

Michigan Severe Weather Awareness Week, 6-14, 2014



2013 New Baltimore Super Cell

The Michigan Committee for Severe Weather Awareness (MCSWA) was formed in 1991 to promote safety awareness and coordinate public information efforts regarding tornadoes, flooding, and winter weather.

INSIDE THIS PACKET

- **Michigan Committee for Severe Weather Awareness Contacts**
- **2013 Severe Weather Review**
- **Michigan Tornado History by County**
- **Tornado and Thunderstorm Safety**
- **Tornado and Thunderstorm Facts**
- **Flood Preparation and Planning**
- **Flood Insurance**
- **Lightning Safety**
- **Disaster Preparedness for Pets**
- **NOAA Weather Radio All Hazards**
- **National Weather Service Contacts**

For more information, visit the MCSWA Web site at www.mcswa.com or visit us on [Facebook](#).

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April 2014

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2013 Severe Weather Review

Once again Michigan residents were reminded in 2013 that severe weather can strike at any time. While most Michigan tornadoes occur from May to August during the afternoon and evening hours, a November 2013 severe weather outbreak hit Michigan with three reported tornadoes.

According to the National Weather Service (NWS), there were no deaths and only two injuries in Michigan from severe weather in 2013. The injuries resulted from severe thunderstorm winds. Flooding, severe thunderstorms and tornadoes were responsible for about \$277 million in damages in 2013, compared to \$210 million in damages in 2012.

In 2013, southeast Michigan had an above average severe weather season while the rest of the state recorded well below average activity. The state experienced less significant severe weather events in 2013 compared to 2012, but there were more days of severe weather especially for southeast lower Michigan. Even with the sporadic activity, the severe weather in Michigan still took a substantial toll on the state.

Flooding

Flooding in 2013 resulted in about 100 flooding events and 8 flash flood events statewide with damages in excess of \$140 million. The most significant flooding occurred in mid-April across central lower Michigan. Another round of significant flooding happened across upper Michigan in late April.

Record flooding occurred during the month of April and record crests occurred on the lower portions of the Grand River at Ionia, Lowell, Ada, Comstock Park, and Grand Rapids, Michigan. Due to the severity of the flooding, Michigan's Governor Rick Snyder declared a state of disaster for 19 counties and two cities. The two cities declared in the disaster were Grand Rapids and Ionia. The counties included in the disaster declaration included Barry, Gratiot, Ionia, Kent, Mecosta, Muskegon, Newaygo, Osceola, Ottawa, Midland and Saginaw. Hundreds of homes were flooded, over 300 roads closed, and flood damage estimates were in excess of \$40 million.

Late season melting of a significant snow pack caused minor to moderate flooding across west and north central Upper Michigan from April 28 to 30. Gogebic County was hardest hit by the flooding where numerous primary and secondary roads closed. Snow melt flooding also impacted Ontonagon, Houghton, Keweenaw, Baraga and Marquette counties. The upper Michigan flooding was responsible for in excess of \$4 million in damages.

Tornadoes and Severe Thunderstorms

In 2013, there were 11 tornadoes across the state, which is just below the average of 15. There were only three days in which the 11 tornadoes occurred. Six of the 12 tornadoes developed between Lansing and Flint on May 28, two tornadoes developed around midnight in Livingston County on August 28-29, and the last three developed with the severe weather outbreak of November 17. The strongest tornadoes were rated EF2 and hit areas just north of Fenton and near Goodrich on May 28.

Severe thunderstorm occurrences were again sparse across northern lower and the Upper Peninsula despite a more average temperature and precipitation pattern. The below average severe weather activity spread into southwest lower in 2013, leaving only southeast lower to experience more severe thunderstorm than in an average year.

The first severe weather event hit affected mainly southeast lower Michigan on April 18. A strong cold front was responsible for developing the thunderstorms. There were 16 reports of wind damage or downed trees as the line of thunderstorms passed over metro Detroit.

It wasn't until May 20 when the next round of severe thunderstorms hit the state. On May 20, there were 58 reports of damaging winds or large hail across central and southern lower Michigan. Winds of 70 to 75 mph knocked down numerous trees near Linden, Beaverton and Alma. A wind gust of nearly 60 mph blew over a semi-trailer on Interstate 75 near West Branch. There was also golf ball size hail in Kalkaska and Mecosta Counties. The May 28 tornado event started with some wind damage just north of Lansing. The first tornado touchdown west of Perry and by the time it was over, there were five more tornadoes including the EF2's near Fenton and Goodrich, an EF1 in the Beecher district of Flint, and an EF1 that was on the ground for 10 miles with a width over 500 yards around Byron. These tornadoes downed numerous trees, a few homes lost roofs and two homes were destroyed. May ended with another severe weather event on May 30. Across northern and southeast lower there were 36 reports of severe winds and hail including golf ball size hail in Midland.

June severe weather activity was limited just isolated event across the state except for June 17 and 25. On June 17, two isolated severe thunderstorms moved from Midland southeast to the northern suburbs of Detroit. Each of these storms produced golf ball size hail and wind gust up to 70 mph. The largest hail, 2 inches in diameter, fell in Genesee County while the strongest winds, in excess of 70 mph, were reported near Saginaw and Lapeer. Storms developed near southern Lake Michigan on June 25. The intensified and expanded in coverage across far southern lower Michigan. There were 17 reports of damaging winds and large hail across the southern tier of Michigan counties.

July featured a mid-month week long heat wave. Leading up to and through the heat wave there was very little severe weather activity. However when the cold front finally made it through the state on July 18 and 19, widespread severe weather erupted. There were over 80 distinct reports of mostly wind damage across the state. On the evening of July 18 severe storms tore through L'Anse Michigan producing a swath of straight-line wind damage. No injuries but a close call when a tree fell through a mobile home with a woman inside. Also on the evening of July 18, straight-line winds knocked down over 50 trees in Muskallonge State Park narrowly missing several campers. Then during the early morning of July 19 an 80 mph wind gust hit the shoreline of Helen Lake near Republic knocking hundreds of trees down. Trees crashed through one cottage, but miraculously the occupants escaped injury.

Severe weather in August was limited to a squall line that move from northwest lower Michigan southeast toward the Flint area during the early morning hours of August 7, some severe hail storms in the U.P. on August 21, wind damage in the U.P. during the early morning hours of August 26, and the two overnight Livingston County tornadoes on August 28-29.

Multiple thunderstorms moved over portions of the upper St. Mary's River Valley on September 10 producing a swath of 3 to 5 inches of rain on the northern half of Sugar Island. A large number of roads on the north side of the office were washed out or rendered impassable. The next day saw a round of severe thunderstorms across southern lower Michigan.

The most widespread severe weather damage across lower Michigan occurred during the combined severe thunderstorm and wind event on November 17-18. Numerous tree and powerline damage was reported across Michigan. This event also featured a several small tornados. There was an EF1 in the Cassopolis area, and EF0s in Muskegon, Newaygo and southern Otsego Counties. The combination of the tornadoes, severe thunderstorm winds and winds behind the cold front left over 600,000 homes and businesses without power and about \$70 million in damages.

The following is a list of tornadoes experienced by each county in Michigan.

County	1950-2013	2013	County	1950-2013	2013
Alcona	11	0	Lake	2	0
Alger	6	0	Lapeer	21	0
Allegan	29	0	Leelanau	4	0
Alpena	14	0	Lenawee	32	0
Antrim	9	0	Livingston	26	2
Arenac	7	0	Luce	3	0
Baraga	2	0	Mackinac	6	0
Barry	18	0	Macomb	20	0
Bay	13	0	Manistee	2	0
Benzie	4	0	Marquette	8	0
Berrien	31	0	Mason	5	0
Branch	17	0	Mecosta	9	0
Calhoun	16	0	Menominee	8	0
Cass	16	1	Midland	10	0
Charlevoix	4	0	Missaukee	8	0
Cheboygan	6	0	Monroe	33	0
Chippewa	6	0	Montcalm	11	0
Clare	8	0	Montmorency	6	0
Clinton	17	0	Muskegon	8	1
Crawford	11	0	Newaygo	13	1
Delta	11	0	Oakland	31	0
Dickinson	9	0	Oceana	5	0
Eaton	25	0	Ogemaw	14	0
Emmet	5	0	Ontonagon	3	0
Genesee	45	4	Osceola	16	0
Gladwin	9	0	Oscoda	5	0
Gogebic	3	0	Otsego	4	1
Grand Traverse	4	0	Ottawa	19	0
Gratiot	15	0	Presque Isle	6	0
Hillsdale	23	0	Roscommon	8	0
Houghton	1	0	Saginaw	23	0
Huron	13	0	Sanilac	15	0
Ingham	28	0	Schoolcraft	3	0
Ionia	17	0	Shiawassee	28	2
Iosco	12	0	St. Clair	21	0
Iron	6	0	St. Joseph	11	0
Isabella	13	0	Tuscola	17	0
Jackson	17	0	Van Buren	19	0
Kalamazoo	25	0	Washtenaw	27	0
Kalkaska	7	0	Wayne	29	0
Kent	31	0	Wexford	8	0
Keweenaw	2	0			

A single tornado can cross county lines. Therefore, the sum of the counties will not equal the total number of tornadoes statewide.

Tornado and Thunderstorm Safety

Preparing for a tornado or thunderstorm:

- Plan ahead. Be sure everyone in your household knows where to go and what to do in case of a tornado or thunderstorm warning.
- Know the safest location for shelter in your home, workplace, and school. Load-bearing walls near the center of the basement or lowest level generally provide the greatest protection.
- Know the location of designated shelter areas in local public facilities, such as schools, shopping centers, and other public buildings.
- Have emergency supplies on hand, including a battery-operated NOAA Weather Radio, flashlight, and a supply of fresh batteries, first-aid kit, water, and cell phone.
- Keep a three-day supply of food on hand. Keep some food in your supply kit that doesn't require refrigeration.
- Make an inventory of household furnishings and other possessions. Supplement it with photographs of each room and keep it in a safe place.
- Sign up to receive text or e-mail alerts from your local media, weather provider or the Weather Channel at www.weather.com.

What to do when a thunderstorm approaches your area:

- Stay tuned to your weather radio or local news station for the latest updates from the National Weather Service or go to the National Weather Service Web site, www.nws.gov.
- Seek safe shelter when you first hear thunder or when you see dark threatening clouds developing overhead or see lightning. To determine the proximity of the severe weather, count the seconds between the time you see lightning and hear thunder. If the time between is less than 30 seconds, ensure you are in a safe location and stay inside until 30 minutes after you last hear thunder or see lightning. Remember, lightning can strike more than 10 miles away from any rainfall.
- When you hear thunder, run to the nearest large building or a fully enclosed vehicle (soft-topped convertibles are not safe). It is not safe anywhere outside.
- If you are boating or swimming, get to land and seek shelter immediately.
- Telephone lines and metal pipes can conduct electricity. Any item plugged into an electrical outlet may cause a hazard during a tornado or thunderstorm. Do not use corded (plug-in) telephones except in an emergency.

What to do when a tornado warning is issued for your area:

- Quickly move to shelter in the basement or lowest floor of a permanent structure.
- In homes and small buildings, go to the basement and get under something sturdy, like a workbench or stairwell. If a basement is not available, go to an interior part of the home on the lowest level. A good rule of thumb is to put as many walls between you and the tornado as possible.
- In schools, hospitals, and public places, move to the designated shelter areas. Interior hallways on the lowest floors are generally best.
- Stay away from windows, doors, and outside walls. Broken glass and wind blown projectiles cause more injuries and deaths than collapsed buildings. Protect your head with a pillow, blanket, or mattress.
- If you are caught outdoors, a sturdy shelter is the only safe location in a tornado.
- If you are boating or swimming, get to land and seek shelter immediately.

After a tornado or thunderstorm:

- Inspect your property and motor vehicles for damage. Write down the date and list the damages for insurance purposes. Check for electrical problems and gas leaks, and report them to the utility company at once.
- Watch out for fallen power lines. Stay out of damaged buildings until you are sure they are safe and will not collapse. Secure your property from further damage or theft.
- Use only chlorinated or bottled supplies of drinking water. Check on your food supply. Food stored in a refrigerator or freezer can spoil when the power goes out.

Tornado and Thunderstorm Facts

1. What is a severe thunderstorm?

A severe thunderstorm produces large hail that is one inch in diameter or larger, damaging winds of 58 mph or greater, and/or a tornado.

2. What is a tornado?

A tornado is a column of violently rotating winds extending down from a thunderstorm cloud and touching the surface of the earth.

3. What is the difference between a tornado and a funnel cloud?

A funnel cloud is also a column of violently rotating winds extending down from a thunderstorm; however, it does not touch the earth as a tornado does.

4. How many tornadoes usually occur in Michigan every year?

Michigan experiences an average of 15 tornadoes annually. Since 1950, 243 persons have been killed due to tornadoes. During this same time, Michigan has experienced 982 tornadoes.

5. When do tornadoes generally occur?

Most tornadoes occur during the months of May, June, July, and August primarily in the late afternoon and evening hours. However, tornadoes can occur anytime of the day or night in almost any month during the year.

6. How fast do tornadoes travel?

Tornadoes generally travel from the southwest at an average speed of 30 mph. However, some tornadoes have very erratic paths, with speeds approaching 70 mph.

7. How far do tornadoes travel once they touch the ground?

The average Michigan tornado is on the ground for less than 10 minutes and travels a distance of about five miles. However, they do not always follow the norm and have been known to stay on the ground for more than an hour and travel more than 100 miles.

8. When is a tornado or severe thunderstorm watch issued?

A tornado or severe thunderstorm watch is issued whenever conditions exist for severe weather to develop. Watches are usually for large areas about two-thirds the size of Lower Michigan and are usually two-to-six hours long. Watches give you time to plan and prepare.

9. When is a tornado or severe thunderstorm warning issued?

The local National Weather Service (NWS) office issues a tornado warning whenever NWS Doppler Radar indicates a thunderstorm is capable of producing a tornado or when a tornado has been sighted by a credible source. A severe thunderstorm warning is issued whenever a severe thunderstorm is observed or NWS Doppler Radar indicates a thunderstorm is capable of producing damaging winds or large hail.

Warnings are issued for even smaller areas, such as parts of counties. These "storm-based" NWS warnings are issued for the threatened area in a shape of a polygon. The "polygon" warnings only include sections of a county or group of counties and usually last for 30 to 90 minutes in length. You must act immediately when you first hear the warning. If severe weather is near you, seek shelter immediately. If not, keep a constant lookout for severe weather and stay near a shelter.

10. What is a special marine warning?

The NWS will issue a special marine warning for the Great Lakes and the connecting waterways when a strong or severe thunderstorm develops or moves over the water. The special marine warning is issued for boaters, both recreational and commercial. For residents and visitors of Michigan's many coastal communities, the special marine warning provides valuable information about a storm that is about to move onshore.

11. How do I find out about a warning if my electricity is already out?

A NOAA Weather Radio All Hazards with battery back-up capability is your best source to receive the warning. In some areas, civil emergency sirens may be your first official warning. In addition, if your television or radio has battery back-up capability, you may receive NOAA's National Weather Service warnings from local media.

Steps to Prepare for a Flood

Flooding can occur during any season in Michigan. Planning in advance can afford you extra critical time when a flood is coming, and can help you increase the odds of protecting your valuable documents, your real estate, and your personal property – including cherished belongings. Developing a flood plan is one of the advance methods your family, business, or community can put together to help you respond quickly in the event of a flood near your property. A “rapid-response” plan can be as simple as a one-page plan that answers the following questions:

1. How will we find out about a coming flood?

The first part of a Flood Plan is putting yourself in a position to get some advance warning of an unfolding situation. Large-scale flooding on the main stem of a river may occur over many hours or several days, but flash floods can strike in minutes. Important steps you can take include signing up for flood alerts and monitoring weather patterns and local conditions. Flooding in Michigan can happen any time of year.

- Sign up for National Weather Service Flood Alerts at www.focusonfloods.org/flood-alerts
- Monitor river levels via NOAA Watch at www.noaawatch.gov/floods.php
- Determine your property's proximity to waterways by learning about and reviewing flood hazard maps at www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/understanding_flood_maps.jsp

2. At what river level does our property begin to flood?

First, determine “What’s Your Number?” by learning the flood stage at the stream gage nearest you. This information is available through the National Weather Service’s Advanced Hydrologic Prediction Services web site at <http://water.weather.gov/ahps>. Then, determine the level at which floodwaters begin to affect your property. This step may take research or personal experience to determine, such as talking to neighbors to find out how high the river was during recent floods, and at what point flooding began in your neighborhood. Each neighborhood and each property has its own unique terrain and placement to consider when determining this factor, and it is safest to err on the side of caution.

3. How can we prepare for floods?

Preparing your household for a flood involves steps that will improve your readiness for many different types of disasters. Give yourself plenty of time to evacuate by developing an emergency kit including first aid supplies, a three-day supply of non-perishable food, bottled water, a battery-powered radio, flashlights, and extra batteries. Also, have personal items ready like rubber boots, a rain jacket, warm clothes, and hygiene and sanitation products. Learn additional ways to prepare at www.ready.gov/floods

4. How will we learn about evacuation orders?

Contact your local emergency management office to find out how your community notifies residents of floods and how it will issue evacuation orders. Make a commitment to follow evacuation orders the first time to help prevent emergency personnel from having to return to the affected area for a rescue when travel is no longer safe.

5. What access roads can we use to evacuate in the case of rising waters?

Research indicates the majority of flood-related fatalities occur when cars become trapped on roads that are known to flood. To prevent this, follow instructions from emergency personnel and before a flood happens talk to neighbors, emergency personnel, and others to determine when and where flooding typically occurs on access roads leading to your home. Know what roads you regularly travel and whether or not they will flood, and plan alternate routes when needed.

6. What steps should we take to prepare our property?

Research the flood-proofing options available to you. Can you install a quick-disconnect furnace, or elevate electrical and mechanical equipment? Are there steps you can take to alleviate pressure on your structure and to prevent extensive damage to doors and windows if flooding does occur? For additional information about protecting your property from floods, visit www.mcswa.com.

7. Where should our family meet if we are separated during a flood event?

Before a flood or other emergency strikes, designate a safe place away from your home where your family members can all meet. Make sure that all family members know the location, you have a plan for contacting each other, and you have an emergency kit ready to take with you. In addition, it is important to know whether your child's school or family members' work place is in a flood zone. If so, what provisions are in place to ensure their safety?

8. How do I keep my family safe during a flood?

Floods are among the most frequent and costly natural disasters. For information on keeping your family safe before, during and after a flood, please visit www.mcswa.com

Other Considerations

- A written plan is essential for helping individuals and household members to think through important issues in advance. You should also research whether there are similar plans in place for your work and children's daycare and school, as well as to see how they work with your plan.
- Expect roadways to be blocked during a flood. Contact your friends and family to ensure they are safely sheltered. Listen to local media for flood-prone roads as well as making contact with neighbors in your area..
- Remember, the most common things people regret planning to protect during an emergency include pets, photographs, and computers. Can you pack all these in a vehicle and drive to higher ground in time? Ensure you have a plan in place to protect your pets and keepsakes before an emergency.

Helpful Flood Terms

- **Flood Watch:** Flooding is possible. Tune in to your NOAA Weather Radio, local radio, or television for information and check the flood alert sites on the Internet.
- **Flash Flood Watch:** Flash flooding is possible. Be prepared to move to higher ground and tune in to your NOAA Weather Radio, commercial radio, or television for information.
- **Flood Warning:** Flooding is occurring or will occur soon. If advised to evacuate, do so immediately.
- **Flash Flood Warning:** A flash flood is occurring. Seek higher ground immediately.

Flood Insurance

Why Buy Flood Insurance?

Flooding can occur during any season in Michigan. The National Flood Insurance Program (NFIP) estimates that 90 percent of all natural disasters involve flooding. A small amount of water can bring a tremendous amount of damage, and many property owners are unaware that their properties are at risk for flooding. A home located in the floodplain has a four times greater risk of flooding than burning, during the course of a 30-year mortgage.

What's worse: many property owners don't realize that their homeowners' or property owners' insurance doesn't cover flood damage. To be covered from flood damage, one must purchase National Flood Insurance through an insurance agent. Consider that even just an inch of water can require a property to replace carpet, drywall, floor boards, moldings, doors and other belongings. Additionally, clean-up of mud and residue can be costly, as can repairing any mold and mildew damage that may occur.

To help calculate flood damage that might occur to your home, visit www.floodsmart.gov and click on the link to learn more about "What Could Flooding Cost Me?"

1. Is flood damage covered by my homeowners insurance?

Flood damage is excluded in nearly all homeowners and renters insurance policies but, if desired, can be purchased as a separate policy.

2. Where do I get flood insurance?

Any licensed property/casualty insurance agent can sell a flood insurance policy. If you experience trouble in locating an agent, contact the National Flood Insurance Program's agent referral program at 1-888-CALL-FLOOD. You can also locate an agent by filling out your "One-Step Flood Risk Profile" at www.floodsmart.gov.

3. Is there a waiting period before my flood insurance policy becomes effective?

There is a 30-day waiting period before a new or modified flood insurance policy becomes effective. You can also locate an agent by completing your "One-step risk profile" at www.floodsmart.gov.

4. Do I need to live in a floodplain to get flood insurance?

It is important to note that nearly 30 percent of all flood claims come from outside the "100-year-floodplain" as determined by the National Flood Insurance Program. The fact that a property is outside of the "legal" floodplain does not mean that the river or stream can't still reach that property. You do not need to live in a floodplain to purchase flood insurance – coverage is available to any building located in a community that has qualified for the National Flood Insurance Program. For a listing of Michigan communities participating in the NFIP, you may visit www.fema.gov/cis/MI.html%20.

5. Is water back up in basements covered by a flood insurance policy?

Coverage for water back up in basements (drains/sewers) is excluded from the flood insurance policy.

6. Can I get coverage for water back up in basements?

Although basement water back up is excluded under most homeowners' insurance policies, coverage can be obtained by purchasing an endorsement. Most insurance companies offer sewer and drain back up as optional coverage. Coverage and limits vary by insurance company, so check with your agent/company about specifics. Some insurers include full coverage for sump pump failure while others specify items that are covered.

Flood Safety

Floods are among the most frequent and costly natural disasters. Conditions that cause floods include heavy or steady rain, for several hours or days, that saturates the ground. Flash floods occur suddenly due to rapidly rising water along a stream or low lying area.

Act Now To Be Prepared

- Learn the safest route from your home or business to high, safe ground should you have to leave in a hurry.
- Develop and practice a 'family escape' plan and identify a meeting place if family members become separated.
- Make an itemized list of all valuables including furnishings, clothing and other personal property. Keep the list in a safe place.
- Stockpile emergency supplies of canned food, medicine and first aid supplies and drinking water. Store drinking water in clean, closed containers.
- Plan what to do with your pets.
- Have a portable radio, flashlights, extra batteries and emergency cooking equipment available.
- Keep your automobile fueled. If electric power is cut off, gasoline stations may not be able to pump fuel for several days. Have a small disaster supply kit in the trunk of your car.
- Find out how many feet your property is above and below possible flood levels. When predicted flood levels are broadcast, you can determine if you may be flooded.
- Keep materials like sandbags, plywood, plastic sheeting and lumber handy for emergency water-proofing.

What should I do?

- Listen to area radio and television stations and a NOAA Weather Radio for possible flood warnings and reports of flooding in progress or other critical information from the National Weather Service (NWS).
- Be prepared to evacuate at a moment's notice.
- When a flood or flash flood warning is issued for your area, head for higher ground if necessary and stay there.
- Stay away from floodwaters. If you come upon a flowing stream where water is above your ankles, stop, turn around and go another way. Six inches of swiftly moving water can sweep you off of your feet.
- If you come upon a flooded road while driving, turn around and go another way. If you are caught on a flooded road and waters are rising rapidly around you, get out of the car quickly and move to higher ground. Most cars can be swept away by less than two feet of moving water.
- Keep children out of the water. They are curious and often lack judgment about running water or contaminated water.
- Be especially cautious at night when it is harder to recognize flood danger.

What supplies do I need?

- Water—at least a 3day supply; one gallon per person per day
- Food—at least a 3day supply of nonperishable, easy to prepare food
- Flashlight
- Battery powered or hand crank radio (NOAA Weather Radio, if possible)
- Extra batteries
- First aid kit
- Medications (7day supply) and medical items (hearing aids with extra batteries, glasses, contact lenses, syringes, cane)
- Multipurpose tool
- Sanitation and personal hygiene items
- Copies of personal documents (medication list and pertinent medical information, deed/lease to home, birth certificates, insurance policies)
- Cell phone with chargers
- Family and emergency contact information
- Extra cash
- Emergency blanket
- Map(s) of the area
- Baby supplies (bottles, formula, baby food, diapers)
- Pet supplies (collar, leash, ID, food, carrier, bowl)
- Tools/supplies for securing your home
- Extra set of car keys and house keys
- Extra clothing, hat and sturdy shoes
- Rain gear
- Insect repellent and sunscreen
- Camera for photos of damage

What do I do after a flood?

- Return home only when officials have declared the area safe.
- Before entering your home, look outside for loose power lines, damaged gas lines, foundation cracks or other damage.
- Parts of your home may be collapsed or damaged. Approach entrances carefully. See if porch roofs and overhangs have all their supports.
- Watch out for wild animals, especially poisonous snakes that may have come into your home with the floodwater.
- If you smell natural or propane gas or hear a hissing noise, leave immediately and call the fire department.
- If power lines are down outside your home, do not step in puddles or standing water.
- Keep children and pets away from hazardous sites and floodwater.
- Materials such as cleaning products, paint, batteries, contaminated fuel and damaged fuel containers are hazardous. Check with local authorities for assistance with disposal to avoid risk.
- During cleanup, wear protective clothing, including rubber gloves and rubber boots.
- Make sure your food and water are safe. Discard items that have come in contact with floodwater, including canned goods, water bottles, plastic utensils and baby bottle nipples. When in doubt, throw it out!
- Do not use water that could be contaminated to wash dishes, brush teeth, prepare food, wash hands, make ice or make baby formula.
- Contact your local or state public health department for specific recommendations for boiling or treating water in your area after a disaster as water may be contaminated.

- **"When in doubt, throw it out":** Dispose of food, beverages and medicine exposed to floodwaters and mud, including canned goods, capped bottles and sealed containers. Water may not be safe to drink, clean with, or bathe in after an emergency such as a flood. Use only bottled, boiled, or treated water until your water supply is tested and found safe.
- **Get rid of mold:** Mold can cause asthma attacks or irritate your eyes, nose and skin. Remove all items that have been wet for more than 48 hours. To clean hard surfaces, use commercial cleaning products or a bleach solution of 1 cup of bleach to 1 gallon of water.

Lightning Safety

Lightning can provide a spectacular display of light on a dark night, but this awesome show of nature can also cause death and destruction. Lightning is the visible discharge of electrical energy. It is often accompanied by thunder, which is a sonic boom created by the same discharge. If you hear thunder, lightning is a threat, even if the storm seems miles away and the sky is blue. The electrical energy from lightning seeks a path to the ground – your home, the trees in your yard, or even *you* can be the chosen path.

SAFETY TIPS

1. Plan your evacuation and safety measures. At the first sign of lightning or thunder, activate your emergency plan. Lightning often precedes rain, so do not wait for the rain to begin before suspending activities. No place is absolutely safe from lightning; however, some places are much safer than others. The safest location during lightning activity is a large enclosed building. The second safest location is an enclosed metal topped vehicle, but NOT a convertible, bike, or other topless or soft-top vehicle.
2. If outdoors, get inside a suitable shelter **IMMEDIATELY**. Your only safe choice is to get to a protected building or vehicle. Avoid seeking shelter under a tree as a tree can attract lightning. In the event you are outdoors without a safe vehicle or shelter, follow outdoor safety tips at www.lightningsafety.noaa.gov/outdoors.htm. Although these tips will not prevent you from being hit, they can HELP lessen the odds.
3. If indoors, avoid water, doors, windows, and using the telephone and headsets. Lightning could strike exterior wires, inducing shocks to inside equipment. Any item plugged into an electrical outlet may cause a hazard.
4. Do not resume activities until 30 minutes following the last observed lightning or thunder.
5. Injured persons do not carry an electrical charge and can be handled safely. If you are qualified to do so, apply first aid procedures to a lightning victim. Call 911 or send for help immediately.

For additional information, visit NOAA's lightning safety Web site:
www.lightningsafety.noaa.gov



Disaster Preparedness for Pets

The following information, prepared by the Humane Society of the United States, will help you become better prepared to care for your pets in a disaster or emergency.

Don't Forget Identification

- Your pets should be wearing up-to-date identification at all times.
- In addition to your phone number, include the number of a friend or relative. If your pet is lost, you want to provide a number on the tag that will be answered when you are away from your home.

Find a Safe Place Ahead of Time

- Don't wait until a disaster strikes to do your research.
- Evacuation shelters do not generally accept pets, except for service animals. Plan ahead to ensure your family and pets will have a safe place to stay.
- If you have more than one pet, you may have to prepare to board them separately. Make a list of boarding facilities and veterinary offices that might be able to shelter animals, including 24-hour telephone numbers.
- Ask your local animal shelter if it provides foster care or shelter for pets during an emergency. Animal shelters have limited resources so this should be your last resort.
- Contact hotels and motels outside of your immediate area to check policies on accepting pets. Ask about any restrictions on number of animals, size, and species, as well as whether a "no pet" policy would be waived during an emergency.
- Make a list of pet-friendly places and keep it handy. Call ahead for a reservation as soon as you think you might have to leave your home.
- Check with friends, relatives, or others outside of your immediate area. Ask if they would be able to shelter you and/or your animals, if necessary.

If You Evacuate, Take Your Pets

- The single most important thing you can do to protect your pets if you evacuate is to take them with you. If it's not safe for you to stay in the disaster area, then it's not safe for your pets.
- Animals left behind in a disaster can easily be injured, lost, or killed.
- Animals left inside your home can escape through storm-damaged areas, such as broken windows.
- Animals turned loose to fend for themselves are likely to become victims of exposure, starvation, predators, contaminated food or water, or other accidents.
- Do not leave your animals tied or chained outside during a disaster; this can be deadly.
- If you leave, even if only for a few hours, take your animals. You have no way of knowing if you will be allowed back into the area to care for your pet.
- Leave early; don't wait for a mandatory evacuation order. An unnecessary trip is better than waiting too long, making it unsafe to leave.
- Take pet food, medications, and special items with you such as leashes, toys, or a litter box.

In Case You Are Not Home

- An evacuation order may be issued, or a disaster may strike, when you're at work or out of the house. Make arrangements well in advance for a trusted neighbor to take your pets and meet you at a specified location.
- If you arrange for someone to take your pets, be sure the person is comfortable with your pets, knows where your animals are likely to be, knows where your disaster supplies are kept, and has a way to access your home.
- If you use a pet sitting service, discuss the possibility of getting their assistance well in advance.

Warning Systems

NOAA Weather Radio All Hazards

Voice of NOAA's National Weather Service

NOAA Weather Radio All Hazards is a service provided by the National Weather Service (NWS). It provides continuous broadcasts of the latest weather information and forecasts from your local NWS office. NOAA Weather Radio All Hazards broadcasts important forecast and warning information as quick as possible.

With NOAA Weather Radio All Hazards, you will always have access to potentially life-saving emergency information. During severe weather, NWS personnel can interrupt routine weather broadcasts and insert warning messages concerning immediate threats to life and property. A special alert tone can also be activated that triggers an alerting feature on specifically equipped receivers. In the simplest case, this signal activates audible or visual alarms indicating that an emergency condition exists within the broadcast area of the station. In the most sophisticated alerting system, receivers equipped with Specific Area Message Encoding (SAME) technology allow listeners to choose which counties and for what events their radio will sound an alarm when official NWS watches and warnings are issued.

NOAA Weather Radio All Hazards broadcasts warning and post-event information for all types of emergencies, both natural and technological. Working with other federal and local agencies, NOAA Weather Radio is an "all hazards" radio network. This makes NOAA Weather Radio All Hazards the single source for the most comprehensive weather and emergency information available to the public.

NOAA Weather Radio All Hazards is the voice of the NWS and is provided as a public service by the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). These life-saving receivers, that should be as common as home smoke detectors, can be purchased at many retail stores and through web sites that sell electronic merchandise. It provides the timeliest forecast and warning information from your local NWS office. This information can save your life.

For more information, including where you can buy a NOAA Weather Radio, visit www.nws.noaa.gov/nwr.

Wireless Emergency Alerts (WEAs)

Automatic weather warnings on your smart phone: no matter where you are

Imagine being on vacation when a tornado warning is issued for your area. How would you find out? If you own a smart phone, you no longer have to worry. The Federal Emergency Management Agency, the Federal Communications Commission, the National Weather Service, and CITA-The Wireless Association have developed a cell phone emergency alert system that will automatically notify you through a text-like message about urgent weather warnings, emergency messages from the President of the United States, and amber alerts. If you have a WEA enabled smart phone, you don't have to sign up or do anything...you already have it. If you are not sure if your phone supports this new technology, then check with your cell phone carrier. In many cases, all you may need to do is update your device's software.

Wireless Emergency Alerts are a point-to-multipoint system, which means alert messages will be sent to those within a targeted area, unlike text messages which are not location aware. For example, if a person with a WEA-capable device from Michigan happened to be in Minnesota when a flash flood threatens in that area, they would receive an "Imminent Threat Alert" on their device.

While these alerts will appear on a person's mobile device similar to a text message, Wireless Emergency Alerts are not text messages. Instead, WEAs use a different kind of technology to ensure they are delivered immediately and are not subjected to potential congestion (or delays) on wireless networks.

You can see additional information on the NWS' Wireless Emergency Alert website at http://www.crh.noaa.gov/news/display_cmsstory.php?wfo=crh&storyid=83063&source=0#faq2.

NATIONAL WEATHER SERVICE OFFICES

MARQUETTE: MQT

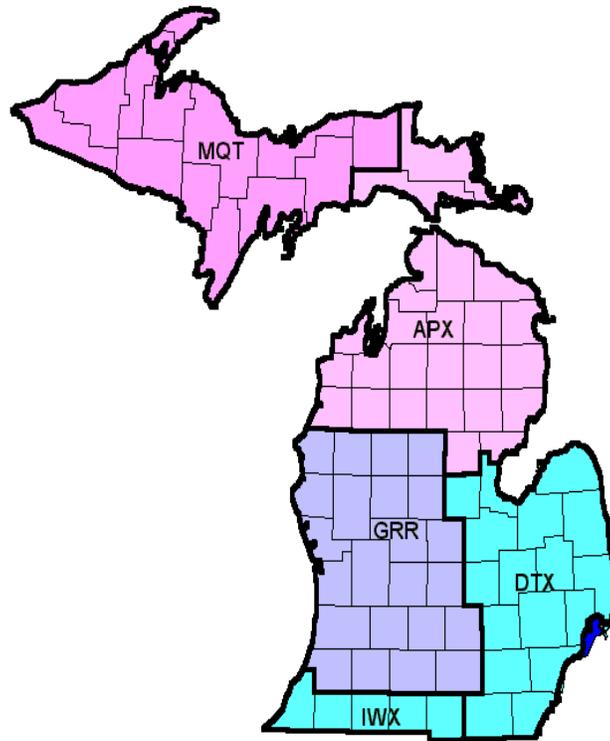
NWS Office, NOAA
112 Airport Dr. South
Negaunee, MI 49866
(906) 475-5782, Ext. 726
Contact: Matt Zika
Matthew.Zika@noaa.gov
<http://www.weather.gov/mqt/>

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NWS Office, NOAA
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Contact: Jim Keysor
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<http://www.weather.gov/apx/>

GRAND RAPIDS: GRR

NWS Office, NOAA
4899 South Complex Dr. SE
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(616) 949-0643, Ext. 726
Contact: Jim Maczko
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<http://www.weather.gov/grr/>



NORTHERN INDIANA: IWX

NWS Office, NOAA
7506 East 850 N.
Syracuse, IN 46567
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Contact: Michael Lewis
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DETROIT/PONTIAC: DTX

NWS Office, NOAA
9200 White Lake Rd.
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