winter Weather	\$19,748.36		
2000-12-29	2000-11-01	DR-1353-ND	Major disaster	Severe Winter Storms and Tornadoes	Tornado (primary); also designated: Winter Weather	no Public Assistance recorded		
1997-04-07	1997-02-28	DR-1174-ND	Major disaster	Severe Flooding,Severe Winter Storms, Snowmelt, Spring Rains	Inland Flooding (primary); also designated: Wildfire, Winter Weather	no Public Assistance recorded		
1997-01-12	1997-01-03	DR-1157-ND	Major disaster	Severe Winter Storms and Blizzard Conditions	Winter Weather	no Public Assistance recorded		
1994-07-01	1994-03-05	DR-1032-ND	Major disaster	Severe Storms, Flooding	Inland Flooding	no Public Assistance recorded		
1979-04-26	1979-04-26	DR-581-ND	Major disaster	Severe Storms, Snowmelt & Flooding	Inland Flooding	no Public Assistance recorded		
1976-07-21	1976-07-21	EM-3016-ND	Emergency	Drought	Drought	no Public Assistance recorded		
1969-04-18	1969-04-18	DR-256-ND	Major disaster	Flooding	Inland Flooding	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.

Statewide declarations

Source: 2

Declared	Incident began	FEMA number	Type	Title	Mapped hazard
2000-06-27	2000-04-05	DR-1334-ND	Major disaster	Severe Storms, Flooding and Ground Saturation	Inland Flooding
1957-06-22	1957-06-22	DR-79-ND	Major disaster	Tornado	Tornado

FEMA recorded these with designated area Statewide and no county, so they are listed on every county page in the state and not counted with county rows. Local data needed: whether each one affected this county.

Public Assistance not placed in any North Dakota county: 1 row, \$23,693.61; listed on the North Dakota state page.

Source: 3

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
Cold Wave	27	3	1	3	0	0	1996 to 2026-06-30	Includes 1 Frost/Freeze record.
Drought	25	24	1	18	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	225	24	3	16	0	0	1955 to 2026-06-30	
Heat Wave	1	0	0	0	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	8	0	0	0	11	2	1996 to 2026-06-30	
Landslide	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Lightning	0	0	0	0	0	0	1996 to 2026-06-30	No recorded events, 1996 to 2026-06-30, NOAA NCEI Storm Events
Strong Wind	200	49	12	43	2	2	1955 to 2026-06-30	Includes 56 High Wind records.
Tornado	24	4	0	1	1	0	1950 to 2026-06-30	
Wildfire	2	1	0	1	2	1	1996 to 2026-06-30	
Winter Weather	92	13	0	13	8	1	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
2025-07-29	Thunderstorm Wind	87 kt (100 mph) estimated gust	\$100,000 property; \$0 crops (2025 dollars)	0, 0	CHARLSON	new since last plan; within last 5 years	B1-c worst recorded: Thunderstorm Wind
2024-10-05	Wildfire		\$7,000,000 property; \$5,000,000 crops (zone total, 2024 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level	new since last plan; within last 5 years	B1-c worst recorded: Wildfire
2022-04-23	Blizzard		\$3,000,000 property; \$0 crops (zone total, 2022 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level	new since last plan; within last 5 years	B1-c worst recorded: Winter Storm, Heavy Snow, Blizzard, Lake-Effect Snow, Winter Weather, Sleet
2022-04-12	Blizzard		\$0 property; \$0 crops (zone total, 2022 dollars)	1, 0	NWS zone NDZ017 (MCKENZIE), zone-level	new since last plan; within last 5 years	deaths or injuries recorded
2021-03-16	Drought		\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level	in the 12 months before plan approval	B1-c worst recorded: Drought
2021-02-10	Extreme Cold/ Wind Chill		\$0 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level	in the 12 months before plan approval	B1-c worst recorded: Cold/Wind Chill, Extreme Cold/Wind Chill
2021-01-13	High Wind	72 kt (83 mph) measured gust	\$100,000 property; \$0 crops (zone total, 2021 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level	in the 12 months before plan approval	B1-c worst recorded: High Wind and Strong Wind
2019-03-21	Flood		\$4,000,000 property; \$0 crops (2019 dollars)	0, 0	FAIRVIEW		B1-c worst recorded: Flash Flood, Flood, Lakeshore Flood
2018-07-09	Tornado	EF2, 0.53 mi within this county, 400 yd wide	\$3,500,000 property; \$0 crops (2018 dollars)	1, 28	WATFORD CITY		deaths or injuries recorded
2011-07-16	Excessive Heat		\$0 property; \$0 crops (zone total, 2011 dollars)	0, 0	NWS zone NDZ017 (MCKENZIE), zone-level		B1-c worst recorded: Excessive Heat, Heat
1997-11-27	Frost/Freeze		\$15,000 property; crops not reported (1997 dollars)	1, 3	MANDAREE		deaths or injuries recorded
1996-09-04	Hail	4.5 in	\$30,000 property; \$300,000 crops (1996 dollars)	0, 0	KEENE		B1-c worst recorded: Hail

The full list is in the Excel file, sheet "B1-d Storm Events history" (604 rows).

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

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
Cold Wave	14.6	event-days per year	about 14.6 days per year	Likely	Storm Events event- days in 14 of 30 years, 1996 to 2025 (46.7%)	278	2005-11-12 to 2024-11-12 (19 years)	countywide	
Drought	31.7	event-days per year	about 31.7 days per year	Likely	Storm Events event- days in 4 of 30 years, 1996 to 2025 (13.3%)	945	2000 to 2025 (25.25 years; D3 and D4 only)	countywide	
Earthquake	0.000098	annual probability at a location	chance a given location in the county has at least minor-damage shaking in a year: 0.0098%			not shown	modeled	see B1-f	No descriptor (Storm Events does not record earthquakes).
Hail	1.98	events per year	about 1.98 per year	Highly likely	FEMA annualized frequency (modeled)	77.2 (modeled)	1986 to 2023 (38 years)	countywide	
Heat Wave	1	event-day per year	about 1 day per year	Possible	Storm Events event- days in 1 of 30 years, 1996 to 2025 (3.33%)	16	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	0.513	event-days per year	about 0.513 days per year		Storm Events event- days in 0 of 30 years, 1996 to 2025 (0%)	35	1946-12-31 to 2014-02-12 (67 years)	countywide	No Storm Events ice storm record, 1996 to 2025
Inland Flooding	0.286	event-days per year	about 0.286 days per year	Likely	Storm Events event- days in 5 of 30 years, 1996 to 2025 (16.7%)	8	1996 to 2023 (28 years)	see B1-f	
Landslide	1.82	events per year (modeled)	about 1.82 per year	Highly likely	FEMA annualized frequency (modeled)	not shown	modeled	see B1-f	
Lightning	28.5	days per year with a strike	about 28.5 days per year	Highly likely	FEMA annualized frequency (modeled)	not shown	1995 to 2023 (29 years; CONUS)	countywide	
Strong Wind	1.33	events per year	about 1.33 per year	Highly likely	FEMA annualized frequency (modeled)	51	1986 to 2023 (38 years)	countywide	
Tornado	0.427	events per year	about 1 in 2 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
Wildfire	0.00176	annual probability at a location	chance a given location in the county burns in a year: 0.176%	Possible	Storm Events records in 2 of 30 years, 1996 to 2025 (6.67%)	not shown	modeled	see B1-f	
Winter Weather	16.4	event-days per year	about 16.4 days per year	Likely	Storm Events event- days in 26 of 30 years, 1996 to 2025 (86.7%)	312	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.

Where NRI gives event-days, the descriptor comes from the share of years with a Storm Events record; NRI's source records more events, so the two differ.

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	109	30	3.63
Hail	2.00 in+	1996 to 2025	10	30	0.333
Thunderstorm Wind (counted as NRI Strong Wind)	50-64 kt	1996 to 2025	94	30	3.13
Thunderstorm Wind (counted as NRI Strong Wind)	65 kt+	1996 to 2025	21	30	0.7
Thunderstorm Wind (counted as NRI Strong Wind)	unmeasured or below 50 kt	1996 to 2025	0	30	0
Tornado	EF0-1	1996 to 2025	8	30	0.267
Tornado	EF2-3	1996 to 2025	2	30	0.0667
Tornado	EF4-5	1996 to 2025	0	30	0
Tornado	unrated (EFU)	1996 to 2025	4	30	0.133

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	
Cold Wave	5 of 5	95.9	98.5	99.4	Very High 5
Drought	5 of 5	72.0	85.3	89.0	Relatively Low 4, Very Low 1
Earthquake	5 of 5	4.1	7.8	11.9	Very Low 5
Hail	5 of 5	91.1	96.1	97.6	Relatively High 5
Heat Wave	5 of 5	10.0	21.3	32.5	Relatively Low 3, Very Low 2
Hurricane	0 of 5				Not Applicable 5
Ice Storm	5 of 5	91.3	93.0	96.0	Relatively High 5
Inland Flooding	5 of 5	7.3	28.7	54.5	Relatively Moderate 2, Relatively Low 2, Very Low 1
Landslide	5 of 5	36.9	87.8	90.5	Relatively Low 4, Very Low 1
Lightning	5 of 5	53.1	70.9	84.3	Relatively High 1, Relatively Moderate 4
Strong Wind	5 of 5	88.8	92.7	97.6	Very High 1, Relatively High 4

Hazard	Tracts <i>rated of all</i>	NRI risk score, 0 to 100			Tracts by rating
		Min	Median	Max	
Tornado	5 of 5	59.9	62.6	76.2	Relatively High 1, Relatively Moderate 4
Wildfire	5 of 5	89.6	94.5	95.4	Relatively Moderate 5
Winter Weather	5 of 5	98.7	99.1	99.8	Very High 5

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).

Each jurisdiction (starting figures from federal data)

Sources: 1, 3, 4, 6

Jurisdiction	Type	Plan status	Repetitive loss <i>FMA RL and SRL (44 CFR 77.2); repeat-flood, any definition</i>	Public Assistance to this jurisdiction <i>FEMA records matched by applicant name; federal share obligated, nominal dollars</i>	Event records naming this place <i>all years; since its plan</i>	Notes
McKenzie County	County	Expired on 2026-03-21	FMA RL 0, SRL 0; any 0	\$866,826.74	0 total; 0 since its plan	Includes \$47,016.42 for declarations not counted as hazard incidents (DR-4509-ND).
Alexander city	City	Expired on 2026-03-21	FMA RL 0, SRL 0; any 0	\$1,128.73	37 total; 5 since its plan	
Arnegard city	City	Expired on 2026-03-21	FMA RL 0, SRL 0; any 0	no Public Assistance recorded	26 total; 8 since its plan	
Watford City city	City	Expired on 2026-03-21	FMA RL 0, SRL 0; any 0	\$59,833.34	75 total; 11 since its plan	Includes \$47,659.67 for declarations not counted as hazard incidents (DR-4509-ND).

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 2021-03-22 <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
Cold Wave	\$5,477,611,945	\$134,829,471	14,685	\$2,123	\$426,391	\$4,433,239	under 0.0001%		\$0		
Drought	n/a	\$40,778,705	n/a	n/a	\$39,204	n/a	0.0961% (agriculture)		\$0		NRI has no building exposure for this hazard; agriculture shown
Earthquake	\$10,206,420,623	n/a	14,704	\$9,255	n/a	\$1,149	under 0.0001%				
Hail	\$5,477,611,945	\$134,829,471	14,685	\$973,469	\$73,597	\$109,463	0.0178%	\$112,000			
Heat Wave	\$5,477,611,945	\$134,829,471	14,685	\$2,178	under \$1	\$77,927	under 0.0001%				
Hurricane											Not Applicable in NRI for this county
Ice Storm	\$5,477,611,945	n/a	14,684	\$248,646	n/a	\$72,163	0.00454%				
Inland Flooding	\$5,475,674,838	\$181,790	364	\$2,571,288	\$1,014	\$4,142	n/a (see note)			\$2,958,752.65	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	\$83,856,188	n/a	293	\$1,444	n/a	\$325	0.00172%				
Lightning	\$5,477,611,945	n/a	14,685	\$11,306	n/a	\$113,297	0.000206%				
Strong Wind	\$5,477,611,945	\$134,829,471	14,685	\$97,022	\$23,484	\$657,047	0.00177%	\$153,000	\$0	\$786,864.52	
Tornado	\$5,477,611,945	\$134,829,471	14,685	\$369,277	\$2,647	\$476,266	0.00674%	\$0			

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 2021-03-22 <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
Wildfire	\$909,805,158	\$45,693,362	5,701	\$402,913	\$255	\$34,718	0.0443%		\$12,000,000	\$734,637.93	
Winter Weather	\$5,477,611,945	\$134,829,471	14,685	\$193,805	\$139	\$274,799	0.00354%		\$3,200,000	\$2,906,526.06	

Totals since 2021-03-22 (Storm Events through 2026-06-30): 60 county-coded records, 60 with a damage value recorded (including \$0), \$265,000; 58 zone-level records, 58 with a damage value recorded (including \$0), \$15,200,000 reported for the zone; Public Assistance: \$3,693,390.58 on 5 counted declarations, 3 of them with Public Assistance.

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	14,685
Building value (total, not at risk)	\$5,477,611,945
Agriculture value (total, not at risk)	\$134,829,471
NRI risk rating (all hazards)	Very Low
Expected annual loss, buildings and agriculture, all hazards	\$5,449,458
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)	\$6,254,536
Social vulnerability rating	Very 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	0	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	0	0	0	0	0

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>
McKenzie County	380054	0	0	0	0	0	0	0
Alexander city	380055	0	0	0	0	0	0	0
Arnegard city	380372	0	0	0	0	0	0	0
Watford City city	380344	0	0	0	0	0	0	0

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: 0 in every occupancy group.

Sources: 1, 4

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 0 properties are 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):

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