Chapter 3: Hazard Identification and Risk Assessment

As part of the 2022 Plan Update process for Somerset County, Maryland, a Hazard Identification and Risk Assessment (HIRA) has been completed for the County.

> A **risk** is the chance, high or low, that any hazard will occur and the severity or impact from that hazard.

Eleven (11) natural hazards have been identified and a hazard risk has been assigned to each. Only natural hazards are included in this assessment as they lend themselves better to data collection related to geographic extent than technological and man-made hazards. Risk for the technological and man-made hazards (i.e., major transportation accident, hazmat, and cyber-attack) was assessed by the Hazard Mitigation Planning Committee (HMPC).

Table 3-1: Hazard Identification and Risk Assessment Ranking Results			
Hazards	**2017 Hazard Ranking**	**2022 Hazard Ranking**	**2022 Composite Score**
Coastal Hazards	High	High	27
Thunderstorm	Medium-High	Medium-High	22.5
Emerging Infectious Diseases	High	High	26.5
High Wind	Medium-High	Medium-High	21.5
Flood	High	High	24
Tornado	Medium-Low	Low	12.5
Extreme Heat	Medium-High	Medium	15
Drought	Medium-High	Medium	18
Winter Storm	Medium	Medium	18
Wildfire	Medium	Low	14.5
Earthquake	Low	Low	9
HazMat	Medium	Medium	-
Major Transportation Accident	Medium	Medium	-
Cyber Attack	High	High	-

The methodology and data used to complete the HIRA for the natural hazards listed in Table A-1 has been included on the following pages, which will comprise *Appendix A* of the 2022 Plan Update.

3.1   Hazard Identification and Risk Assessment Method

To assess the hazard risk for the eleven (11) natural hazards identified in this Plan Update, a composite score method was undertaken. The composite score method was based on a blend of quantitative and qualitative factors extracted from the National Centers for Environmental Information (NCEI) database, and other available data sources. These included:

- Historical impacts, in terms of human lives and property;
- Geographic extent;

- Historical occurrence;
- Future probability; and,
- Community perspective.

The following seven (7) ranking parameters were used to develop the composite risk score, which provide the hazard ranking results for the eleven (11) identified natural hazards. Each parameter was rated on a scale of one (1) to four (4).

Injuries and Death Ranking	
Death	4
N/A	3
Injury	2
None	1

Source: National Centers for Environmental Information

Property and Crop Damage Ranking	
>=2M	4
>=501K	3
>=50k	2
>=0	1

Source: National Centers for Environmental Information

Annualized Events Ranking	
>=2.51	4
>=1.01	3
>=0.11	2
>=0	1

Source: National Centers for Environmental Information

Probability and Future Ranking	
Highly Likely	4
Likely	3
Occasional	2
Unlikely	1

Source: National Centers for Environmental Information, based upon annualized events

Community Perspective Ranking	
Very Concerned	4
Concerned	3
Somewhat Concerned	2
Not Concerned	1

Source: Dorchester County Hazard Mitigation Plan Update: Public Survey

Table 3-2: Max Geographical Extent (Hazard Dependent) Ranking								
Ranking	Coastal Hazards	Drought	Flood	Thunderstorm	Tornado & Earthquake	Wildfire	High Wind	Winter Weather
1	0.00	0	0.00	0-2 events	0-10 events	0	0.00	10"-19"
2	25.00	0.18	10.00	3-5 events	11-17 events	0.4674	60.00	20"-29"
3	50.00	0.3421	20.00	6-8 events	18-22 events	2.1545	74.00	30"-39"
4	75.00	0.49	30.00	>9 events	>23 event	3.9041	95.00	>40"
Calculated Using:	% of Coastal Land Area	% Crop Area	% Area in 100-yr Floodplain	Average number based on: Number of events, 2"> hail and lightning events with Injuries/Deaths	Sum of all tornados weighted by F-scale (F1*1.5, F2*2, F3*3, F4*4); Number of Earthquake Events	Average annual acres burned (%)	ASCE Design Wind Speeds	Average Snowfall
Source:	COASTAL: Risk Area	DROUGHT: CDL MD	FLOOD: DFIRMS	THUNDERSTORM: NCDC	TORNADO: NCDC EARTHQUAKE:	WILDFIRE: MD DNR Forest Service	WIND: ASCE	WINTER STORM: National

Table 3-2: Max Geographical Extent (Hazard Dependent) Ranking								
Ranking	**Coastal Hazards**	**Drought**	**Flood**	**Thunderstorm**	**Tornado & Earthquake**	**Wildfire**	**High Wind**	**Winter Weather**
					Maryland Geological Survey			*Weather Service*
Source: 2021 State of Maryland Hazard Mitigation Plan.								

The following weighted risk factors were used in the equation below to determine the composite risk score for each identified hazard.

Equation: Composite Score = IN + DT + PD + CD + (GE*1.5) + EV + FP + (CP*1.5)

Table 3-3: Weighted Risk Factors		
Injuries	IN	**1**
Deaths	DT	**1**
Property Damage	PD	**1**
Crop Damage	CD	**1**
Geographic Extent (Hazard Dependent)	GE	**1.5**
Events (Annualized)	EV	**1**
Future Probability	FP	**1**
Community Perspective	CP	**1.5**

3.2   Hazard Ranking Results

Using the data tables above to populate the parameters, the composite score was determined for each hazard identified in Table 3-1. Hazard Rankings were assigned accordingly using the Composite Score, Table 3-4 below.

Table 3-4: Composite Score	
Score	**Hazard Ranking**
>=0	**Low**
>=15	**Medium**
>=20	**Medium-High**
>=24	**High**

Table 3-5, following, provides the hazard risk ranking update results. Flood, Coastal Hazards, and Emerging Infectious Diseases were ranked as "High" risk hazards. Thunderstorm, and High Wind were ranked as "Medium-High" risk hazards. Drought, Extreme Heat, and Winter Weather were ranked as "Medium" risk hazards. Tornado, Wildfire, and Earthquake were ranked as "Low" risk hazards.

Table 3-5: Natural Hazard Risk Ranking Results									
Hazard	Injuries & Deaths		Property & Crop Damage		Geographic Extent	Total Events Annualized	Future Probability	Community Perspective	Composite Score	Hazard Ranking
	IN	DT	PD	CD	GE	EV	FP	CP	CS	
Flood (Flash Flood, Heavy Rain)	0 = 1	0 = 1	$500K = 2	$0 = 1	56.5% = 4	1.4 = 3	Highly Likely = 4	Very Concerned = 4	24	High
Drought	0 = 1	0 = 1	$0 = 1	$2.0M = 4	29% = 2	0.17 = 2	Occasional = 2	Somewhat Concerned = 2	17	Medium
Tornado	0 = 1	0 = 1	$68.0K = 2	$0 = 1	5 = 1	0.12 = 2	Unlikely = 1	Somewhat Concerned = 2	12.5	Low
Thunderstorm (Thunderstorm Wind, Lightning, Hail)	4 = 2	0 = 1	$370K = 2	$0 = 1	217 = 4	1.10 = 3	Highly Likely = 4	Concerned = 3	22.5	Medium-High
High Wind	0 = 1	0 = 1	$1.05M = 3	$0 = 1	117 = 4	0.29 = 2	Likely = 3	Concerned = 3	21.5	Medium-High
Wildfire	0 = 1	0 = 1	$0 = 1	$0 = 1	0.076% = 1	10.4 = 4	Occasional = 2	Somewhat Concerned = 2	14.5	Low
Extreme Heat	0 = 1	0 = 1	$0 = 1	$0 = 1	29% = 2	0.11 = 2	Likely = 3	Somewhat Concerned = 2	15	Medium
Winter Storm (Winter Storm, Blizzard, Ice Storm)	0 = 1	0 = 1	$30K = 1	$0 = 1	7.0" = 1	2.85 = 4	Highly Likely = 4	Concerned = 3	18	Medium
Coastal Hazards (Tropical Storm, Hurricane, Coastal Flooding, Shoreline Erosion, Sea Level Rise)	0 = 1	0 = 1	$6.446M = 4	$1.5M = 3	96% = 4	0.78 = 2	Highly Likely = 4	Very Concerned = 4	27	High
Emerging Infectious Diseases	2	4	$0 = 1	$0 = 1	100% = 4	357.6 cases annually = 4	Highly Likely = 4	Concerned = 3	26.5	High
Earthquake	0	0	0	0	11 = 3	0.5 annual earthquakes = 2	Unlikely = 1	Not Concerned = 1	9	Low

3.3   Data Tables

The following data tables were developed and used to populate five (5) of the eight (8) parameters: Injuries, Death, Property Damage, Crop Damage, and Annualized Events.

FLOOD

Table 3-5: Total Flood Hazard Risk Assessment Data Table					
Hazards included within this table from NCEI Data: Flood, Flash Flood, and Heavy Rain					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1998-2022)
0	0	$500K	$0	% in 100-yr SFHA Flood Zone = 56.5%	Total = 35 Annual Avg = 1.4
Source: National Centers for Environmental Information, as of May 2022 & 2021 State of Maryland Hazard Mitigation Plan *Note: Data collected for 1950-present, no data available for these event types prior to 1998.*					

Table 3-6: Flood Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (2011-2022)
0	0	$500K	$0	% in 100-yr SFHA Flood Zone = 56.5%	Total = 7 Annual Avg = 0.58
Note: Data collected for 1950-present, no data available for this event type prior to 2011. *Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.* *Based on NCEI definitions/criteria: Flood (C). Any high flow, overflow, or inundation by water which causes damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, that poses a threat to life or property. If the event is considered significant, it should be entered into Storm Data, even if it only affected a small area. Refer to the Flash Flood event (Section 14) for guidelines for differentiating between Flood and Flash Flood events.*					

Table 3-7: Flash Flood Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (2006-2022)
0	0	$0	$0	% in 100-yr SFHA Flood Zone = 56.5%	Total = 6 Annual Avg = 0.35
Note: Data collected for 1950-present, no data available for this event type prior to 2006. *Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.* *Based on NCEI definitions/criteria: Flash Flood (C). A life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to the shorter-term flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash flooding, such as dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Conversely, flash flooding can transition into flooding as rapidly rising waters abate. The Storm Data preparer uses professional judgment in determining when the event is no longer characteristic of a Flash Flood and becomes a Flood.*					

Table 3-8: Heavy Rain Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1998-2022)
0	0	$0	$0	% in 100-yr SFHA Flood Zone = 56.5%	Total = 22 Annual Avg = 0.88
Note: Data collected for 1950-present, no data available for this event type prior to 1998. *Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.*					

Based on NCEI definitions/criteria: Heavy Rain (C). Unusually large amount of rain which does not cause a Flash Flood or Flood event, but causes damage, e.g., roof collapse or other human/economic impact. Heavy Rain will no longer be acceptable as a means to record low-impact or isolated flood events.

DROUGHT

Table 3-9: Drought Hazard Risk Assessment Data Table					
Hazards included within this table from NCEI Data: Drought					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1998-2022)**
0	0	$0	$2.00M	% Crop land cover from 2017 USDA Cropland Data = 29%	Total = 1 Annual Avg = 0.04
Source: National Centers for Environmental Information, as of May 2022, 2021 State of Maryland Hazard Mitigation Plan & USDA 2017 Cropland Data.					
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.					
Based on NCEI definitions/criteria: Drought (Z). Drought is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area. Conceptually, drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield. There are different kinds of drought: meteorological, agricultural, hydrological, and social-economic. Each kind of drought starts and ends at different times.					

WILDFIRE

Table 3-10: Wildfire Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Events (2000-2022)**
1	0	$0	$0	Avg Annual Acres Burned = 0.076%	Total = 218 Annual Avg = 10.4/yr.
Note: Data obtained from MD-DNR Forest Service for 2000-2020.					

TORNADO

Table 3-11: Total Tornado Hazard Risk Assessment Data Table					
Hazards included within this table from NCEI Data: Tornado, Funnel Cloud, and Waterspout. No Funnel Cloud or Waterspout events are recorded in the NCEI Database for this county.					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1981-2022)**
0	0	$68.0K	$0	SVRGIS (intensity & frequency) = 5 events	Total = 5 Annual Avg = 0.12
Source: National Centers for Environmental Information, as of February 2022 & 2021 State of Maryland Hazard Mitigation					
Note: Data collected for 1950-present, no data available for this event type prior to 1967.					

Table 3-12: Tornado Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1981-2022)**
0	0	$68K	$0	SVRGIS (intensity & frequency) = 5 events	Total = 5 Annual Avg = 0.12
Note: Data collected for 1950-present, no data available for this event type prior to 1981.					
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.					

Based on NCEI definitions/criteria: Tornado (C). A violently rotating column of air, extending to or from a cumuliform cloud or underneath a cumuliform cloud, to the ground, and often (but not always) visible as a condensation funnel. For a vortex to be classified as a tornado, it must be in contact with the ground and extend to/from the cloud base, and there should be some semblance of ground-based visual effects such as dust/dirt rotational markings/swirls, or structural or vegetative damage or disturbance.

HIGH WIND

				Table 3-13: Total Wind Hazard Risk Assessment Data Table	
				Hazards included within this table from NCEI Data: High Wind and Strong Wind. Note: No Strong Wind Hazard events are recorded in the NCEI database for Somerset County.	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2006-2022)**
0	0	$1.050M	$0	ASCE Wind Design Speed = 117	Total = 5 Annual Avg = 0.29

Source: National Centers for Environmental Information, as of May 2022 & 2019 Building Code Administration
Note: Data collected for 1950-present, no data available for these event types prior to 2006.

				Table 3-14: High Wind Hazard Data Table	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2006-2022)**
0	0	$1.050M	$0	ASCE Wind Design Speed = 117	Total = 5 Annual Avg = 0.29

Note: Data collected for 1950-present, no data available for this event type prior to 2006.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: High Wind (Z). Sustained non-convective winds of 35 knots (40 mph) or greater lasting for 1 hour or longer, or gusts of 50 knots (58 mph) or greater for any duration (or otherwise locally/regionally defined). In some mountainous areas, the above numerical values are 43 knots (50 mph) and 65 knots (75 mph), respectively. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

WINTER STORM

				Table 3-15: Total Winter Weather Hazard Risk Assessment Data Table	
				Hazards included within this table from NCEI Data: Winter Storm, Winter Weather, Blizzard, Ice Storm, Frost/Freeze, Heavy Snow, Extreme Cold, and Cold/Wind Chill. Note: No Extreme Cold Hazard events are recorded in the NCEI database for Somerset County.	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1996 -2022)**
0	0	$30K	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 77 Annual Avg = 2.85

Source: National Centers for Environmental Information, as of May 2022, 2021 State of Maryland Hazard Mitigation Plan, & NOAA/NWS

				Table 3-16: Winter Storm Hazard Data Table	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1996-2022)**
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 33 Annual Avg = 1.22

Note: Data collected for 1950-present, no data available for this event type prior to 1996.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.

Based on NCEI definitions/criteria: Winter Storm (Z). A winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/regionally defined 12 and/or 24-hour warning criteria for at least one of the precipitation elements. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. Normally, a Winter Storm would pose a threat to life or property.

Table 3-17: Winter Weather Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1997-2022)**
0	0	$30.0K	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 36 Annual Avg = 1.39

Note: Data collected for 1950-present, no data available for this event type prior to 1997.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Winter Weather (Z). A winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria. A Winter Weather event could result from one or more winter precipitation types (snow, or blowing/drifting snow, or freezing rain/drizzle). The Winter Weather event can also be used to document out-of-season and other unusual or rare occurrences of snow, or blowing/drifting snow, or freezing rain/drizzle. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 3-18: Ice Storm Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1998-2022)**
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 1 Annual Avg = 0.04

Note: Data collected for 1950-present, no data available for this event type prior to 1998.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Ice Storm (Z). Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is 1/4 or 1/2 inch or more). If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. The Storm Data preparer should include the times that ice accretion began, met criteria, and accretion ended. If the freezing rain was mixed with other precipitation types, then a Winter Storm event should be used.

Table 3-19: Blizzard Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2010-2022)**
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 2 Annual Avg = 0.15

Note: Data collected for 1950-present, no data available for this event type prior to 2010.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Blizzard (Z). A winter storm which produces the following conditions for 3 consecutive hours or longer: (1) sustained winds or frequent gusts 30 knots (35 mph) or greater, and (2) falling and/or blowing snow reducing visibility frequently to less than 1/4 mile. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 3-20: Heavy Snow Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2017-2022)**
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 1 Annual Avg = 0.17

Note: Data collected for 1950-present, no data available for this event type prior to 2017.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.

Based on NCEI definitions/criteria: Heavy Snow (Z). Snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24 hour warning criteria. This could mean values such as 4, 6, or 8 inches or more in 12 hours or less; or 6, 8, or 10 inches in 24 hours or less. If the event that occurred is considered significant, even if it affected a small area, it should be entered into Storm Data. I

Table 3-21: Cold/Wind Chill Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1996-2022)
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 1 Annual Avg = 0.04

Note: Data collected for 1950-present, no data available for this event type prior to 1996.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Cold/Wind Chill (Z). Period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typical value is -18° F or colder) conditions. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data .

Table 3-22: Frost/Freeze Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (2003-2022)
0	0	$0	$0	Average snowfall total: 7.0" (NOAA/NWS)	Total = 3 Annual Avg = 0.15

Note: Data collected for 1950-present, no data available for this event type prior to 2003.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Frost/Freeze (Z). A surface air temperature of 32 degrees Fahrenheit (°F) or lower, or the formation of ice crystals on the ground or other surfaces, for a period of time long enough to cause human or economic impact, during the locally defined growing season. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data. .

COASTAL HAZARDS

Table 3-23: Total Coastal Hazards Hazard Risk Assessment Data Table					
Hazards included within this table from NCEI Data: Tropical Storm, Hurricanes, and Coastal Flooding. No Tropical Depressions or Storm Surge events are recorded in the NCEI Database for this county.					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1996-2022)
0	0	$6.446M	$1.5M	% of County in Coastal Land Area = 96%	Total = 21 Annual Avg = 0.78

Source: National Centers for Environmental Information, as of May 2022 & 2021 State of Maryland Hazard Mitigation Plan
Note: Data collected for 1950-present, no data available for these event types prior to 1996.

Table 3-24: Tropical Storm Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1996-2022)
0	0	$721K	$1.0M	% of County in Coastal Land Area = 96%	Total = 7 Annual Avg = 0.26

Note: Data collected for 1950-present, no data available for this event type prior to 1996.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Tropical Storm (Z). A tropical cyclone in which the 1-minute sustained surface wind ranges from 34 to 63 knots (39 to 73 mph). A Tropical Storm should be included as an entry when these conditions are experienced in the WFO's (Weather Forecast Office) CWA (County Warning Area).

				Table 3-25: Hurricane Hazard Data Table	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1996-2022)**
0	0	$250K	$500K	% of County in Coastal Land Area = 96%	Total = 3 Annual Avg = 0.11

Note: Data collected for 1950-present, no data available for this event type prior to 1996.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Hurricane/Typhoon (Z). A tropical cyclone in which the maximum 1-minute sustained surface wind is 64 knots (74 mph) or greater. In the Atlantic Ocean or the North Pacific Ocean east of the International Date Line, this event would be labeled a Hurricane, and in the North Pacific Ocean west of the International Dateline, this event would be classified as a Typhoon.

				Table 3-26: Coastal Flooding Hazard Data Table	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2008-2022)**
0	0	$5.475M	$0	% of County in Coastal Land Area = 96%	Total = 11 Annual Avg = 0.73

Note: Data collected for 1950-present, no data available for this event type prior to 2008.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Coastal Flood (Z). Flooding of coastal areas due to the vertical rise above normal water level caused by strong, persistent onshore wind, high astronomical tide, and/or low atmospheric pressure, resulting in damage, erosion, flooding, fatalities, or injuries. Coastal areas are defined as those portions of coastal land zones (coastal county/parish) adjacent to the waters, bays, and estuaries of the oceans. Farther inland, the Storm Data preparer determines the boundary between coastal and inland areas, where flood events will be encoded as Flash Flood or Flood rather than Coastal Flood. Terrain (elevation) features will determine how far inland the coastal flooding extends.

THUNDERSTORM

				Table 3-27: Total Thunderstorm Hazard Risk Assessment Data Table *Hazards included within this table from NCEI Data: Thunderstorm Wind, Lightning, and Hail.*	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1962-2022)**
4	0	$370K	$0	ASCE Wind Design Speed = 117 2">> hail and lightning events with Injuries/Deaths = 0	Total = 67 Annual Avg = 1.10

Source: National Centers for Environmental Information, as of May 2022, & 2019 Building Code Administration & 2021 State of Maryland Hazard Mitigation Plan. Note: Data collected for 1950-present, no data available for this event type prior to 1962.

				Table 3-28: Thunderstorm Wind Hazard Data Table	
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1969-2022)**
4	0	$359K	$0	ASCE Wind Design Speed = 117	Total = 49 Annual Avg = 0.91

Note: Data collected for 1950-present, no data available for this event type prior to 1969.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Thunderstorm Wind (C). Winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. Maximum sustained winds or wind gusts (measured or estimated) equal to or greater than 50 knots (58 mph) will always be entered. Events with maximum sustained winds or wind gusts less than 50 knots (58 mph) should be entered as a Storm Data event only if the result in fatalities,

injuries, or serious property damage. Storm Data software permits only one event name for encoding severe and non-severe thunderstorm winds. The Storm Data software program requires the preparer to indicate whether the sustained wind or wind gust value was measured or estimated.

Table 3-29: Lightning Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (2010-2022)
0	0	$11K	$0	Countywide	Total = 3 Annual Avg = 0.23

Note: Data collected for 1950-present, no data available for this event type prior to 2010.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Lightning (C). A sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage.

Table 3-30: Hail Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1962-2022)
0	0	$0	$0	2"> hail and lightning events with Injuries/Deaths = 0	Total = 15 Annual Avg = 0.25

Note: Data collected for 1950-present, no data available for this event type prior to 1962.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Hail (C). Frozen precipitation in the form of balls or irregular lumps of ice. Hail ¾" or larger in diameter will be entered. Hail accumulations of smaller size, which cause property and/or crop damage or casualties, should be entered. Maximum hail size will be encoded for all hail reports entered.

EXTREME HEAT

Table 3-31: Total Extreme Heat Hazard Risk Assessment Data Table					
Hazards included within this table from NCEI Data: Excessive Heat and Heat					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (1996-2022)
0	0	$0	$0	% Crop from 2017 Agriculture Census = 29%	Total = 3 Annual Avg = 0.11

Source: National Centers for Environmental Information, as of May 2022 & 2021 State of Maryland Hazard Mitigation Plan.
Note: Data collected for 1950-present, no data available for this event type prior to 1996.

Table 3-32: Excessive Heat Hazard Data Table					
Injuries	Deaths	Property Damage	Crop Damage	Geographic Extent	Days with Events (2011-2022)
0	0	$0	$0	% Crop from 2017 Agriculture Census = 29%	Total = 1 Annual Avg = 0.08

Note: Data collected for 1950-present, no data available for this event type prior to 2011.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Excessive Heat (Z). Excessive Heat results from a combination of high temperatures (well above normal) and high humidity. An Excessive Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established excessive heat warning thresholds. Fatalities (directly related) or major impacts to human health that occur during excessive heat warning conditions are reported using this event category. If the event that occurred is considered significant, even though it affected a small area, it should be entered into Storm Data.

Table 3-33: Heat Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (1996-2022)**
0	0	$0	$0	% Crop from 2017 Agriculture Census = 29%	Total = 2 Annual Avg = 0.07

Note: Data collected for 1950-present, no data available for this event type prior to 1996.
Legend: There are three designators: C - County/Parish; Z - Zone; and M – Marine Zone.
Based on NCEI definitions/criteria: Heat (Z). A period of heat resulting from the combination of high temperatures (above normal) and relative humidity. A Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established advisory thresholds. Fatalities or major impacts on human health occurring when ambient weather conditions meet heat advisory criteria are reported using the Heat event. If the ambient weather conditions are below heat advisory criteria, a Heat event entry is permissible only if a directly related fatality occurred due to unseasonably warm weather, and not man-made environments.

EMERGING INFECTIOUS DISEASES

Table 3-34: Cases of Selected Notifiable Conditions Reported – Somerset County, Maryland					
Condition	**2015**	**2016**	**2017**	**2018**	**2019**
Animal Bites	54	54	59	52	48
Campylobacteriosis	1	5	4	8	7
Chlamydia	188	226	185	187	184
Cryptosporidiosis	1	0	0	0	1
Ehrlichiosis	2	1	1	0	3
Encephalitis – non-Arboviral			1		
Gonorrhea	38	53	56	69	38
H. influenzae – invasive disease	0	0	1	1	0
Hepatitis C (acute symptomatic)	-	1	1	-	-
Kawasaki Syndrome	-	-	1	-	-
Legionellosis	-	-	-	-	1
Listeriosis	-	1	-	-	-
Lyme Disease	5	7	9	5	6
Meningitis, aseptic	3	1	2	5	4
Meningitis, fungal	-	1	-	-	-
Mycobacteriosis, Other than TB & Leprosy	3	2	4	6	10
Pertussis	-	-	2	4	-
Pneumonia – Hospitalized Healthcare Worker	-	1	-	-	-
Rabies - Animal	5	4	3	4	5
Salmonellosis – other than typhoid fever	12	17	6	19	29
Shiga toxin producing E. coli (STEC)	-	-	1	1	-
Shigellosis	-	6	-	-	-
Spotted Fever Rickettsiosis	-	-	-	2	4
Strep Group A – Invasive Disease	-	-	1	3	-
Strep Group B – Invasive Disease	4	5	4	3	7
Strep pneumoniae - Invasive Disease	1	-	-	1	1
Syphilis - Congenital	-	1	-	-	-
Syphilis – primary and secondary	2	4	-	2	-

Table 3-34: Cases of Selected Notifiable Conditions Reported – Somerset County, Maryland					
Condition	**2015**	**2016**	**2017**	**2018**	**2019**
Tuberculosis	1	1	1		1
Vibriosis (non-cholera)	3	2	4	2	1
Yersiniosis	-	-	-	-	1
Zika virus infection	**	0	1	0	0
TOTALS:	323	393	347	374	351
Average Numbers of New Cases 2015-2019	357.6				

* Data sources: Maryland's NEDSS and PRISM databases. Data is current as of 5/12/2022. These are active databases and counts may vary slightly over time, as well as differ slightly from counts published by the Centers for Disease Control and Prevention (CDC). HIV/AIDS data are not included here but available at http://phpa.dhmh.maryland.gov/OIDEOR/CHSE/SitePages/statistics.aspx.

** Zika virus infections not reported for the year 2015 in the database.

EARTHQUAKE

Table 3-35: Earthquake Hazard Data Table					
Injuries	**Deaths**	**Property Damage**	**Crop Damage**	**Geographic Extent**	**Days with Events (2000-2022)**
0	0	0	0	Sum of all events = 11	Total = 11 Annual Average = 0.5

Source: Maryland Geological Survey (MGS), 2000-present.