

Awareness and Preparation

	ANTRIM COUNTY HAZARD MITIGATION STRATEGIES	HAZARD TYPE										WHERE - Affected Locations or Groups	WHO - Responsible Parties	HOW - Resources	WHEN - Timeframe (Years)	PRIORITY TYPE (High, Med, or Low)	STRATEGY TYPE			
		Severe Winter Weather	T-Storm, High Winds, Hail, Tornado, Lightning	Wildfire	Flooding and Erosion	Rip Current	Extreme Temperatures	Drought	Invasive Species	Public Health Emergency	1						2	3	4	
1	Incorporate the County Hazard Mitigation Plan's strategies into elements of County and local master plans.	X	X	X	X	X	X	X	X	X	Countywide	Antrim County Planning Commission; Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.	A, B	Ongoing		X	X	X	X	
2	Continue to pursue interdepartmental cooperation and coordination of police, fire, rescue and EMS services to achieve community-wide coverage availability.	X	X	X	X	X	X	X	X	X	Countywide	County Sheriff and EM; local fire/EMS	A, B, C	Ongoing		X				
3	Continue and strengthen partnerships with local government agencies, businesses and non-profits to provide public education on hazard scenario preparedness and prevention.	X	X	X	X	X	X	X	X	X	Countywide	Antrim County government, HDNW MI, MDNR		Ongoing		X	X	X	X	
3a	Continue to inform the public about emergency events and shelter sites via utilization and promotion of the Rave mass notification system, NWS weather radios (as a good backup plan) and website/social media.	X	X	X	X	X	X	X	X	X	Countywide	County EM	A, B, C	Ongoing					X	
3b	Continue the preparedness practice of conducting the annual statewide tornado drill.		X								Countywide	County EM	A, B, C	Annually		X			X	
3c	Continue to promote participation in Storm Spotter Training via partnership with the NWS.		X								Countywide	County EM	A, B, C	Annually					X	
3d	Provide public education regarding structural modifications (such as foundation anchoring and tie downs for older mobile homes) and tree management practices to reduce risk of damage from high winds.		X								Countywide	Antrim County Building Dept.	A, B, F, G, H, I				X		X	
3e	Provide local governments, institutions and citizens information on funding opportunities for constructing shelter sites, safe rooms, and the installation of generators for shelter sites.	X	X	X	X	X	X	X	X	X	Countywide	County EM; Antrim County Building Dept.	A, B, BB-DD				X		X	
3f	Continue the preparedness practice of conducting the annual statewide tornado drill.		X								Countywide	County EM	A, B, C	Annually		X			X	
3g	Ensure that communities have a good snow removal plan and share this with the County Road Commission	X									Villages of Bellaire, Ellsworth, Central Lake, Elk Rapids, and Mancelona; Hamlets of Alba and Alden	Villages of Bellaire, Ellsworth, Central Lake, Elk Rapids, and Mancelona; Hamlets of Alba and Alden; ACRC	A, B, C			X			X	
3h	Provide public education regarding structural modifications (such as foundation anchoring and tie downs for older mobile homes) and tree management practices to reduce risk of damage from high winds.		X								Countywide	Antrim County Building Dept.	A				X		X	
3i	Increase public education efforts regarding natural resilient shoreline preservation strategies to protect against beach erosion and coastal flooding.				X						Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids; County EM; ACD	R - W, JJ, KK, MM - WW				X		X	
3j	Utilize resources offered by the Great Lakes Water Safety Consortium to increase beach safety awareness and incident prevention at public beaches along Lake Michigan.					X					Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids; County EM.	X						X	
3k	Promote (via social media, etc.) awareness of vegetation/fuel management for fire prevention around homes and other structures.			X							Countywide	County EM, County Building Dept., Local Fire Depts./First Responders, MDNR	M, N						X	
4	Continue to provide ACD's Forest Management Plans and Best Management Practices for County forests and private landowners.	X	X	X	X	X	X	X	X	X	Countywide	ACD	MM	Ongoing				X	X	

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5	Continue operation of the local tornado siren in the Village of Mancelona.		X										Village of Mancelona	Village of Mancelona DPW, Fire	B, C	Ongoing				X	
6	Investigate the cost and feasibility of installing new tornado sirens in the Villages of Bellaire, Central Lake, Elk Rapids and Ellsworth.		X										Villages of Bellaire, Central Lake, Elk Rapids and Ellsworth	Villages of Bellaire, Central Lake, Elk Rapids and Ellsworth	A, B			X		X	
7	Evaluate additional designated sites to temporarily store cleanup debris from downed trees after storm events.	X	X		X								Countywide	Community DPWs, EM, RC	A, B, O, P			X			
8	Improve emergency communication with the public by issuing road closure notifications and snow plowing updates via emergency alert systems, County EM social media, and the county website.	X	X	X	X			X	X			X	Countywide	RC, County EM, MSP, County Sheriff, local governments	A					X	
9	Continue to develop Emergency Action Plans through the Antrim County Dept. of Emergency Services as needed for large public events.	X	X	X	X	X	X					X	Countywide	County EM	A, B, C	As needed		X			
10	Continue the Antrim County Commission on Aging's snow plowing services to seniors through their "Home Chore" program; the "telephone reassurance" call service to check on homebound seniors; and the snowmobile club's "rescue service".	X	X	X	X			X				X	Countywide	Antrim County Commission on Aging	D	Ongoing		X			
11	Ensure that County residents, particularly vulnerable populations, have access to healthy, affordable food options.								X	X	X		Countywide	County EM, NMCAA, local food pantries, school districts, local communities				X	X	X	X
11a	Create community gardens in hamlets, villages, and/or school locations to promote learning about growing local food, native pollinating plants, and provide access to fresh produce.										X	X	Villages of Bellaire, Ellsworth, Central Lake, Elk Rapids, and Mancelona; Hamlets of Alba, Alden, and Kewadin	Local governments, local schools, churches, senior living facilities, parks	D, I, J, JJ			X	X	X	
11b	Continue to provide and improve food assistance programs and emergency food programs to help communities prepare for unanticipated pandemics, but also increase year-round food accessibility.	X	X	X	X							X	Countywide	NMCAA; local food pantries; School Districts (school meal programs)	State grant funds; F, I, J	Ongoing		X			
11c	Food rescue programs, involving public/private partnerships between restaurants, hotels and other venues of large food production, can partner with local food pantries to make good food more widely available.	X	X	X	X							X	Countywide	NMCAA; local food pantries; School Districts (school meal programs)	F, I			X		X	
12	Continue programs and services offered by the Health Department of NW MI and/or MDHHS, such as: immunizations; community clinics; school health services; permitting processes for proper location and installation of water wells and septic systems; education about cleaning, monitoring and maintaining septic systems; septic or well repair financial assistance, and the inspection and licensing of food service establishments				X							X	Countywide	HDNW MI; MDHHS	E, MDHHS	Ongoing		X	X	X	X
13	Continue to coordinate with the MDHHS for guidance via their State Pandemic Plan and information about new or emerging disease threats.											X	Countywide	HDNW MI; MDHHS; County EM; Meadow Brook MCF	A-E, MDHHS	Ongoing		X			X
14	Maintain proper levels of PPE for healthcare workers and first responders, with additional supplies for long-term care facilities.											X	Countywide; Local fire stations and EMS services.	County EM; local fire/EMS; Meadow Brook MCF	A, C	Ongoing		X			
15	Prepare emergency evacuation plans for potential flooding events and coordinate with surrounding communities				X								Communities in the ERCOL watershed and/or adjoining Lake Michigan (Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them); particularly areas with "Special Flood Hazard Areas" on FIRMS	County EM, local governments	A, B, C, R - W, AA, BB			X			

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16	Provide outreach to all communities in the County that contain areas that have been affected by flooding events, but do not participate in the NFIP, explaining the benefits of participation.				X					Townships of Central Lake, Forest Home, Helena, Custer, Kearney and Echo; Villages of Bellaire, Central Lake and Ellsworth	Drain Commissioner, EM, MI EGLE	A, B, AA, EGLE			X			X
17	Review and adopt FEMA's revised FIRM Maps, which should include findings from the 2022 ERCOL hydrology study, that identify flood hazard areas.				X					Townships of Banks, Torch Lake, Milton and Elk Rapids; Village of Elk Rapids	Drain Commissioner, EM, MI EGLE	A, B, AA, EGLE			X			
18	Identify flood-prone areas and areas that have reported repetitive loss damages due to flooding on FIRMS and pursue FEMA hazard mitigation assistance grants related to flood mitigation, such as innovative stormwater management solutions, property acquisition, structure demolition or relocation, dry flood proofing, structure elevation, or project scoping (engineering, environmental, feasibility, and/or benefit-cost analysis)				X					Townships of Banks, Torch Lake, Milton and Elk Rapids; Village of Elk Rapids	Drain Commissioner, EM, MI EGLE	A, B, AA - DD			X	X	X	X
19	Promote education about the benefits of natural shoreline and streambank restoration; identify priority shoreline and streambank restoration sites.				X					Communities in the ERCOL watershed and/or adjoining Lake Michigan (Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them); particularly areas with "Special Flood Hazard Areas" on FIRMS	Antrim Conservation District, lake associations, TOMWC, the Watershed Center Grand Traverse Bay	A, B, W, KK, MM - WW			X		X	X
20	Reference LIAA's NW MI Coastal Resilience Atlas - Ch. 5 for maps of areas along the Lake MI shoreline where vulnerable populations are most at risk from extreme heat events. Share with the Antrim COA, local charities/non-profits, emergency responders and local governments.				X					Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	A, B, C, D, S			X			X
21	Consider developing a drought communication plan and early warning system to facilitate timely communication of local drought conditions/outlook to officials, decision makers, emergency responders, and the general public.								X	Countywide	County EM, ACD/USDA-NRCS	A, B, C, K, L, KK			X			X
22	Consider developing agreements for secondary water sources that may be used during drought conditions.								X	Countywide	County EM, ACD/USDA-NRCS	A, B, C, LL			X			
23	Consider establishing an irrigation time/scheduling program or process so that all agricultural land gets the required amount of water. Through incremental timing, each area is irrigated at different times so that all water is not consumed at the same time. Spacing usage may also help with recharge of groundwater.								X	Countywide	County EM, ACD/USDA-NRCS	B, LL			X			
24	Consider implementing mandatory water conservation measures during drought emergencies, such as: •Developing an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc. •Adopting ordinances to prioritize or control water use, particularly for emergency situations like fire fighting.								X	Countywide	County EM, USDA-NRCS, local governments	B, LL			X			
25	Continue collaboration with MSUE to provide information on agriculture management and best practices in drought situations.								X	Countywide	County EM, MSUE, ACD/USDA-NRCS,	KK	Ongoing				X	X
26	Support the USDA - NRCS's provision of free technical assistance such as the Conservation Stewardship Program, resource assessment and monitoring, and determination of financial assistance for local farmers, ranchers and forest managers in the wake of a natural disaster.								X	Countywide	ACD/USDA-NRCS	LL	Ongoing			X		X

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Shelters	27	Maintain an accurate inventory of emergency shelter sites (overnight vs. daily use types); review annually and update as needed.	X	X	X	X		X				X	Countywide	County EM; American Red Cross	A	Annually		X			
	27a	The Antrim County Office of Emergency Management will continue to collaborate with local communities and non-profits to increase the number of emergency shelters available to the public during emergency events (i.e., expand agreements with libraries, senior centers).	X	X	X	X		X				X	Countywide	County EM; American Red Cross; Local Fire Depts.; Senior Centers; Municipal Offices	A, B, C	Ongoing		X	X		X
	27b	Provide local governments or public/private organizations information on funding sources for the installation of generators to enhance capabilities of emergency shelter locations.	X	X	X	X		X				X	Countywide	County EM; Local Fire Depts.; Senior Centers; Municipal Offices	A, B, C, D, CC, DD				X		X
	28	Evaluate the feasibility and need to construct storm shelters, such as concrete "safe rooms", at campgrounds, day camps and mobile/modular home communities.	X	X	X	X		X					See hazard map for locations of campgrounds and mobile homes	County Building Dept., EM; local govts; private and public campground managers	A, B, C, D, CC, DD				X		
	29	Continue to establish areas of refuge and evacuation routes from campgrounds, recreation areas, and other sites of large outdoor events.	X	X	X	X		X				X	See hazard map for locations of campgrounds and mobile homes	County EM; private and public campground managers; local fire depts.	A, B, C	Ongoing		X	X		X
	30	Create signage in public parks/beaches that illustrate the nearest emergency shelter locations.	X	X	X	X		X					Countywide	County and local governments; GTRLC; MDNR	A, B, I, X, UU						X
	31	Maintain procedures to create quarantine areas in group living quarters, such as overnight shelters or assisted living facilities.										X	Various shelter sites; Meadow Brook Medical Care Facility	ARC, HDNW MI, Meadow Brook Medical Care Facility	A, C, E; MDHHS	Ongoing		X			
Buildings & Infrastructure	32	Continue enforcement of current State building codes (particularly for campground pavilions), applicable zoning codes, and soil erosion regulations with new construction through local permitting processes. Antrim County's Soil Erosion and Sedimentation Code (intended to be updated) is applicable if the project involves earth change that disturbs one or more acre, or is within 500 feet of a lake, stream or wetland.				X							Countywide	County and Local Governments	A, B, Y, MM	Ongoing		X		X	
	32a	Continue enforcement of building codes and EGLE permitting requirements by verifying floodplains, EGLE-designated Critical Dune areas and High Risk Erosion Areas relative to new construction or site modification.				X							Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	County Building Dept., EGLE	A, B, R-U	Ongoing		X			
	32b	Consider revising zoning code requirements in high fire-risk areas to include wildland fire risk mitigation practices (i.e., provide a 25 foot cleared space/defensible space between houses and other structures.)			X								Countywide	County Building Dept.; local governments with zoning (Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.)	A, B, C, M, N			X			
	33	Create a special county construction code to address updated wind loads on one and two-family structure types.		X									Countywide	County Building Dept.	A, B, CC, DD				X		
	34	Improve the ability of public buildings to shed or hold snow load.	X										County and Local Government Buildings	County and Local Governments	A, B, BB - DD				X		
	35	Promote the availability of low-cost residential weatherization and home improvement programs.	X	X	X	X		X				X	Countywide	NMCAA	F, G, H				X		X

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Buildings & Infrastructure	36	Evaluate the need/potential to provide reduced-cost program to install air conditioning in the homes of low-income senior citizens.			X				X		Countywide	Antrim County Commission on Aging	D, G, I						X				
	37	Improve ventilation techniques in areas, facilities, or vehicles that are prone to crowding or that may involve exposure to contagion or noxious atmospheres.							X		Countywide	Local and county governments, schools, private venues.	A, B, BB - DD						X	X			
	38	Continue to pursue opportunities for brownfield and blight clean-up activities, including demolition and clearance of vacant, condemned structures, to remove actual and potential sources of land, water and air contamination.		X	X	X				X	Countywide	Antrim County Brownfield Authority; Local Governments	A, B	Ongoing					X	X	X	X	
	39	Inventory and prioritize improvements for flood prone locations				X					Countywide	ACRC, Drain Commissioner, Villages, Townships, land management agencies	R -T, W, BB - DD, XX						X	X			
	40	Complete infrastructure improvements in areas of high flooding potential, such as upgrading aging stormwater abatement structures, or replacing undersized/aging culverts and bridges to improve river function and high volume streamflow.				X					Countywide	ACRC, MDOT, Villages, Townships		As needed						X	X		
	40a	Reconstruct: Bridge Street culvert at the river between St. Clair Lake and Ellsworth Lake; C-48/Lake St. bridge over Skinner Creek by Tapawingo restaurant; and the East Jordan Road (C-48) culvert at a tributary to St. Clair Lake.				X					Village of Ellsworth, Banks Twp.	ACRC; Village of Ellsworth, Banks Twp.	A, B, BB - DD							X	X		
	40b	Replace/upsze culverts over Spencer Creek on Coy St., Smalley, St., Manley Rd, Valley St.; and over creek on SE Torch Lake Drive, north of W. Elder Rd.				X					Helena Twp., Hamlet of Alden	ACRC, Helena Twp., Hamlet of Alden	A, B, BB - DD							X	X		
	40c	Replace/upsze culverts on Cottage Drive along north side of Clam Lake				X					Forest Home Twp.	ACRC, Forest Home Twp.	A, B, BB - DD							X	X		
	40d	Replace/upsze culverts on/around Shanty Creek Golf Course; control runoff and flooding around Batchelder Rd.				X					Shanty Creek Resort, Custer Twp.	ACRC; Shanty Creek Resort, Custer Twp.	A, B, BB - DD							X	X		
	40e	State Street Bridge over Intermediate Lake - upsze when due for replacement				X					Village of Central Lake	Village of Central Lake	A, B, BB - DD							X	X		
	40f	Mohrmann Bridge Rd. over the Green River - upsze when due for replacement				X					Central Lake Twp.	ACRC, Central Lake Twp.	A, B, BB - DD							X	X		
	40g	Continue to evaluate the best course of action to mitigate the deteriorating culverts/street infrastructure at water crossings on Dexter and Cedar Streets, considering that area is part of the hydro dam overflow zone.				X					Village of Elk Rapids	Village of Elk Rapids	A, B, BB - DD							X	X		
	40h	Inventory coastal erosion problem areas, including problem roads/culverts (some sites identified in June 2022 field trip).				X					Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids; ACRC; MDPT, homeowner associations	A, B, R-V, BB, DD, OO, PP						X				X
	41	Investigate possibly relocating structures in areas prone to coastal flood damage and erosion. Reference LIAA's Northwest Michigan Coastal Resilience Atlas to identify and promote awareness of the impacts to public and private properties from "lucky", "expected" and "perfect storm" coastal flooding scenarios, as well as the predicted advancement of coastal recession.	X		X					X	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	Townships of Banks, Torch Lake, Milton, and Elk Rapids; Village of Elk Rapids	A, B, R - W, BB DD							X	X		X

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Buildings & Infrastructure	42	Continue enforcement of Milton Township's Septic Inspection and Property Transfer Ordinance to protect public health and prevent or minimize the degradation of groundwater and surface water quality from malfunctioning sewage treatment and disposal systems.				X					X	Ongoing		X	X	X			
	43	Per the 2016 The Septic Question report by TOMWC and HDNWMI, consider the use of pilot program initiated by local governments to evaluate a trial Septic Inspection ordinance in other communities. Target the most urgent areas for protection when considering mandatory pumping or inspection ordinances. For example an Overlay District could target properties with septic systems within 1,000 feet of an inland lake or stream or a Great Lake.			X					X	Communities in the ERCOL watershed and/or adjoining Lake Michigan (Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them); particularly areas with identified "Special Flood Hazard Areas" on FIRMS	Communities in the ERCOL watershed and/or adjoining Lake Michigan; The Watershed Center; HDNW MI	A, B, E, Y, NN - TT		X	X	X		
	44	Support the implementation of the Watershed Center for Grand Traverse Bay's Septic System Management Plan, Action Step: 2.c.v.: Focus new educational efforts on community treatment systems in coordination with Three Lakes Association				X					Townships of Milton, Torch Lake, Central Lake, Forest Home, Helena, Custer, and Kearney; Village of Bellaire	Townships of Milton, Torch Lake, Central Lake, Forest Home, Helena, Custer, and Kearney; Village of Bellaire; The Watershed Center; HDNW MI	OO, SS	Ongoing	X	X	X	X	
Utilities & Technology	45	Continue work amongst the utility companies (GLE, Consumers E.), the Antrim County Road Commission & MDOT to clear vegetation (particularly diseased or dead trees) along various road and utility right-of-ways to minimize power outages and road blockages from storm damage.	X	X						X	Countywide	RC, MDOT, local villages, utility companies	A, B, O, P, MM, NN	Ongoing	X	X			
	46	Continue to maintain effective communications practices between electric utility companies regarding power restoration. (County EM to post and promote the electrical outage map on social media account.)	X	X	X	X		X			Countywide	Consumers Energy or Great Lakes Energy and the County Emergency Mgmt.	A, B, C, O, P	Ongoing				X	
	47	Investigate opportunities to bury overhead utilities, such as during new construction or in areas regularly prone to power outages.	X	X	X				X		Countywide	Consumers Energy or Great Lakes Energy	A, B, O, P, CC, DD		X	X			
	48	Document occurrences of electrical interruptions during storms and collaborate with electric companies to improve the resiliency of the infrastructure in these areas.	X	X	X	X			X		Countywide	Citizen volunteers, Consumers Energy or Great Lakes Energy	B, O, P		X			X	
	49	Continue to maintain community water and/or sewer infrastructure at acceptable operating standards.				X				X	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona, Ellsworth (water only).	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona, Ellsworth (water only).	B, E, EGLE	Ongoing	X	X			
	50	Separate storm and sanitary sewer systems where applicable.	X	X		X				X	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	B, EGLE		X	X	X		
	51	Identify the locations of where backup generators on wastewater pump chambers are needed to alleviate manual pumping/hauling in the event of a power outage, and apply for funding.	X	X		X				X	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	B, CC, DD			X			
	52	Install backflow prevention valves on stormwater discharge and water supply locations as needed.		X		X				X	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	Villages of Elk Rapids, Bellaire, Central Lake, Mancelona.	A, B, CC, DD			X			
	53	Update and maintain Continuity of Operations (COOP) plans and alternative "remote work" schedules.								X	County Government and Local Government Agencies; Public Schools	County Government and Local Government Agencies; Public Schools	A, B, School Systems	Ongoing	X				
	54	Continue to expand the availability of high-speed internet service to allow for widely available remote work/learning.								X	Countywide	Local service providers; Connected Nation MI	A, B, P, Q	Ongoing	X	X		X	
55	Utilize the ERCOL hydrology study tool completed in 2022 by the ACE to evaluate and prepare for potential impacts to the watershed in various scenarios.				X				X	Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them	Antrim County Drain Commissioner	A, B, OO - UU		X	X	X			

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Utilities & Technology	55a	Utilize the ERCOL hydrology model to predict the resulting hydrology of the upper chain of lakes if Lake Bellaire is dredged of excess sediment.				X							Townships of Banks, Central Lake, Echo, Forest Home and Kearney; Villages of Bellaire, Central Lake and Ellsworth	Antrim County Drain Commissioner	A, B, QQ			X	X	X
	55b	Utilize the ERCOL hydrology study tool to better predict impacts to major dams from high lake level scenarios.				X							Villages of Elk Rapids and Bellaire	Antrim County Drain Commissioner	A, B, QQ			X	X	X
	55c	Dredge sediment buildup near the Torch River Bridge to improve drainage capabilities and reduce inland flooding				X							Milton Township (Antrim County) and Clearwater Township (Kalkaska County)	Antrim County Drain Commissioner, Kalkaska County Drain Commissioner, EGLE	A, B, QQ, RR, UU			X	X	X
	55d	Replace the Six Mile Lake and St. Clair Lake water control structures. Utilize the ERCOL hydrology model to predict what type of new monitoring station design to use so that the floodplain won't be displaced and lake levels are sufficiently regulated.				X							Banks Township, Village of Ellsworth	Antrim County Drain Commissioner	A, B, AA - DD, QQ			X	X	X
	55e	Pursue funding to expand the ACE ERCOL model to include the hydrology of the Elk River in the Village of Elk Rapids.				X							Village of Elk Rapids	Antrim County Drain Commissioner	A, B, AA - DD, QQ			X	X	X
	55f	Pursue funding to expand and continue the ACE ERCOL hydrology model to include an evaluation of the Bellaire Dam's capacity.				X							Village of Bellaire	Antrim County Drain Commissioner	A, B, AA - DD, QQ			X	X	X
	56	Continue to maintain the Elk Rapids Dam, and create an updated Emergency Action Plan.				X							Village of Elk Rapids	Village of Elk Rapids, Antrim County Drain Commissioner	B, EGLE			X		
	57	Continue to maintain the Bellaire Dam with regular inspections by EGLE and update the EAP as needed.				X							Village of Bellaire	Village of Bellaire; Antrim County Drain Commissioner	A, EGLE	Ongoing		X		
	58	Continue to maintain Cedar River Dam on Derenzy Road with regular inspections by EGLE and update the EAP as needed.				X							Village of Bellaire	Antrim County Drain Commissioner	B, EGLE	Ongoing		X		
Environment & Natural Resources	59	Continue to utilize and promote the technical assistance, outreach and education pertaining to invasive species management (monitoring, treatment & removal) provided by non-profit and government agencies.									X	Countywide	ACD, CAKE CISMA, USDA-NRCS, MSUE, MDARD			Ongoing		X	X	X
	59a	Continue to provide invasive species management services with reduced-cost services for landowners.									X	Countywide	CAKE-CISMA,ACD	NN		Ongoing			X	X
	59b	CAKE-CISMA to investigate funding through NRCS EQUIP grants to provide workshops to help landowners with Autumn Olive management options.									X	Countywide	CAKE-CISMA	HH, LL - NN	0-2 Years				X	X
	59c	Continue to conduct annual routine invasive species surveying and monitoring to identify new emergent invasive species (such as Cypress Spurge or Leafy Spurge) before they get established and spread in the county.									X	Countywide	CAKE-CISMA, ACD	HH, MM - PP, RR - WW	Ongoing				X	X
	59d	Continue participation in EGLE's annual Great Lakes Aquatic Invasive Species "Landing Blitz" event at public boat launches, emphasizing the need to Clean, Drain, Dry boats whenever they come out of the water, and Dispose of any unwanted bait in the trash.									X	Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them	CAKE-CISMA,ACD	B, FF, NN - PP; RR - WW	Ongoing				X	X
	59e	Promote MSUE's "Clean Boats, Clean Waters" comprehensive aquatic invasive species boater outreach program; apply for grant funding to communicate aquatic invasive species prevention information through outreach materials and in-person educational events to boaters.									X	Townships of Echo, Kearney, Custer, Banks, Central Lake, Forest Home, Helena, Milton, Elk Rapids, Torch Lake and the villages within them	CAKE-CISMA,ACD		Annually		X	X	X	

	ANTRIM COUNTY HAZARD MITIGATION STRATEGIES	HAZARD TYPE								WHERE - Affected Locations or Groups	WHO - Responsible Parties	HOW - Resources	WHEN - Timeframe (Years)	PRIORITY TYPE (High, Med, or Low)	STRATEGY TYPE					
		Severe Winter Weather	T-Storm, High Winds, Hail, Tornado, Lightning	Wildfire	Flooding and Erosion	Rip Current	Extreme Temperatures	Drought	Invasive Species						Public Health Emergency	1	2	3	4	
Environment & Natural Resources	59f	Continue to promote EGLE's "NotMISpecies" webinars and resources on invasives control and management							X		Countywide	CAKE-CISMA,ACD	B, GG, NN - PP; RR - WW	Ongoing				X	X	
	59g	Determine if the invasive species autumn olive and russian olive are prone to wildfire.			X					X	Countywide	ACD, CAKE CISMA, MDNR, MSUE	JJ, LL - NN, MDNR Forestry Division					X	X	
	59h	Investigate alternative, effective and less expensive invasive species control measures, such as livestock grazing.								X	Countywide	ACD, CAKE CISMA, MDNR, MSUE	JJ, LL - NN, MDNR Forestry Division					X	X	
	60	Consider adoption of local ordinances that regulate activities to prevent the introduction of or the contribution to the spread of invasive species, such as prohibiting the use of invasive species in landscaping and/or vegetative riparian buffers, and permit treatment of existing infestations.								X	Antrim County; Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.	Antrim County; Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.	B, GG, MM, NN			X		X	X	
	61	Consider implementing spraying programs to control mosquito populations and prevent/reduce mosquito-borne diseases.								X	Countywide	Local governments	A, B, MDHHS				X			X
	62	Continue to identify and prioritize sites for open space protection/preservation, green infrastructure and/or stormwater management, especially in areas prone to flooding or erosion.				X		X		X	Countywide	ACD, Grand Traverse Regional Land Conservancy, lake associations	A, B, Y, AA, MM, VV, WW				X		X	X
	63	Establish a "green infrastructure" link system that connects and expands existing parks, preserves and greenways in the County.				X		X		X	Countywide	ACD, Grand Traverse Regional Land Conservancy, Antrim County, local governments, lake associations.	A, B, Y, AA, MM, VV, WW				X		X	X
	64	Incorporate green infrastructure and stormwater management into local master plans and recreation plans.				X				X	Antrim County; Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.	Antrim County; Villages of Bellaire, Central Lake, Elk Rapids, Ellsworth, and Mancelona; Townships of Banks, Elk Rapids, Forest Home, Helena, Kearney, Milton, and Torch Lake.	A, B, VV	Ongoing			X	X	X	
	65	Continue to provide the ACD's Healthy Landscapes Program to help lakeshore residents learn what they can do to help protect their property value and the health of the lake on which they live by protecting, stabilizing and beautifying their shorelines with nature-based solutions.				X					Countywide	Antrim County, ACD, lake associations	MM, QQ - UU	Ongoing			X	X	X	
	66	Regularly remove dead/diseased trees along the 30+ mile trail system at Glacial Hills Pathway & Natural Area and the 1.6 miles of trail at the Coy Mountain Natural Area.	X	X	X					X	Forest Home Township, Village of Bellaire, Helena Twp.	Helena Twp., Friends of Glacial Hills, Grand Traverse Regional Land Conservancy	A, B, VV, volunteers	As needed			X		X	
	67	Continue to provide ACD's Forest Management Plans and Best Management Practices for County forests and private landowners.	X	X	X	X		X	X	X	Countywide	ACD	MM	Ongoing			X		X	X
	68	Continue to conduct wildfire management such as prescribed burns and surface fuels management projects on open space/public land (this also encourages regeneration of native plant species).				X				X	Countywide	MDNR, GTRLC	VV, MDNR Forestry Division	Ongoing			X		X	
	69	Continue efforts to regularly clean up river and lake debris.				X					Countywide	River & Lake Associations, The Watershed Center, Grand Traverse Regional Land Conservancy, Antrim Conservation District, MDNR	MM - PP, RR - WW	Ongoing					X	X
70	Continue to regularly clean out plugged culverts (due to sediment deposits, beaver activity, invasive species, etc.)	X	X	X					X	Countywide	RC, MDOT, local villages	A, B, XX MDOT, ACRC	As needed			X		X		

ID	Resource	Description	Hazard Type	Website
A	Antrim County staff	Antrim County staff as appropriate	All hazards	https://www.antrimcounty.org/
B	Local government staff	All local units of government - employees, elected and appointed officials	All hazards	
C	Local Emergency Services and Fire Departments	MNDR Field Office (Bellaire); Banks Twp Fire (Ellsworth station), Bellaire Fire, Central Lake Fire, East Jordan Fire, Elk Rapids Fire, Elmira/Warner Fire (Elmira station), Manelona Fire (2 stations), Milton Twp. Fire (Kewadin and Radip City stations), South Torch Fire (Alden station), Star Twp. Fire (Alba station), Torch Lake Fire (Eastport station)	Severe winter weather; Thunderstorm, High Winds, Hail, Tornado, Lightning; Wildfire; Flooding; Extreme Temperatures; Public Health Emergency	
D	Antrim County Commission on Aging	The Antrim County Commission on Aging helps seniors and their families by answering questions, finding specific products and services, and by providing guidance on how to access a variety of programs and agencies available to residents of our County. Services include: Home-Delivered Meals ☐ Congregate Meals ☐ Dining Out Program ☐ Senior Project Fresh ☐ Personal Care ☐ Respite Care ☐ Homemaker Program ☐ Snow Removal Program ☐ Medical Transportation ☐ Flu Immunizations ☐ Medicare/Medicaid Assistance Program ☐ Volunteer Opportunities ☐ Loan Closet for Durable Medical Equipment ☐ Tax Assistance ☐ Monthly Newsletter ☐ Project Lifesaver ☐ Information & Assistance ☐ Assistance w/Unmet Needs	Severe winter weather; Thunderstorm, High Winds, Hail, Tornado, Lightning; Flooding; Extreme Temperatures; Public Health Emergency	https://www.antrimcounty.org/departments-services/commission_on_aging/index.php
E	Health Department of Northwest Michigan (HDNW)	Provide programs and services such as: immunizations; community clinics; school health services; permitting processes for proper location and installation of water wells and septic systems; education about cleaning, monitoring and maintaining septic systems; septic or well repair financial assistance, and the inspection and licensing of food service establishments.	Severe winter weather; Thunderstorm, High Winds, Hail, Tornado, Lightning; Flooding; Extreme Temperatures; Public Health Emergency	https://www.nwhealth.org/
F	Northern Michigan Community Action Association (NMCAA)	Weatherization Assistance Program and Emergency Home Repair Program for low- to moderate- income households. Provides food distribution via the following USDA programs: monthly food package to low-income senior citizens via the Commodity Supplemental Food Program (CSFP), and The Emergency Food Assistance Program (TEFAP) to low-income persons through a quarterly distribution.	Severe winter weather; Thunderstorm, High Winds, Hail, Tornado, Lightning; Flooding; Extreme Temperatures; Public Health Emergency	https://www.nmcaa.net
G	"MI HOPE" Grants (Michigan Housing Opportunities Promoting Energy Efficiency)	Program for up to \$25K to repair or replace roofs, doors, windows, insulation, heating/cooling systems, water heaters, security lighting, Energy Star appliances and electrical systems for eligible low-income residents.	Severe winter weather; Thunderstorm, High Winds, Hail, Tornado, Lightning; Flooding; Extreme Temperatures; Public Health Emergency	www.michigan.gov/mi-hope
H	Otsego-Antrim Habitat for Humanity	Critical Home Repair and Aging in Place Programs. Habitat selects partner families based on income, need and willingness to partner. They also help elderly persons preserve their independence by providing critical repairs to their house so they can safely stay in their home longer than they might have been able to without the repairs. Habitat affiliates use volunteer labor and donated materials to keep their costs low and take no profit for their services.	Flooding, Thunderstorms, Hail, High Winds, Severe Winter Weather, Lightning, Extreme Temperatures, Public Health Emergency	https://www.otsegoantrimhabitat.org/critical-home-repairs
I	Grand Traverse Regional Community Foundation	GTRCF supports a variety of community need areas, including youth, arts and culture, education, environment, and health and human services. We do this by promoting giving, engaging in collaborative leadership, supporting nonprofit organizations through meaningful grants and local students through scholarships, and building endowments that make a lasting impact for generations to come. Service area includes Antrim, Benzie, Grand Traverse, Kalkaska, and Leelanau Counties.	Invasive Species, Flooding, Extreme Temperatures, Public Health Emergency	https://www.gtrcf.org/
J	Groundwork Center for Resilient Communities	With roots firmly embedded in the pro-health, pro-environment, and pro-economy principles of a local food system, the Groundwork Food and Farming team creates markets for local farmers, and helps connect locally grown food to school children, food pantry clients and families across the state.	Public Health Emergency	https://www.groundworkcenter.org/food-farming/
K	Midwest Agriculture Climate Team	MAC-T members are Extension specialists and state climatologists from many of the states represented in the Midwest Climate Hub, and NOAA NVWS climate and weather specialists. The goal of this team is to share expertise regionally, discuss impacts and opportunities as it relates to agriculture and outlooks, and maintain an open line of communication so when weather/climate events do occur, the Midwest agriculture community is set to respond. The team meets monthly during the growing season regularly, and as needed during the winter season.	Drought, Extreme Temperatures, Flooding, Severe Winter Weather, High Winds, Hail	https://www.climatehubs.usda.gov/hubs/midwest/topic/midwest-agriculture-climate-team-mac-t
L	NWS Climate Prediction Center	The U.S. Drought Monitor is a map released every Thursday, showing parts of the U.S. that are in drought. The map uses five classifications: abnormally dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought: moderate (D1), severe (D2), extreme (D3) and exceptional (D4).	Drought	https://www.cpc.ncep.noaa.gov/products/Drought/
M	National Fire Protection Association Firewise USA Program	Firewise USA Program: Each applicant must create a board/committee, complete a community wildfire risk assessment with a 3-year action plan to reduce ignition risk to homes, and complete annual educational and risk reduction actions identified in the plan.	Wildfire, Drought	https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA
N	NFPA Community Wildfire Defense Grants	Communities can use these grants from the USFS in a variety of ways to reduce the wildfire risk to people and property. One key use is capacity building for wildfire mitigation. For example, communities can use the grants to support the implementation and enforcement of wildfire-related codes and standards; to train people to assess wildfire risk and implement effective mitigation measures; and to perform outreach to community members through programs like Firewise USA®. Communities that build these fundamentals—sound land use and building practices, a skilled workforce, and an educated public—will be better prepared for sustained and effective risk reduction and better equipped to take advantage of future federal grants that prioritize communities with codes in place.	Wildfire, Drought	https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire
O	Consumer's Energy Utility Services	Consumers Energy provides electrical and natural gas utility services. Energy through renewable energy sources is available. A power outage map is available to track outage locations.	All hazards.	https://www.consumersenergy.com/outage-map
P	Great Lakes Energy Utility Services	GLE provides electric and high-speed fiber internet and voice services. GLE provides an online power outage map to track outage locations. Also, Trustream's Status Map indicates where fiber internet is available or is being explored in the region.	All hazards.	https://www.gtlakes.com/power-outages/ https://www.trustreamfiber.com/status-map/
Q	Connected Nation Michigan	Connected Nation develops and provides the tools, resources, and methods that help states and communities create and implement solutions to their broadband and digital technology gaps. They assess and plan for the expansion of broadband access, adoption, and use. They empower people with technology skills and resources to improve their quality of life, and we develop public-private partnerships to bring technology access to targeted geographies and population.	All hazards.	https://connectednation.org/michigan/
R	Great Lakes Shoreviewer Tool	View aerial imagery of Lake MI shoreline and associated risk levels for coastline, infrastructure/roads, and buildings.	Shoreline flooding and erosion	http://www.greatlakesshoreviewer.org/
S	Northwest Lower MI Coastal Resilience Atlas	Mapped coastal flooding and coastal erosion based on three future climate scenarios for communities adjoining Lake MI; areas of the shoreline population, by census tract, that are most vulnerable to extreme heat events.	Shoreline flooding and erosion, Extreme Heat	http://www.resilientmichigan.org/nw_atlas.asp
T	State-designated High Risk Erosion Areas: programs and maps	High risk erosion areas are those shorelands of the Great Lakes where recession of the landward edge of active erosion has been occurring at a long-term average rate of one foot or more per year, over a minimum period of 15 years.	Shoreline erosion	https://www.michigan.gov/egle/about/organization/water-resources/shoreland-management/high-risk-erosion-areas
U	State-designated Critical Dune Areas	Michigan's critical dune program protects the dune resource using alternative construction techniques to reduce the impacts of development on dunes and protects dune vegetation essential to dune preservation and stability. Earthmoving, vegetation removal, and construction activities within a critical dune area are regulated through a permit program.	Shoreline erosion	https://Michigan.gov/CriticalDunes
V	Michigan EGLE's Coastal Zone Management Program	A plethora of resources to improve coastal and climate resiliency through both planning and best management projects.	Shoreline flooding and erosion	https://www.michigan.gov/egle/about/organization/water-resources/coastal-management
W	Resilient Lakeshore Heritage Program	This grant program is administered by the Michigan State Historic Preservation Office. Funding for the program is provided by the Paul Bruhn Historic Revitalization Grant from the National Park Service to support the preservation of historic buildings in rural communities located along the Great Lakes statewide.	Shoreline flooding and erosion	
X	Great Lakes Water Safety Consortium	A nonprofit community of BEST practice, connecting and serving safety experts & water enthusiasts, educating the public on safer ways to enjoy the water, and encouraging leaders to take bold action to make their shoreline safer for residents and visitors.	Coastal Hazards - rip currents	https://www.greatlakeswatersafety.org/
Y	EGLE's Wetlands Map Viewer	The WMV application was created for the Department of Environment, Great Lakes, and Energy to provide the public with quick and easy access to wetland spatial data.	Flooding, Drought, Extreme Temperatures	https://www.mcqi.state.mi.us/wetlands/mcqiMap.html
Z	EGLE's Michigan Oil, and Gas and Minerals Division Data Explorer	Interactive mapping tool to search for oil and gas well facilities and associated records throughout Michigan; list of oil and gas well types and status codes.	Flooding, Lightning, Tornado, Severe Winter Weather, High Winds	https://www.egle.state.mi.us/dataminer/ https://www.michigan.gov/egle/about/organization/oil-gas-and-minerals/oil-and-gas/oil-and-gas-well-type-and-status
AA	FEMA Floodplain Management Resources for Local Government Officials	How to participate with the NFIP and tools and resources to provide higher standards for floodplain management.	Inland and coastal flooding	https://www.fema.gov/floodplain-management/manage-risk/local
BB	FEMA Flood Mitigation Assistance (FMA) Grant Program	FMA is a non-disaster, competitive grant program that provides funding to states, local communities, federally recognized tribes. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. • \$800 million available in funding for FY22 • Application Period: September 30, 2022, to January 27, 2023 • Period of Performance: 3 Years • Cost-share: 25% non-federal • Severe Repetitive Loss (up to 100% federal) • Repetitive Loss (up to 90% federal) • Priorities are set each fiscal year	Inland and coastal flooding	https://www.fema.gov/grants/mitigation/floods

ID	Resource	Description	Hazard Type	Website
CC	FEMA Building Resilient Infrastructure and Communities (BRIC) Grant Program	BRIC is a non-disaster grant program, which provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. Funding has doubled for BRIC to \$2.295 billion for FY21. • Caps: States/Territories Allocation and Activities: \$2 million; Tribal set-aside: \$2 million; National Competition: \$2.133 billion • Application Period: September 30, 2022 to January 27, 2023 • Period of Performance: 3 year from start date on Recipient's federal award • Cost-share: 25% non-federal • Economically disadvantaged rural communities are eligible for 10% non-federal • Priorities are set each fiscal year	All hazards	https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities
DD	FEMA Hazard Mitigation Grant Program (HGMP)	HMGP is a post-disaster grant program, where funding is only made available under a Presidential major disaster declaration, in the areas of the State requested by the Governor. Federally-recognized tribes may also submit a request for a Presidential major disaster declaration within their impacted areas.	All hazards	https://www.fema.gov/grants/mitigation/hazard-mitigation
EE	HMGP Post-Fire Assistance (PFA) grant program	This grant funds projects that make a community more resilient after a designated wildfire disaster. States and federally-recognized tribes affected by fires resulting in a Fire Management Assistance Grant (FMAG) declaration on or after October 5, 2018, are eligible to apply.	Wildfire, Drought	https://www.fema.gov/grants/mitigation/post-fire
FF	State of MI: Resources and Best Practices to prevent and manage invasive species	Prevention tips and action steps to control or remove invasive species.	Invasive Species	https://www.michigan.gov/invasives/take-action
GG	EGLE's "NotMiSpecies" webinar series	This webinar series explores how agencies, universities and locally led organizations are working together to protect Michigan's natural resources through the Michigan Invasive Species Program. If you are concerned about the impacts of invasive species or interested in the techniques used to control them, join us as we examine species-specific actions, innovations in research and technology, and programs designed to help communities prevent and manage harmful invasive species.	Invasive Species	https://www.michigan.gov/invasives/take-action
HH	Michigan Invasive Species Grant Program	The Departments of Natural Resources, Environmental Quality and Agriculture and Rural Development work together to address strategic issues of prevention, detection, eradication, and control for both terrestrial and aquatic invasive species in Michigan. This program is designed to address strategic issues of prevention, detection, eradication and control for both terrestrial invasive species (TIS) and aquatic invasive species (AIS) in Michigan.	Invasive Species	www.michigan.gov/invasives/grants/misgp
II	Clean Boats, Clean Waters Program	Funding from the Michigan Department of Environment, Great Lakes, and Energy and the Great Lakes Restoration Initiative has enabled Clean Boats, Clean Waters to grow into a comprehensive aquatic invasive species boater outreach program. The program's mission is to prevent new aquatic invasive species introductions and limit their dispersal from water recreation activities through outreach and engagement. The program promotes understanding of boat cleaning practices and regulations through the distribution of educational materials, an online resource library, boat washing demonstrations, grants and partnerships.	Invasive Species	www.canr.msu.edu/clean_boats_clean_waters/index
JJ	Michigan State University Extension (MSUE)	Resources available for: training elected and appointed officials, agriculture and food support programs, and natural resources protections.	Inland flooding, shoreline erosion; Invasive Species; Public Health Emergency	https://www.canr.msu.edu/outreach/
KK	MSUE's Michigan Inland Lakes Partnership	The purpose of the Michigan Inland Lakes Partnership (Partnership) is to engage state and local agencies, Native American Nations, outreach institutions (universities and other educational institutions), non-governmental organizations (NGOs), businesses, industries and citizens in a collaborative effort to ensure the quality, sustainability and ecological diversity of lakes, while considering society's needs. The Partnership will promote communication and cooperation between partners, communities and citizens interested in the management of Michigan's inland lakes, educating leaders, and strengthening stewardship efforts.	Inland flooding, shoreline erosion; Invasive Species	https://www.canr.msu.edu/michiganlakes/convention/
LL	USDA Natural Resources Conservation Service (NRCS)	The NRCS helps America's farmers, ranchers, and landowners conserve our nation's resources through voluntary programs and science-based solutions.	Drought; Extreme Temperatures; Invasive Species; Public Health Emergency	https://www.nrcs.usda.gov/
MM	Antrim Conservation District	Our mission is to promote the exploration and conservation of Antrim County's natural resources. Our current programs include forestry, water quality and soil erosion, invasive species, and recycling/household hazardous waste. Our partners include: Michigan Agriculture Environmental Assurance Program (MAEAP), CAKE-CISMA, USDA-NRCS, MI On-Farm Produce Safety program, and several local recreation advocacy groups.	Flooding, shoreline erosion; Invasive Species; wildfire; drought	https://www.antrimcd.com/
NN	Charlevoix-Antrim-Kalkaska-Emmet Cooperative Invasive Species Management Association	CAKE-CISMA was established in 2015 as a joint effort between local conservation districts and various non-profits. Their mission is to protect the natural resources, economy, and human health of Northern Lower Michigan through collaborative outreach and management of invasive species. They host educational events at schools, conduct invasive species treatment days with local non-profits, and treat high priority invasive species throughout the 4 county area. Most often they work with terrestrial invasive species, but occasionally work with aquatic invasive species as well. A particular funding source they are looking into is the NRCS' Environmental Quality Incentives Program (EQUIP) grant to fund workshops for landowners about Autumn Olive management options.	Invasive Species	https://www.cakecisma.org/
OO	The Watershed Center Grand Traverse Bay	Advocates for clean water in Grand Traverse Bay and acts to protect and preserve the bay's watershed.	Flooding, Coastal Hazards, Invasive Species, Public Health Emergency	https://gtbay.org/
PP	Tip of the Mitt Watershed Council	Dedicated to protecting lakes, streams, wetlands, and groundwater resources of Antrim, Charlevoix, Cheboygan and Emmet Counties through respected advocacy, innovative education, technically sound water quality monitoring, thorough research, and restoration actions. The Watershed Council speaks for our members, including full-time and seasonal residents, lake associations, and businesses. We work to maintain the environmental integrity and economic and aesthetic values of the Great Lakes, inland lakes, rivers and streams, wetlands, and groundwater.	Flooding, Coastal Hazards, Invasive Species, Public Health Emergency	https://www.watershedcouncil.org/
QQ	Elk River Chain of Lakes - Watershed Plan Implementation Team	ERCOL-WPIT was formed in 2011 to implement activities pertaining to the Elk River Chain of Lakes in the Grand Traverse Bay Watershed Protection Plan. Organized by The Watershed Center and Tip of the Mitt Watershed Council, ERCOL-WPIT engages lake associations, local governments, area nonprofits, and interested citizens in collaborative efforts to protect and preserve water quality throughout the entire watershed.	Flooding, Coastal Hazards, Invasive Species, Public Health Emergency	https://gtbay.org/elk-river-chain-of-lakes-watershed-implementation-team/
RR	Torch Lake Protection Alliance	Encourages members to be good neighbors within their communities by keeping informed and acting when necessary to prevent activities harmful to Torch Lake. Promotes policies that are beneficial to Torch Lake. Places a priority on issues relevant to the protection of Torch Lake. Commissions academic and scientific research to understand and ensure the health of the lake. Consults and retains counsel to address erroneous behavior that compromises lake quality and safety.	Flooding, Invasive Species, Public Health Emergency, Drought	https://tla.co/
SS	Three Lakes Association	The mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes Watershed for all generations with emphasis on Lake Bellaire, Clam Lake, Torch Lake and their tributaries. From monitoring water quality to actively engaging with our local and state governments to providing grants for local science education in our schools, TLA has worked to insure that our lakes will remain the wonderful natural resource that we all love and enjoy.	Flooding, Invasive Species, Public Health Emergency, Drought	https://www.3lakes.com/
TT	Intermediate Lake Association	Dedicated to protecting and improving the water quality and wildlife habitat on Intermediate Lake.	Flooding, Invasive Species, Public Health Emergency, Drought	http://intermediatelake.org/home.htm
UU	Elk-Skegemog Lakes Association	ESLA's focus is in protecting the environment, monitoring development, tracking water quality and following trends in boating, fishing, and other uses of our lakes. ESLA has worked closely with other environmental organizations to sustain high water quality, responsible shoreline development, and safe recreational use.	Flooding, Invasive Species, Public Health Emergency, Drought	https://www.elk-skegemog.org/
VV	Grand Traverse Regional Land Conservancy	GTRLC's service area includes Antrim, Benzie, Grand Traverse, Kalkaska and Manistee Counties. Land conservation efforts are focused on protecting crucial wildlife habitat and corridors, critical watersheds, unique high-quality farm lands, valuable forestland and ecologically significant dunes along Lake Michigan's beautiful and endangered shore.	Flooding, Invasive Species, Coastal Hazards, Public Health Emergency, Drought, Extreme Heat	https://www.gtrlc.org/
WW	Conservation Resource Alliance	Current projects include: Wild Roots, a cost-share program offering native plants to property owners at a greatly reduced rate; and the River Care Program, which ensures that natural resource professionals maintain a consistent and prioritized action plan for each river in the organization's region. River Care professionals not only find and repair physical problems before they become worse, they also team with local agencies, residents, and interest group representatives for fact-based conversations. These cross-functional teams can speak openly and affect change in an agile, efficient and transparent way. CRA works in the 10-county northwest MI region, along with the southerly adjoining counties of Mason, Lake, Osceola, Oceana and Newaygo.	Flooding & Erosion; Invasive Species; Drought; Extreme Heat; Public Health Emergency	https://www.rivercare.org/
XX	Great Lakes Stream Crossing Inventory	Previously, individual inventories were conducted by partnership agencies, watershed organizations, and road agencies but were not readily accessible to stakeholders and did not contain comparable information. The newly developed protocol and datasheet are intended to promote consistent data collection, selection criteria for improvement projects, and selection of appropriate Best Management Practices for each project to benefit all stakeholders. Information gathered on the datasheet can and has been used to prioritize structure replacement and successfully seek funding.	Flooding & Erosion	https://great-lakes-stream-crossing-inventory-michigan.hub.arcgis.com/

STRATEGY TYPES

1	Local Planning & Regulations
2	Building & Infrastructure Projects
3	Natural Systems Protection
4	Education & Awareness Efforts

PRIORITY

HIGH
MEDIUM
LOW