

Revised and updated for 2020
Includes disease pandemic info

UPPER SKAGIT VALLEY DISASTER PREPAREDNESS GUIDE 2020

**Clear Lake
Sedro-Woolley
Day Creek
Lyman
Hamilton
Birdsview
Grasmere
Concrete
Rockport
Darrington
Marblemount
Newhalem
Diablo**

Want to help? Volunteer.

Would you like to learn more about preparing yourself or your family for a catastrophic event? Do you have an interest in helping your neighborhood before, during, or after an emergency? Are you able to help others with local emergencies? You can volunteer! There are a variety of programs in Skagit County that help our community prepare for natural disasters, pandemics, and emergencies.

Skagit County Department of Emergency Management (DEM) offers preparedness programs such as “Two Weeks Ready” and “Map Your Neighborhood” free of charge for anyone interested in learning about disaster resilience. Map Your Neighborhood builds and strengthens disaster readiness among neighbors, so the community as a whole is better prepared for any emergency.

For those wanting or willing to help beyond their immediate neighborhood, there are many ways to volunteer. Skagit County has active Community Emergency Response Teams (CERT) (see green box, this page), Search and Rescue groups (SAR), and Amateur Radio Emergency Services (ARES).

You can also get registered as an Emergency Worker. The Skagit County Emergency Worker Program is part of state law. Our emergency workers provide valuable services to our community through their training, knowledge, skills, and dedication. They are crucial during emergencies or disasters, and will be provided with orientation, training, and other materials as required for specific volunteer needs. There is a wide variety of volunteer opportunities and you don’t have to belong to a group to volunteer.

The Skagit County Sheriff’s Office Search and Rescue (SAR) program provides the county with highly trained and skilled members to assist in the location and rescue of missing and lost individuals who may be injured or in dangerous conditions, and are unable to rescue themselves. The SAR program includes land, water, canine, and off-road groups. Rescues and searches occur from the salt water of Puget Sound to the backcountry of the North Cascade



mountain range.

Amateur radio operators help their communities in good times and bad, through community events, disaster response, and various programs. The Amateur Radio Emergency Service (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment with their local ARES leadership for communications duty in the public service when disaster strikes. People use ham radios to talk across town, around the world, or even into space, without Internet or cell phones. It’s fun, social, educational, and can be a lifeline during times of need. You don’t need to be licensed or have equipment to get started. Our ARES group helps during training exercises, SAR responses, Emergency Operations Center activations, and more. Call DEM to get connected with the local radio crew, and check out Web sites, such as AARL.org/ARES, for more amateur radio information.

Call Skagit DEM at 360.416.1850 or e-mail dem@co.skagit.wa.us for more information on any of these programs. We want to help you prepare and, if able, to prepare you to help others. Skagit Department of Emergency Management can help you volunteer as an individual through the Emergency Worker Program or as part of CERT, SAR, or ARES groups to make your community better prepared for emergencies. The staff at DEM thanks you for your preparedness and volunteer efforts.

—Submitted by
Skagit County DEM



Concrete Herald

The Voice of the Upper Skagit Valley

Jason K. Miller, publisher and editor 360.853.8213 / editor@concrete-herald.com

Proofreading: Chazlyn Lovely; Bookkeeping: Upriver Bookkeeping Services.

Contacts
Newsroom: 360.853.8213 / editor@concrete-herald.com // Advertising: 360.853.8213 / ads@concrete-herald.com
Letters: P.O. Box 682, Concrete, WA 98237 / letters@concrete-herald.com // Classifieds: P.O. Box 682, Concrete, WA 98237 / classifieds@concrete-herald.com

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From the editor

The beauty of our surroundings brings with it a certain level of risk. Sometimes it’s easy to forget that the same forces that acted on the landscape during past centuries might affect our lives during our relatively short stay on this planet. The same river that provides lovely views and recreation opportunities can swell or change course. The same mountains that offer gorgeous vistas could erupt with little warning. Lightning can spark wildfires. The earth can shake and slide.

Each natural disaster addressed in this guide carries with it a level of risk. For example, it’s important to understand that some form of flooding in the Upper Skagit Valley is almost a certainty during the rainy winters, and that volcanic activity or a dam breach is far less likely.

This guide isn’t meant to induce panic. That’s not a productive use of your time. Rather, it aims to educate, to bring everyone in the Upper Skagit Valley onto the same page, to make everyone aware of the emergency networks in place within the municipalities and on county lands. If we all understand how the current systems work, we can make informed decisions for our families in the event of a natural disaster.

This guide is an annual effort, published each September during National Preparedness Month. Your feedback is most welcome, and can be e-mailed to editor@concrete-herald.com or mailed to P.O. Box 682, Concrete, WA 98237.

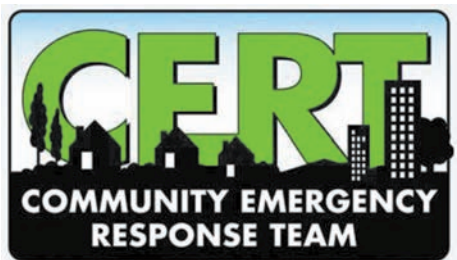
Don’t panic. Prepare. It makes good sense.

—J. K. M.

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If an earthquake or other major disaster struck your neighborhood, would you be willing to help rescue people and provide basic first aid until

police, fire, and EMS personnel arrive? If so, then join the Community Emergency Response Team (CERT). The CERT program educates people about disaster preparedness. CERT training is available in Skagit County. Upcoming training dates and more information can be found online at www.skagitcert.org, by e-mailing dem@co.skagit.wa.us, or by calling 360.416.1850.

Floods and winter storms are almost a certainty in the wet Upper Skagit Valley. If the Skagit River doesn’t flood, you can practically bet some smaller tributary will jump its banks and cause trouble. And we’re not alone: Floods are the most common natural disaster in the U.S.

Flooding in the Upper Valley is a relatively forecast event, said Skagit County Dept. of Emergency Management (DEM) Chief Bob Dolhanyk.

“There’s a little time to get the word out to start sandbagging or evacuating a flood-prone area,” said Dolhanyk.

In the event of major flooding that could harm life or property, DEM may “stand up” its Emergency Coordination Center, working closely with the county’s Public Works Dept., which often will start work before the ECC has been activated. DEM may coordinate calls for assistance as the Skagit 911 center starts to get overloaded. You’ll find DEM and Public Works personnel closing roads, getting evacuation messages out to the public, working with the county commissioners if a state of emergency needs to be declared. “We get the word out,” said Dolhanyk.

As common as flooding is in the Skagit Valley, every year there are new residents who are experiencing it for the first time and who may not realize how quickly flood waters can come up. “Heed that evacuation warning!” Dolhanyk urges. Not doing so puts themselves and rescuers in tough—even dangerous—situations. Failing to evacuate flooded areas, entering flood waters, or remaining after a flood has passed can result in injury or death.

Floods may:

- Result from rain, snow, coastal storms, storm surges, and overflows of dams and other water systems.
- Develop slowly or quickly. Flash floods can come with no warning.
- Cause outages, disrupt transportation, damage buildings, and create landslides.

If you are under a flood warning, find safe shelter right away. Do not walk, swim, or drive through flood waters.

A mere six inches of moving water can knock you down, and one foot of moving water can sweep your vehicle

away. Stay off of bridges over fast-moving water. Determine how best to protect yourself based on the type of flooding. Evacuate if told to do so. Move to higher ground or a higher floor. Stay where you are.

When a flood threatens, prepare

Know the types of flood risk in your area. Visit FEMA’s Flood Map Service Center for information.

Sign up for CodeRED, Skagit County’s warning system, at the Skagit County DEM Web site. The Emergency Alert System (EAS) and National Oceanic and Atmospheric Administration (NOAA) Weather Radio also provide emergency alerts.

If flash flooding is a risk in your location, then monitor potential signs, such as heavy rain.

Learn and practice evacuation routes, shelter plans, and flash flood response.

Gather supplies in case you have to leave immediately, or if services are cut off. Keep in mind each person’s specific needs, including medication. Don’t forget the needs of pets. Buy extra batteries and charging devices for phones and other critical equipment.

Purchase or renew a flood insurance policy. It typically takes up to 30 days for a policy to go into effect and can protect the life you’ve built. Homeowner’s policies do not cover flooding. Get flood coverage under the National Flood Insurance Program (NFIP).

Keep important documents in a waterproof container. Create password-protected digital copies.

Protect your property. Move valuables to higher levels. Declutter drains and gutters. Install check valves. Consider a sump pump with a battery.

Surviving a flood

Depending on where you live, and the impact and the warning time of flooding, go to the safe location that you previously identified.

If told to evacuate, do so immediately. Never drive around barricades. Local responders use them to safely direct traffic out of flooded areas.

Listen to CodeRED, EAS, or NOAA Weather Radio for current emergency information and instructions.

Reminder: Do not walk, swim, or drive through flood waters. Stay off bridges over fast-moving water. Fast-moving water can wash bridges away without warning.

FLOODS & WINTER STORMS

If your vehicle is trapped in rapidly moving water, stay inside the vehicle. If water is rising inside the vehicle, seek refuge on the roof.

If trapped in your house or another building, go to its highest level. Do not climb into a closed attic; depending on the severity of the event, you could become trapped by rising floodwater. Go on the roof only if necessary. Once there, signal for help.

After the flood

Listen to your municipality or county authorities for information and instructions. Return home only when authorities say it is safe.

Avoid driving, except in emergencies. Snakes and other animals may be in your house. Wear heavy gloves and boots during clean up.

Be aware of the risk of electrocution. Do not touch electrical equipment if it is wet or if you are standing in water. If it is safe to do so, turn off the electricity to prevent electric shock.

Avoid wading in floodwater, which can contain dangerous debris and be contaminated. Underground or downed power lines can also electrically charge the water.

Use a generator or other gasoline-powered machinery only outdoors and away from windows.

For more information about flooding in Skagit County: www.skagitcounty.net/Common/Asp/Default.asp?d=Flood&c=General&p=floodmain.htm.

Winter storms and power outages

In the Upper Skagit Valley, power outages are relatively infrequent though not uncommon, especially during winter storms.

Puget Sound Energy serves our region and eastern Snohomish County. To report a power outage, call 888.225.5773 or go to pse.com, where you can access your myPSE account and view an outage map.

You can follow the utility on Twitter (@PSETalk) or Facebook. A myPSE app also is available.

Every storm is different, so be prepared and tune into local media, such as KSVU 90.1 FM and the Concrete Herald Web site (www.concrete-herald.com) or Facebook page.

Sources: Skagit County Dept. of Emergency Management, FEMA, pse.com.

Get to know your DEM

The Skagit County Dept. of Emergency Management (DEM)

aims to plan, protect, prevent, and mitigate in the event of a disaster. The department handles response coordination and recovery, which could last days, weeks, months, or years, depending on the scope of the disaster.

The office provides emergency management services countywide, working with municipalities via interlocal agreements.

DEM has assembled a comprehensive emergency management plan and a hazard mitigation plan. Both plans are approved at the state level, and are reviewed and resubmitted for approval every five years.

The office conducts exercises to ensure that its plans are valid and will work as written. “We exercise them to make sure we’re planning appropriately,” said DEM Chief Bob Dolhanyk. “We learn and improve.”

DEM also assists Skagit County municipalities with

their Emergency Action Plans (EAP), serving as a resource to assist them to make sure they make sense and don’t omit anything.

The DEM office reaches out to stakeholders who would be involved in response or recovery, such as fire and police departments, public works teams, and civilian industries that may have specific equipment or skill sets that DEM would need to help with a given situation, such as building or bridge inspection. When an emergency occurs, DEM will activate its Emergency Coordination Center as needed.

Public outreach is another key component of the DEM mission, aimed to educate Skagit County residents and keep them in a preparedness mindset. “It’s easy for people to think it will never happen to them,” said Dolhanyk. “You need to be prepared.”

LANDSLIDES

With the memory of the Oso landslide still fresh in our minds, residents of the Upper Valley and the Darrington/Oso area should make sure we are prepared for such a disaster.

Landslides have occurred in almost every state and can cause significant damage. They can move slowly and cause damage gradually, or move rapidly—as the SR 530 slide did—destroying property and taking lives suddenly and unexpectedly.

Most landslides are caused by natural forces or events, such as heavy rain and snowmelt (common in our region), earthquake shaking, volcanic eruptions, and simple gravity.

Landslides in our region are typically associated with periods of heavy rainfall or rapid snowmelt—or a simultaneous combination of the two—and tend to worsen the effects of flooding. Areas burned by forest and brush fires also are particularly susceptible to landslides.

Categories

Skagit County Department of Emergency Management (DEM) generally separates landslides into two categories: those that affect property and infrastructure, and those that add human lives to the mix.

For example, a landslide may close a road without causing fatalities. DEM would work with law enforcement and Public Works to set up signs and get warnings out to the public to stay away from the area. They would evaluate the surrounding areas to determine if more slides were coming, the current and expected conditions, and whether evacuations were needed.

The other scenario is worse: What if a landslide washes out a bridge or a road or

homes, so victims are injured or trapped or killed? “That’s a larger, Search-and-Rescue event, with a potential loss of life or injuries sustained,” said DEM Chief Bob Dolhanyk.

Parts of the Upper Valley are known to be prone to landslides because of historical incidents, including avalanches along that portion of SR 20 that is closed during the winter.

“Be overly cautious when traveling in areas that are prone to landslides,” said Dolhanyk.

How to prepare

Landslides generally happen in areas where they have occurred in the past, so learn about your area’s landslide risk by contacting the town or city hall for your municipality, or the county if you live on unincorporated county land. Landslides also can be referred to as mudslides, debris flows, mudflows, or debris avalanches.

Additional tips for landslide awareness:

- Learn about local emergency response and evacuation plans (see the appropriate page in this guide for your community).
- Talk to everyone in your household about what to do if a landslide occurs.
- Create and practice an evacuation plan for your family and your business, if applicable.
- Assemble and maintain an emergency preparedness kit (see p. 16).
- Become familiar with the land around where you live, and work so that you understand your risk in different situations.
- Watch the patterns of storm water drainage on slopes near your home, especially where runoff water

converges.

- Debris flows and other landslides onto roadways are common during rainstorms.
- Heavily saturated ground is very susceptible to mudflows and debris flows.
- Be aware that, generally, landslide insurance is not available, but that debris flow damage may be covered by flood insurance policies from the National Flood Insurance Program at www.floodsmart.gov.

If a landslide occurs or threatens

If you suspect a landslide is imminent, evacuate immediately. Inform affected neighbors if you can, and call 911, which will alert the county and local first responders to the situation.

- Listen for unusual sounds that might indicate moving debris, such as trees cracking or boulders knocking together.
- If you are near a stream or channel, be alert for any sudden increase or decrease in water flow, and notice whether the water changes from clear to muddy. Such changes may mean there is debris flow activity upstream, so be prepared to move quickly.
- Be especially alert when driving. Watch for collapsed pavement, mud, fallen rocks, and other indications of possible debris flow.
- If you are ordered to or decide to evacuate, take your animals with you.
- Consider a precautionary evacuation of large or numerous animals as soon as you are aware of impending danger.
- During severe storms, stay alert and awake. Many deaths from landslides occur while people are sleeping.

After a landslide

When a landslide occurs in your area,

continue to exercise caution.

- Stay away from the slide area until local officials say it is safe to enter.
- Listen to local stations on a portable, battery-powered radio for the latest emergency information.
- Watch for flooding. Floods sometimes follow landslides and debris flows.
- Check for injured and trapped persons and animals near the slide, without entering the slide area.
- Help people who require special assistance.
- Look for and report broken utility lines to appropriate authorities.
- Check your home’s foundation, chimney, and surrounding land for damage.
- Replant damaged ground as soon as possible because erosion caused by loss of ground cover can lead to flash flooding.

Sources: American National Red Cross, Skagit County Dept. of Emergency Management.

Below: This panoramic photo from the March 2015 issue of *Concrete Herald* shows the lingering scar left on landscape and lives after the March 22, 2014, SR 530 landslide. An entire neighborhood was completely destroyed in the blink of an eye that day. In the end, 43 lives were lost to one of the worst disasters in Washington state history.

In a seething rush estimated at 60 miles per hour, Hazel Hill between Darrington and Oso slid, pushing 5 million cubic yards of mud and debris into the North Fork Stillaguamish River and over SR 530. Two large slides happened one after another, followed within minutes by 15 smaller slides.

The slide’s fury was complete. It obliterated houses and barns, tore up chunks of SR 530, and even ripped clothes off the humans who survived its onslaught.



Large portions of the eastern Skagit and Snohomish counties are home to humans who have settled in woodland settings and other rural areas. These residents enjoy the beauty of the environment, but face the very real danger of wildfires.

Wildfires often begin unnoticed. They spread quickly, igniting brush, trees, and homes. In a wildfire, every second counts.

Prepare for the worst

Take the right steps to prepare for—and avoid—wildfires from destroying your property or your life.

- Learn about wildfire risks in your area.
- Talk with members of your household about wildfires—how to prevent them and what to do if one occurs.
- Post emergency phone numbers by every phone in your home.
- Make sure driveway entrances and your house number or address are clearly marked.
- Identify and maintain an adequate water source outside your home, such as a small pond, cistern, well, or swimming pool.
- Set aside household items that can be used as fire tools: a rake, axe, hand saw or chainsaw, bucket, and shovel. You may need to fight small fires before emergency responders arrive.
- Select building materials and plants that resist fire.
- Regularly clean roofs and gutters.

Plan ahead and stay as safe as possible during a wildfire.

- Plan and practice two ways out of your neighborhood in case your primary route is blocked.
- Select a place for family members to meet outside your neighborhood in case you cannot get home or need to evacuate.
- Identify someone who is out of the area to contact if local phone lines are not working.

If a wildfire is in your area

If you receive reports of a wildfire near your home, be ready to leave at a moment’s notice.

- Listen to local radio (KSVU 90.1 FM) and television stations for updated emergency information.

- Always back your car into the garage or park it in an open space facing the direction of escape.
- Confine pets to one room so that you can find them if you need to evacuate quickly.
- Arrange for temporary housing at a friend or relative’s home outside the threatened area.

Limit exposure to smoke and dust by following these tips:

- Listen and watch for air quality reports and health warnings about smoke.
- Keep indoor air clean by closing windows and doors to prevent outside smoke from getting in. If your house is equipped with a whole-house fan, turn it off.
- Use the recycle or recirculate mode on the air conditioner in your home or car. If you do not have air conditioning and it is too hot to stay inside with closed windows, seek shelter elsewhere.
- When smoke levels are high, do not use anything that burns and adds to indoor air pollution, such as candles, fireplaces, and gas stoves. Do not vacuum; it stirs up particles that are already inside your home.
- If you have asthma or another lung disease, follow your health care provider’s advice and seek medical care if your symptoms worsen.
- Consider purchasing an air purifier for one or more rooms in your home. They can make everyone more comfortable, especially while sleeping.
- If you have to spend time outdoors, wear a respirator mask that is rated to filter the fine particles in smoke.

If you need to evacuate, bring these supplies with you:

- Water: one gallon per person, per day (3-day supply). Food: Nonperishable, easy-to-prepare items (3-day supply).
- Flashlight, extra batteries.
- Battery-powered or hand-crank radio (NOAA Weather Radio, if possible), first aid kit.
- Medications (7-day supply) and medical items.
- Multipurpose tool, sanitation and personal hygiene items.
- Copies of personal documents (medication list and pertinent medical information, deed/lease to

WILDFIRES

home, birth certificates, insurance policies).

- Cell phone with chargers.
- Family and emergency contact information, extra cash.
- Emergency blanket, map(s).

After a wildfire

Do not return to or enter your home until fire officials say it is safe. Use caution when entering burned areas, because hazards may still exist, including hot spots, which can flare up without warning.

- Avoid damaged or fallen power lines, poles, and downed wires.
- Watch for ash pits and mark them for safety—warn family and neighbors to avoid the pits also.
- Watch animals closely and keep them under your direct control. Hidden embers and hot spots could burn your pets’ paws or hooves.

- Follow public health guidance on safe cleanup of fire ash and safe use of masks.
- Wet debris down to minimize breathing dust particles.
- Wear leather gloves and heavy-soled shoes.
- Cleaning products, paint, batteries, and damaged fuel containers need to be disposed of properly to avoid risk.

Ensure your food and water are safe.

- Discard any food that has been exposed to heat, smoke, or soot.
- Do not ever use water that you think may be contaminated to wash dishes, brush teeth, prepare food, wash hands, make ice, or make baby formula.

Sources: American National Red Cross, ready.gov.



EARTHQUAKES

An earthquake is the sudden, rapid shaking of the earth, caused by the breaking and shifting of underground rock. Earthquakes can cause buildings to collapse and cause heavy items to fall, resulting in injuries and property damage. Earthquakes can:

- Happen anywhere, although higher risk areas include California, Alaska, and the Mississippi Valley.
- Happen without warning.
- Cause fires and damage roads.
- Cause tsunamis, landslides, and avalanches.

In the Pacific Northwest, the Cascadia Subduction Zone (a.k.a. the Cascadia Fault) is a 1,000 km long dipping fault that stretches from Northern Vancouver Island to Cape Mendocino, Calif. This fault has made the news recently for its purported potential to cause catastrophic damage to most of Western Washington. With the exception of Sedro-Woolley, the communities in the *Concrete Herald* coverage area would not likely bear the full brunt of such an earthquake event, although services would likely be disrupted or cut off for weeks or even months afterward. If an earthquake happens, protect yourself right away. Drop, cover, then

hold on. If you're in a vehicle, pull over and stop. If you're in bed, stay there. If you're outdoors, stay outdoors. Do not get in a doorway and do not run outside.

Preparing for an earthquake

- Secure items, such as televisions and objects that hang on walls. Store heavy and breakable objects on low shelves.
- Practice "Drop, Cover, then Hold On" with family and coworkers. Drop to your hands and knees. Cover your head and neck with your arms. Crawl only as far as needed to reach cover from falling materials. Hold on to any sturdy furniture until the shaking stops.
- Create a family emergency communications plan that has an out-of-state contact. Plan where to meet if you get separated.
- Make a supply kit that includes enough food and water for at least three days, a flashlight, a fire extinguisher, and a whistle. Consider each person's specific needs, including medication. Do not forget the needs of pets. Have extra batteries and charging devices for phones and other critical equipment. See p. 16 for a sample

- kit list.
- Consider obtaining an earthquake insurance policy. Standard homeowner's insurance does not cover earthquake damage.
- Consider a retrofit of your building to correct structural issues that make it vulnerable to collapse during an earthquake.

During an earthquake

Drop, cover, and hold on. Drop to your hands and knees. Cover your head and neck with your arms. Hold on to any sturdy furniture until the shaking stops. Crawl only if you can reach better cover without going through an area with more debris.

- If in bed, stay there and cover your head and neck with a pillow.
- If inside, stay there until the shaking stops. Do not run outside.
- If in a vehicle, stop in a clear area that is away from buildings, trees, overpasses, underpasses, or utility wires.
- If you are in a high-rise building, expect fire alarms and sprinklers to go off. Do not use elevators.
- If near slopes, cliffs, or mountains, be alert for falling rocks and landslides.

After the shaking stops

Expect aftershocks to follow the largest shock of an earthquake.

Check yourself for injury and provide assistance to others if you have training.

- If in a damaged building, go outside and quickly move away from the building. Do not enter damaged buildings.
- If you are trapped, cover your mouth. Send a text, bang on a pipe or wall, or use a whistle instead of shouting so that rescuers can locate you.
- Save phone calls for emergencies.

Once you are safe, monitor local news reports via battery operated radio, TV, social media, and cell phone text alerts for emergency information and instructions. Tune to KSVU 90.1 FM in the Upper Skagit Valley.

Use extreme caution during post-disaster clean-up of buildings and around debris. Do not attempt to remove heavy debris by yourself. Wear protective clothing, including a long-sleeved shirt, long pants, work gloves, and sturdy, thick-soled shoes during clean-up.

For more information about earthquakes, go to <http://earthquake.usgs.gov/earthquakes/states/?region=Washington>. See also "Earthquake and Liquefaction" on p. 13.

Sources: *ready.gov*, *FEMA*, *Earthquake Country Alliance*, *USGS*, *Skagit County Dept. of Emergency Management*, *Pacific Northwest Seismic Network*.

Five dams have been built in the Upper Skagit Valley: two on the Baker River and three on the Skagit River. Puget Sound Energy (PSE) owns and operates the Upper Baker dam and the Lower Baker dam. Seattle City Light (SCL) owns and operates the Gorge, Diablo, and Ross dams on the Skagit River.

The possibility of dam failure is extremely unlikely. Upper Valley residents are encouraged, nonetheless, to understand the level of risk and prepare accordingly.

The dams play a large role in flood mitigation. If a flood scenario is imminent, the Army Corps of Engineers assumes temporary control of the dams and determines how much water to hold back vs. spill into the river channels. This helps to spare downstream communities from catastrophic flooding during a major storm event.

The Baker River Project is on a tributary of the Skagit River and typically controls about 20 percent of the flow in the Skagit River on average. The Skagit River Project, operated by Seattle City Light, sits far upstream on the main stem of the Skagit River and also controls about 20 percent of the flow on average. The other 60 percent of flows in the Skagit Valley are completely unregulated.

All five dams are regulated by the Federal Energy Regulatory Commission (FERC), which sends engineers for inspections on an annual basis.

The Baker dams

The Lower Baker dam was built in 1925 and is referred to as a semi-gravity arch dam, meaning its design combines gravity and a curved profile to

hold back Lake Shannon, its reservoir. In 1959 the Upper Baker dam was constructed. It is a gravity dam. Safety measures for the dams include:

- The first line of defense: On-site operators perform daily inspections of the dams.
- More than 200 instruments (piezometers and inclinometers) monitor the dams. Most are automated, so dam safety engineers and off-site generation operators can more easily monitor them. (Piezometers measure liquid pressure in the ground and in the reservoir; inclinometers measure variations in movement.)
- Upstream and downstream water levels are measured and monitored.
- Engineers and on-site operators perform periodic inspections.
- Maintenance projects are performed, such as another round of regrouting at the base of Lower Baker dam, a task that is done about every 30 years.
- Ongoing analysis occurs to determine if the dams could withstand a "potential maximum flood."
- Dam safety engineers also identify any potential "failure modes" of the dam. They install instruments based on potential failures—cracks, leaks, movement—to monitor those potential failures.
- Spillway gates are tested to make sure they're functioning properly.

If the Baker dams fail

The chances of failure without advance notice are slim. PSE would be notified by its instrument array of any

DAM FAILURE

early stages of failure. "We're confident that we would see something well in advance, and be able to act on that," said PSE Program Manager Miriam Decker. "If it was a really significant event, we'd be able to draw the reservoir down in order to reduce impacts downstream."

Decker said if PSE needed to open spillway gates, with potential inundation impact downstream, it would activate its Emergency Action Plan (EAP), notifying the county that it had an emergency condition at the dam. In the worst-case scenario of imminent failure, PSE would sound its early warning sirens (see photos and caption below) to notify Upper Valley residents.

The array of eight early warning sirens were installed in July 2018 and include a verbal message. The tone is distinct and is paired with a verbal message. Find the sounds here: pse.com/bakerriver (scroll down for siren detail).

The sirens are tested once a month. During the siren test, the sirens sound for less than one minute and include a test message. The siren test occurs on the second Monday of every month at 6 p.m.

If those sirens and message sound off at any other time, an emergency is present, and the sirens will continue to sound until deactivated.

Evacuation

In the unlikely event of a dam failure, PSE will active its EAP and sound the early-warning sirens. If the sirens sound

outside of a scheduled test or without prior notice from the local media, residents are urged to evacuate to higher ground, keeping north or south of the Skagit River.

For evacuation route information, contact Skagit County Dept. of Emergency Management at 360.416.1850, dem@co.skagit.wa.us, or online at skagitcounty.net/departments/emergencymanagement/main.htm.

Public notification enrollment

To stay informed, sign up to receive public notifications from Skagit and Whatcom counties via text message or e-mail.

For Skagit County public notifications via CodeRED, go to www.skagit911.us/contact.html.

For Whatcom County public notifications via Alertsense, go to www.whatcomready.org/public-alerts.

The Skagit dams

The three Seattle City Light dams on the Skagit River—Gorge, Diablo, and Ross, have become part of the landscape of the Upper Valley. Their construction and monitoring/maintenance regimens help to ensure they'll be around for

See **Dam Failure**, p. 8

Seven Steps to Earthquake Safety

Prepare

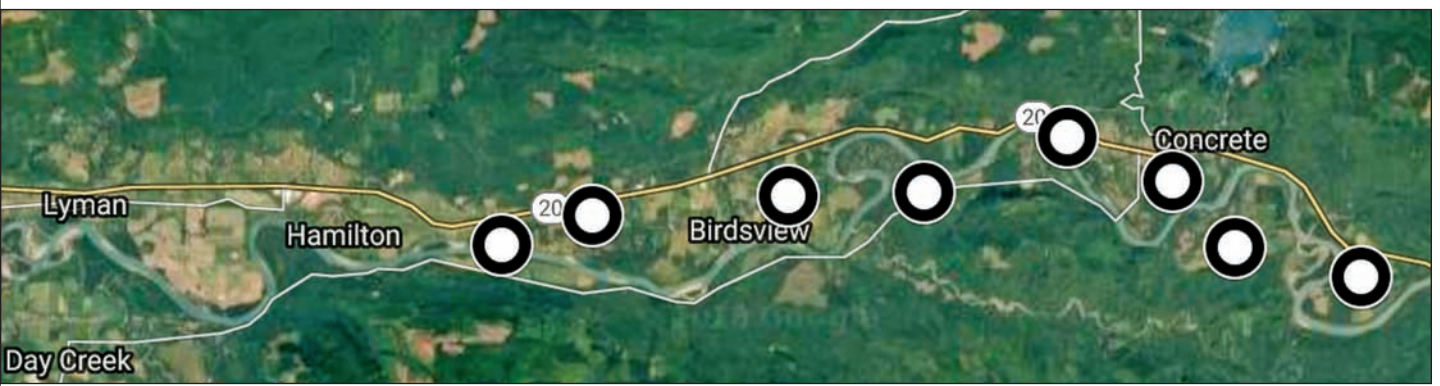
Before you experience a significant earthquake, follow these four steps to make you, your family, or your workplace better prepared to survive and recover quickly:

- Step 1:** Secure your space by identifying hazards and securing moveable items.
- Step 2:** Plan to be safe by creating a disaster plan and deciding how you will communicate in an emergency.
- Step 3:** Organize disaster supplies in convenient locations.
- Step 4:** Minimize financial hardship by organizing important documents, strengthening your property, and considering insurance.

Survive and recover

During an earthquake and immediately after is when your level of preparedness will make a difference in how you and others survive and can respond to emergencies:

- Step 5:** Drop, cover, and hold on when the earth shakes.
- Step 6:** Improve safety after earthquakes by evacuating if necessary, helping the injured, and preventing further injuries or damage. After the immediate threat of the earthquake has passed, your level of preparedness will determine your quality of life in the weeks and months that follow.
- Step 7:** Reconnect and restore. Restore daily life by reconnecting with others, repairing damage, and rebuilding community.



Above and right: Puget Sound Energy (PSE) brought online in July 2018 eight new dam safety sirens, located between Rockport and Hamilton. The map above shows the locations of the sirens, which can be found at the intersections of Cape Horn Rd. / Pinelli Rd., Lusk Rd. / SR 20, Wilde Rd. / SR 20, Cape Horn Dr. / South Skagit Hwy, Dalles Rd. / SR 20, Airport Way / Concrete High School, Concrete Sauk Valley Rd., and Thunderbird Lane / Moen Rd. Aerial image courtesy of PSE.



Dam Failure, cont. from p. 7

many more decades. The base of Ross Dam, for example, is 160 feet thick.

City Light's safety measures are similar to PSE's and just as exhaustive:

- 24-hour video surveillance includes a dam-crest hardwire on each dam that would lose its connectivity in the event of a dam breach, signaling an alarm. "We'd verify the failure with video, then hit the dam failure siren," said Brooks.
- Piezometers provide plenty of warning by measuring pressure in ground water and within the reservoir.
- Other sensors measure reservoir levels. If the lake level changes more than a specific amount within a certain amount of time, that triggers an alarm. A person is deployed and video is checked.
- All three dams have a daily inspection: A person walks the entire dam, checking for little things that are out of place or have changed.
- More thorough monthly inspections include additional items that are checked. Dam safety engineers perform periodic inspections. FERC inspects annually. Every five years an independent consultant is hired to

do a full review of SCL's dam safety program.

If the Skagit dams fail

If the threat of failure arose, SCL would activate its Emergency Action Plan and immediately start monitoring the development of the problem. That triggers a phone tree that reaches out to various emergency management agencies in Skagit and Whatcom counties, putting them on alert.

It's important to note that in reality, dams fail slowly, according to Rachael Brooks, a dam safety engineer for Seattle City Light. They don't suddenly disappear or dissolve into chunks and powder, as Hollywood would have us believe. Because of this fact, SCL would monitor the situation, staying in frequent contact with Skagit County Dept. of Emergency Management (DEM), letting them know how things were progressing, so they could evacuate if needed.

In the unusual event that something were to happen, the inundation that came would probably look most like a flood on the Skagit River.

There are seven total sirens for the SCL projects: Three in Newhalem, three in Diablo, and one at the Environmental

Learning Center near Diablo. There is a daily test at noon for all seven sirens. An annual dam failure siren test is performed too, generally near the beginning of the year, when there aren't many tourists in the area.

How to tell the sirens apart? The 911 siren slowly ramp up to a full tone for 60 seconds. The dam failure siren tone ramps up and holds for about three seconds, then repeats. In the event of an actual dam failure, the dam failure siren would continue in perpetuity, certainly longer than 60 seconds.

Evacuation plans

In the event of any dam failure, plan your possible routes to move uphill—fast. "Get as vertical as you can, as quickly as you can," said Brooks.

The responsibility to instruct Skagit County residents regarding dam failure protocol lies with Skagit County DEM. "Depending where you live along the river, you will have varying amounts of time to get out of the way," said DEM Chief Bob Dolhanyk. "The event likely will be similar to a severe flood event, and how quickly it will come downriver. If you live close to a dam, have a plan for getting to high ground in the shortest

amount of time. If you hear sirens or get an alert that a dam has failed, what is your immediate course of action? And make sure your gas tank is never less than half full."

For more information, contact Skagit County DEM.

PSE has produced a safety brochure that includes more detailed information about its operations and early warning system. A PDF of the brochure is online at pse.com townofconcrete.com. Hardcopies also are available at Concrete Town Hall and the Resource Center in Concrete, as well as the visitor's center at the PSE Lower Baker Office.

"We encourage schools, hospitals, and fire and police departments to work with towns and cities and the county to coordinate their evacuation routes," said PSE's Decker.

For a countywide evacuation plan, contact Skagit County DEM.

Sources: Seattle City Light, Puget Sound Energy, Skagit County Dept. of Emergency Management.

The emergency response needs of the unincorporated community of Clear Lake are served by Skagit County Fire District 4.

Fire District #4 was founded in 1946 and took delivery of its first engine on April 13, 1948. That engine has since been restored and is displayed at all of the fire departments community events.

The fire station is located on Jackson St. in Clear Lake. It was built in 1981 and currently houses two fire engines, a 3,000-gallon tender, and an aid car.

District 4 volunteer firefighters train up to twice weekly to keep up with the growing demand of the fire service and the citizens they serve.

The station tests its siren weekly, on Tuesday nights around 6:45 p.m.

For more information, call 360.856.6283 or go to www.clearlakefire.org.

Sedro-Woolley

With a population of about 11,500 in 2016, Sedro-Woolley is the largest municipality in the Concrete Herald coverage area, and therefore best able to respond to natural disasters.

Besides its fire and police departments, the city has "the knowledge and connections to handle most anything anybody would face," said Police Chief Lin Tucker. "We can gain access to equipment and services for anything that a limited disaster could produce."

A catastrophic regional earthquake would stress the city, however, Tucker said. "That would put us weeks away from assistance, but the city would be able to put together people and resources to take care of our own for a shorter amount of time. It depends on the disaster."

Flooding? Been there, done that, said Tucker. The city has only a few properties in harm's way should that occur, and is well prepared to address flooding.

In an emergency, Sedro-Woolley citizens should call 911, said Tucker. "That gets you directed to all city resources." With upwards of 100 city employees, the municipality may put those people to work, depending on the need. "we have access to vehicles, trucks, tractors—driving through floodwaters is easier with some vehicles," said Tucker. "The military can be called upon. The Street Department. the Garbage Department."

The city has opened City Hall for cold and hot weather emergencies, putting

people in sleeping bags on the floor and turning up the heat or AC as needed.

"And we've used SKAT in the past to move people from point A to point B," said Tucker.

Tucker said the city has long pondered what the stark realities could be in a disaster situation. "Our biggest fear is flooding, so we plan for that and we practice it regularly," he said.

An earthquake could be next in line, with bridges, roads, and other infrastructure damaged, leaving residents without power for three to four days. In such a case, residents would be well advised to prepare well and rely on friends and neighbors as needed.

The Sedro-Woolley School District is yet another resource, likely able to provide emergency shelter and transport.

Alerting responders and the public

In the event of smaller, daily emergencies, the fire department is "toned out" via a pager system that alerts firefighters to leap into action. The fire department includes about half a dozen live-in volunteer firefighters. An additional 40-50 volunteer firefighters live in the area.

CodeRED is the current go-to option for notifying the public. Tucker said Facebook and other social media outlets also are being used, and proving to be successful.

How should Sedro-Woolley residents respond?

Tucker offered the following tips for locals to respond to the disasters addressed in this guide:

Floods and winter storms

Know where you fall in a potential area to be flooded; most of city limits are not in that area. Know how you could be affected; be prepared and make a plan. Be prepared to evacuate.

Winter storms: Secure alternate heat sources. If you have to evacuate, bring warm clothes, blankets, extra gloves, hats, shoes ... and consider your vehicle to be your alternate safe place. If you have to bug out of your house, pretty much everything you need should be in your vehicle.

Landslides

Think about where you're going and what you're doing. Humans aren't good at looking up, but that's what you should do. If you're moving through an

CLEAR LAKE / SEDRO-WOOLLEY

area with a hill, look up! If you see a sign that says "Road Closed," believe it. It's a scary thing to see a tree jiggle on a hillside, then come toward you. Pay attention and know your exits. Know your alternate routes, that little gravel road that you can cut through. Think about where a threat is coming from; orient on that and it will be less of a threat: If you know a hill could slide across a road, don't go on that road.

Don't rely on your cell phone; in a crisis, cell phones will die. No service! We'll lose communication. You need to be able to take care of yourself for a period.

Wildfires

Do all those things that the fire dept. suggests. Clean your property. No long dead grass. Don't make it worse by setting a wildfire. Don't burn during a Burn Ban.

Be vigilant: Watch and report. Some of the recent fires were set by people. Pay attention and keep flammable stuff away from your residence; that's the most important advice. If you get notice of evacuation, consider evacuating, because you will likely put people in harm's way if they have to come back if you're in trouble. It's not just about you.

Earthquake

Wherever you hunker down to wait it out should be a safe spot. If you evacuate a building, don't run out under power lines, for example. But find a safe spot, hunker down, and watch what's going on around you.

If a power line goes down and you step out of your vehicle, you could be electrocuted. You could die. You're more threatened by your china hutch falling over on you or a power line coming down and setting your house on fire.

If you think your power has been compromised, shut off the breaker box. Natural gas? Shut off the main valve to the house. Then check to see what has been compromised. Water line broken in the basement? Think about shutting off everything until you've had a chance to look around.

Dam failure

Think about where you're going to go ahead of time. If you're on the north side of the river, you'll head north. After a catastrophic dam failure, you'll have a

little time to think about it: Head north, out of the path of the river. In Sedro-Woolley, Duke's Hill is a safe place from the inundation, for example. Think about where you want your family to go. If you can't contact your significant other, where will you go? Make sure your entire family is aware of what to do.

The text function on your cell phones will usually work better than the voice function; try that if voice doesn't work.

If a dam or dam's fail, the Skagit River will certainly reflect a flood event. Sedro-Woolley residents will have time to prepare and/or evacuate, but the bigger problem would be people fleeing the mess and causing a traffic bottleneck in town. So just go up the hill, and we'll deal later with the long-term consequences of 6 feet of water coming through and destroying our infrastructure.

Volcanic eruption

Our response would be a blend of earthquake combined with flood. We remember St. Helens and imagine what it would be like if Baker blew: Mud, sludge, trees, snowpack, glaciers, all going into the Baker River. The dams could be compromised, but it's unlikely they'd be destroyed.

React quickly. Get somewhere where you can screen out the ash—your car or house. If there's ash on the roof of your house, think before you act. It might need to be removed because of the weight load—especially if it rains and the ash turns to mud—but this should be done carefully, because ash is slippery, even when it's dry.

To me, the possibility of Mt. Baker erupting is the worst scenario. Roads will not be navigable. Cars won't function properly because of the ash. State and local governments would be out with equipment, clearing the roads, but the wise move for most residents in Sedro-Woolley will be to prepare to shelter in place for several days.

Prepare your community

In Skagit County, the Community Emergency Response Team (CERT) program educates people about personal disaster preparedness and for hazards that could affect their neighborhoods, and trains them in basic disaster response skills, such as medical triage and initial care, fire risk and suppression, light search and rescue, disaster psychology, disaster medical operations, and team organization to understand local emergency medical services (EMS) procedures.

The program is open to any and all who would like to help.

CERT participants receive training to help prepare them to provide immediate responses in a disaster for themselves and family, as well as neighbors when professional responders are not available.

If willing, CERT graduates will be encouraged to continue to develop their skills,

help grow the CERT mission, participate in Skagit County

Dept. of Emergency Management (DEM) preparedness efforts, and help in nondisaster events as able.

The next CERT class in Sedro-Woolley is planned for April 2019.

For more information on the CERT program e-mail phillz@skagitcert.org or kurtvb@skagitcert.org

Map Your Neighborhood

An effort has begun to develop a local Map Your Neighborhood program. General program details are posted at <https://mil.wa.gov/emergency-management-division/preparedness/map-your-neighborhood>.

Source: www.skagitcert.org, mil.wa.gov

GET INVOLVED IN CERT.
[Community Emergency Response Team]

WHAT CERT CAN DO:



RESIDENTIAL & COMMUNITY CHECKS
Make sure family members and neighbors are safe and well following disasters.



TRAFFIC & CROWD MANAGEMENT
Control the flow of people during small power outages or large scale concert or sporting events.



EMERGENCY OPS CENTER STAFFING
Staff emergency operations centers to help organize and complete the response effort.



PUBLIC INFORMATION
Inform communities how to prepare and explain resources out there to help in case of emergency.

Over 2,300 teams nationwide.
FIND YOURS AT FEMA.gov/CERT



DAY CREEK / LYMAN

Day Creek

The emergency response needs of the unincorporated community of Day Creek are served by Skagit County Fire District 16.

The District 16 fire hall is located on the South Skagit Hwy in Day Creek.

For more information, call the fire hall at 360.826.6060.

Lyman

Town of Lyman relies on Skagit County Fire District 8 volunteer fire department and the Skagit County Sheriff's Office for emergency response needs.

The small community has had very specific needs on that front this year, with a swollen Skagit River eroding a portion of its northern bank and destroying three homes, and a landslide north of SR 20 making life very difficult for people who lived up Prevedell Rd.

The town has developed emergency plans for its water system; the plan can be viewed at Town Hall, located in the Minkler Mansion at 8405 S. Main St.

Mayor Eddie Hills said the fire hall

siren was removed years ago, so the fire engine sirens serve as the alert that a call is under way.

Hills said that disaster events affecting Lyman can and should be dealt with in straightforward fashion.

Floods and winter storms: Head for high ground; go up Prevedell Rd. The road is being rebuilt after the slide earlier this year.

Residents also can use Pipeline Rd. to reach Prevedell Rd., said Hills.

Landslides: The small town isn't immune to landslides; witness the Prevedell situation. Slides also have blocked SR 20, forcing Lyman residents to take the long way around via S. Skagit Hwy to the Dalles bridge near Concrete, and doubling back. See the tips for preparing for and living with landslides, p. 4.

Wildfires: Hills said in the event of wildfire, he'd contact the county, then get the word out to Lyman residents by whatever means necessary. Ditto earthquake, dam failure, and volcano eruption.

In the event of a natural disaster, Town of Hamilton will respond with its volunteer fire department, assisted by the Skagit County Sheriff's Office (SCSO) and Skagit County Dept. of Emergency Management (DEM). The town's fire department includes a DNR brushfire truck, its primary fire engine, an ambulance, and an Emergency Command Center rig.

The town does not have a formalized Emergency Action Plan, but is actively seeking to create one. The town has an emergency plan for its water system.

Town officials bring a mixture of classroom education and real-world experience to the possibility of a natural disaster. The fire department is staffed with volunteers who have long histories in the town; they know how the river reacts to certain conditions.

The town has one siren, located behind Town Hall. It is not tested formally because it is used by the fire department; it sounds every time the fire department is called out. During fire department calls, the siren ramps up and declines a few times.

When the siren is used for flood alerts, the town follows the following formula:

- A 1-minute siren means be on alert (READY); South St. should be evacuating (GO), because water already is flowing across that street.
- A 2-minute siren (1 minute on, 30-second break, 1 minute on) means prepare to evacuate (SET), because it looks like the water will breach the levees, and it's already starting to spread out from Carey's Slough.
- A 3-minute siren (1 minute on, 30-second break, 1 minute on, 30-second break, 1 minute on) means if you are south of Carey's slough, you should be leaving (GO), because the water is coming over the levee.

A measurement of 33.27 at the Concrete gauge on the Skagit River is the top of Hamilton's levee. If it goes over that, Hamilton will have water coming over its levee. At that point, water already will be coming in along the slough at Petit St. Any predictions over 33.27, and Hamilton residents need to be intensely aware.

The town posts notices on the Facebook page, "If you live in Hamilton WA," when river levels become a concern.

HAMILTON / BIRDSVIEW

How should residents respond?

Landslides: Hamilton is not directly threatened by landslides, but if the forested slopes on the south side of the Skagit River were to slide into the river, the water would come right through Hamilton.

Wildfires: Hamilton has not yet had any issues with wildfires. The town does not have dense forests surrounding it. Hamilton remains proactive during burn bans, however, making sure that if someone spots a fire, it gets put out.

Earthquake: Most of the buildings in town are two-story or less, with only a few made of brick. For the most part, the town is resilient, and historically has sustained little, if any, earthquake damage."

Dam failure: If residents need to evacuate the entire town, and if they don't think the north side of SR 20 is high enough, the evacuation location would be up Medford Rd., the part up by Cowboy Camp, near the town's well site, because they'd be able to have fresh

water. The area is fairly well protected, and there's enough room for helicopters if needed. The cell tower in that area is just up a nearby logging road."

For more information, call Town Hall at 360.826.3027.

Birdsview

The unincorporated community of Birdsview hosts Fire District 10 Station 1 at 8391 Russell Rd. District 10 Chief Rod Coffell joins with Battalion Chief Lou Daley to lead this volunteer fire department.

The district encompasses 45 square miles around Concrete, with a response area of approximately 200 square miles, and responds to approximately 200 calls per year.

The Birdsview station responds to anything fire-related—structures, vehicles, brush, wildland fires—everything but aid and medical calls.

The Birdsview fire hall siren sounds for every call. In the event of a disaster emergency, listen for the PSE sirens (see p. 7), because the Birdsview siren will sound the same as it always does, making it difficult to determine if a widespread emergency exists.

WINTER WEATHER GET IT TOGETHER

BE PREPARED: PACK AN EMERGENCY KIT

	JUMPER CABLES		ICE SCRAPER
	FLARES/REFLECTORS		FIRST AID KIT
	WINDSHIELD WASHER FLUID		FLASH LIGHT
	NON-PERISHABLE FOOD		WATER
	TRACTION MATERIAL		MEDICINE
	CELLPHONE & CHARGER		BLANKETS

Emergency Preparedness in the Workplace

Common types of emergencies

- fires or explosions
- medical emergencies
- severe weather
- earthquakes
- major power failures
- hazardous material spills

An emergency poses an immediate risk of significant harm to health, life, property or the environment. Preparing for emergencies is an important part of your workplace health and safety program and is a legal requirement throughout Canada.

What's in a written emergency response plan?

- ✓ Scope and outline potential emergencies
- ✓ Alarms and other methods of initiating a response
- ✓ Site-specific response procedures
- ✓ Command structure, roles and responsibilities
- ✓ Shutting down of power
- ✓ Evacuation and assembly procedures
- ✓ Communication systems and protocols
- ✓ Emergency contact lists
- ✓ Resource lists

Why prepare for emergencies?

- Keep employees and responders free from harm
- Manage life-threatening situations
- Minimize damage to the environment, equipment, machinery, tools, etc.
- Minimize downtime

As a worker, it is important that you know how to

- Identify common types of emergencies
- Respond if you encounter a situation
- Respond when an emergency alarm is activated
- Ask your employer for more information and training

6 key steps to emergency planning

- 1** Establish the planning team: representatives from all departments and levels, with support from senior management, is most effective
- 2** Assess the risks and company capabilities
- 3** Develop the emergency response plan
- 4** Implement the plan: obtain equipment, communicate, and train
- 5** Test the plan: hold drills or simulation exercises
- 6** Improve the plan continuously

CCOHS.ca
Canadian Centre for Occupational Health and Safety

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360-708-3279
nwgardenbling@frontier.com
44574 Highway 20 – Concrete, WA 98237

EMERGENCY SUPPLY KIT

Make a plan for how your family will respond to an emergency. Know that you may have a limited amount of time to assess the situation, use common sense, and do what it takes to take care of yourself and your loved ones.

Make an emergency supply kit

Depending on the nature of the event, you may be compelled to flee from your home or “shelter in place.” If you shelter in place, prepare for the worst-case scenario by including the following items in a basic kit of emergency supplies:

- Water: One gallon per person per day, for drinking and sanitation.
- Food: A two-week supply of nonperishable food.
- Battery-powered radio and extra batteries.
- Flashlight and extra batteries.
- First Aid kit.
- Whistle to signal for help.
- Filter mask or cotton t-shirt, to help filter the air.
- Moist towelettes for sanitation.
- Wrench or pliers to turn off utilities.
- Manual can opener for food (if kit contains canned food).
- Plastic sheeting and duct tape (to keep out volcanic ash or other airborne pathogens).
- Garbage bags and plastic ties for personal sanitation.
- Unique family needs, such as daily prescription medications, infant formula or diapers, clothing, toiletries, and important family documents.

The bug-out bag

Consider building two kits: the first one, described above, and a second, smaller one that you can take with you if you have to flee your home. This second version is sometimes called a “bug-out bag.” Each member of your family should have their own bug-out bag.

In this smaller kit, include a gallon of water per person per day for drinking and sanitation. Also include a three-day supply of nonperishable foods that are easy to store and prepare, such as protein bars, dried fruit, or canned goods. Bring warm clothes and a sleeping bag for each member of the family, in case disaster strikes during the cold months.

Your bug-out bags will be customized for each member of your family. Other possible items to include are:

- Photos of all rooms in your house and scans of all your important documents, stored on a flash drive (or cloud server).
- Important documents include your driver’s license, the deed to your house, your will, proof of insurance, medical records, passports, Social Security cards, birth certificates, a list of personal contacts, your children’s immunization records, your pet’s paperwork for vaccinations and medical history—that sort of thing.
- Flashlight.
- First-aid kit.
- Batteries.
- Diapers.
- Prescription medications.
- Nonprescription medications such as pain relievers,

anti-diarrhea medication, antacids, or laxatives.

- Glasses and contact lense solution.
- Infant formula, bottles, diapers, wipes, diaper rash cream.
- Cash or traveler’s checks.
- Household chlorine bleach and medicine dropper to disinfect water.
- Fire extinguisher.
- Matches in a waterproof container.
- Feminine supplies and personal hygiene items.
- Mess kits, paper cups, plates, paper towels, and plastic utensils.
- Paper and pencil.
- Books, games, puzzles or other activities for children.
- Power cells—solar or otherwise—for recharging cell phones.

Pets? Livestock? Don’t forget them

- First, make sure your shelter-in-place or evacuation plan includes your pets and/or livestock. Know what you’re going to do before you are forced to act.
- Include pet food and extra water for your pet in your bug-out bag.
- Make sure your pets are microchipped.

Create an evacuation to-do list

Note the items you will want to pack during an emergency: your bug-out bag, your pets, and a list of valuables (jewelry, paintings, photos) you can’t live without. Also list your action items, such as turning off utilities and locking up your house. If you need to evacuate, break out the evacuation to-do list, check off each item, and evacuate as soon as possible.

Other ways to prepare

Take a first aid and CPR class. Look up your local American Red Cross chapters for information. Buy—and learn to use—a fire extinguisher.

Buy a fireproof and waterproof safe. These can cost \$30 to \$1,000.

Learn now how to safely shut off all utility services—electricity, water, and gas—in your home (FEMA has tips for shutting off utilities).

Maintain your kit and bug-out bags

After assembling your kit, maintain it so it’s ready when needed:

- Keep canned food in a cool, dry place.
- Store boxed food in tightly closed plastic or metal containers.
- Replace expired items as needed.
- Re-think your needs every year and update your kit as your family’s needs change.

Since you do not know where you will be when an emergency occurs, prepare supplies for home, work, and vehicles.

Keep your home-based kit in a designated place and have it ready in case you have to leave your home quickly.

Be prepared to shelter at work for at least 24 hours. Your work kit should include food, water, and other necessities like medicines, as well as comfortable walking shoes, stored in a “grab and go” case.

In case you are stranded, keep a kit of emergency supplies in your car.

Sources: FEMA, Skagit County Dept. of Emergency Management, ready.gov, lifehacker.com.

Include disease in your emergency planning

By Joan Cromley

Emergencies come in all shapes and sizes, and sometimes they become stacked on top of each other—like dealing with flood or wildfire season during a pandemic. Skagit County Department of Emergency Management recommends that you take the time to revise your family emergency plans to consider how you will keep your family safe in the event of an emergency during a disease outbreak.

The most important thing anyone can do in preparation for emergencies during a pandemic or disease outbreak is to learn about and practice effective infection control. Illnesses are usually spread through the air (when someone coughs or sneezes) or through contact (you touch something contaminated, then touch your face). The easiest and most effective way to limit disease spread is to frequently wash your hands, use good cough and sneeze hygiene, and avoid close contact with ill people.

How can you work those preventions into your family emergency plans? Focus on being able to keep your hands and face clean, being able to clean surfaces if needed, and maintaining space. Some examples of things you should consider:

- Have a supply of face masks, hand sanitizer, and tissues in your “go bag” for every person in your house. Wear a face mask whenever you are around other people. If possible, use the tissues to cover your nose and mouth every time you cough or sneeze, and then immediately dispose of them. Wash your hands or use hand sanitizer afterward, and after touching anything that may be contaminated.
- Have a way to disinfect surfaces, whether in your home or at an evacuation location.
- Consider how social distancing will work if you have to evacuate; maintain enough space from others with only a small amount of time spent close to people you don’t know. Plan to have enough supplies so you don’t have to share with anyone you don’t live with, and leave enough space between you and other households to limit contact. Be aware that you may need to go farther away from home to find shelter since local evacuation centers may not be able to hold as many people as normal.

- Be sure any drinking water you touch is safe, and surfaces are effectively cleaned during and after an event. Standing water and open sewage are places of contamination and disease spread.
- Know where to get verified information, not only for evacuations and weather, but also on disease information. Washington Dept. of Health and Skagit County Public Health are good sources of current, local information. Know the signs of any major illnesses in the area (e.g., for COVID-19, you should be looking for fever, cough, and loss of smell, among other symptoms).
- Think through how you can keep others safe if you were to fall ill during an emergency. Plan ahead for a safe location where you can maintain appropriate distance from other people if you need to leave your home. Consider ways to limit other’s exposure to you, such as wearing a face mask and isolation.

Planning for emergencies is a never-ending process. If you don’t have a plan, talk with everyone in your household and

DISEASE PANDEMIC

come up with one. If you have a plan, you can find ways to make your plan better. Adding a few things to your plan to keep you healthy during a disease outbreak—even if it’s not a pandemic—makes you and your family better prepared for anything that happens.

Joan Cromley is Planning Section Chief for Skagit County Dept. of Emergency Management.



Lynette Gentry
Vice President
Branch Manager
NMLS# 1394475

SaviBank

45872 Main Street, Concrete, WA 98237
PO Box 2017, Concrete, WA 98237
P 360.853.8171 F 360.853.7740
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 - Enter any additional information
 - Select the type of alerts you want
2. Download the CodeRED Mobile Alert App. The FREE App allows you to receive notifications nation-wide as you travel away from home.

SIGN-UP for

Skagit County, WA

Emergency Alerts TODAY!

VOLCANOES

Residents of eastern Skagit and Snohomish counties live in the shadow of two volcano peaks: Mt. Baker and Glacier Peak, respectively. While neither volcano is as active as, say, Mt. St. Helens, the possibility of eruption still exists. The very forces that created such breathtaking mountains can also be forces of destruction.

Known as “Koma Kulshan” or “Kulshan” to the indigenous Lummi people, Mt. Baker was highly active for about 10,000 years and has erupted 13 times in recorded history, according to Volcano World at Oregon State University. Its last eruption was in 1880. At 10,775 feet, it is the third highest volcano in Washington.

Unlike Mt. Baker, Glacier Peak is not prominently visible from any major city. At 10,541 feet in elevation, it is next to Mt. St. Helens, the shortest of the major Washington volcanoes.

But its small size belies its violent past. Glacier Peak has produced larger and more explosive eruptions in post-glacial time than any other Washington volcano except Mt. St. Helens. Its last major eruption was about 2,800 years ago.

Glacier Peak’s eruptive episodes are typically separated by several hundred to a few thousand years. Thus in any given year, the probability of a new episode beginning is roughly one in a thousand. It is unlikely that we will see an eruption within our lifetimes. If one does take place, its impact would vary dramatically in different geographic areas, depending on the size of the eruption, wind direction, and type of hazards produced.

For both Mt. Baker and Glacier Peak, there are a handful of similar likely outcomes in the event of a significant eruption. In undeveloped areas near each volcano, the landscape would be severely altered by lava domes, pyroclastic flows, ash clouds, lahars, and associated phenomena.

In river valleys downstream from the volcanoes, lahars could block transportation routes, destroy highways and bridges, bury houses in mud, cover farmland with debris, choke river channels, and increase the severity of floods for years or decades after the eruptions stop.

These effects will be most frequent in the White Chuck and upper Suitttle

River valleys if Glacier Peak erupts, and in the Skagit River and Sauk River valleys if Mount Baker erupts.

In the case of a Glacier Peak eruption, it is less likely that lahars would flow into the Stillaguamish River valley; this would occur only if the Sauk River became choked with enough debris to be diverted west into the Stillaguamish River valley.

When a lahar takes place, residents of communities along all these rivers should move to high ground as quickly as possible.

A destructive force

A volcano is an opening in the Earth’s crust that allows molten rock, gases, and debris to escape to the surface. Alaska, Hawaii, California, and Oregon have the most active volcanoes, but other states and territories have active volcanoes, too.

A volcanic eruption may involve lava and other debris that can flow up to 100 mph, destroying everything in their path. Volcanic ash can travel hundreds of miles and cause severe health problems.

The most probable component of a Mt. Baker or Glacier Peak eruption is the presence of lahars. “Lahar” is an Indonesian term that describes a hot or cold mixture of water and rock fragments that flows down the slopes of a volcano and typically enters a river valley. Lahars are similar to pyroclastic (lava, magma) flows, but contain more water. Lahars form:

1. From debris avalanches that contain water from snow and ice which, when released, mixes with loose debris to form a lahar.
2. From pyroclastic flows and surges that release water that mixes with debris.
3. From pyroclastic flows that dilute themselves with river water as they travel downslope.
4. From natural dam failure.
5. From rainfall on loose material such as ash.

Lahars that contain 20 to 60 percent sediment are usually very turbulent. Lahars that contain greater than 80 percent sediment usually flow more smoothly (laminar flow). These smooth-flowing lahars usually travel much

faster than their turbulent counterparts, and can float boulders, cars, buildings, and bridges.

A volcanic eruption can contaminate water supplies, damage machinery, reduce visibility through smog and harmful gases that may threaten low-lying areas, and make it hard to breathe and irritate the skin, eyes, nose, and throat.

When a volcano warning comes

- Listen for emergency information and alerts.
- Follow evacuation or shelter orders. If advised to evacuate, then do so early.
- Avoid areas downstream of the eruption.
- Protect yourself from falling ash.
- Do not drive in heavy ash fall.

Prepare for a volcano threat

Know your area’s risk from volcanic eruption.

- Ask Skagit County DEM or your local municipality for evacuation and shelter plans, and for potential means of protection from ash.
- Learn about community warning systems. The Volcano Notification Service (VNS) is a free service that sends notifications about volcanic activity. Sign up for alerts at <https://volcanoes.usgs.gov/vns2/>.
- Get necessary supplies in advance in case you have to evacuate immediately, or if services are cut off. Keep in mind each person’s specific needs, including medication. Do not forget the needs of pets. (See kit info, p. 16.)
- Consult your doctor if you have existing respiratory difficulties.
- Practice a communication and evacuation plan with everyone in your family.
- Have a shelter-in-place plan if your biggest risk is from ash.
- Keep important documents in a safe place. Create password-protected digital copies.
- Find out what your homeowner’s insurance policy will cover when a volcano erupts.

During an eruption

- Listen to alerts. The Volcano Notification Service provides up-to-date information about eruptions.
- Follow evacuation orders from local authorities. Evacuate early so you won’t place rescue workers at risk

unnecessarily.

- Avoid areas downwind, and river valleys downstream, of the volcano. Rubble and ash will be carried by wind and gravity. Travel uphill if you have to evacuate.
- Take temporary shelter from volcanic ash where you are if you have enough supplies. Cover ventilation openings and seal doors and windows.
- If outside, protect yourself from falling ash, which can irritate skin and injure breathing passages, eyes, and open wounds. Use a well-fitting, certified facemask such as an N95. The Centers for Disease Control and Prevention (CDC) has a list of certified masks and the maker’s instructions on how to use the masks.
- Avoid driving in heavy ash fall.

After the disaster

- Listen to authorities to find out when it is safe to return after an eruption.
- Send text messages or use social media to reach out to family and friends. Phone systems are often busy after a disaster. Only make emergency calls.
- Avoid driving in heavy ash. Driving will stir up volcanic ash that can clog engines and stall vehicles.
- If you have any breathing problems, avoid contact with ash. Stay indoors until authorities say it is safe to go outside.
- Do not get on your roof to remove ash unless you have guidance or training. If you have to remove ash, be very careful as ash makes surfaces slippery. Be careful not to contribute additional weight to an overloaded roof.

For more information on Glacier Peak, go to <https://snohomishcountywa.gov/2894/Volcano-Preparedness>.

Sources: *ready.gov*, *FEMA*, *USGS*, *Skagit County Dept. of Emergency Management*, *Centers for Disease Control and Prevention*, *American Red Cross*.

An earthquake is the vibration of the earth’s surface following a release of energy in the earth’s crust. This energy can be generated by a sudden dislocation of the crust or by a volcanic eruption. Its epicenter is the point on the earth’s surface directly above the hypocenter of an earthquake. The location of an earthquake is commonly described by the geographic position of its epicenter and by its focal depth.

Most destructive quakes are caused by dislocations of the crust. The crust may first bend and then, when the stress exceeds the strength of the rocks, break and snap to a new position. In the process of breaking, vibrations called “seismic waves” are generated. These waves travel outward from the source of the earthquake at varying speeds.

Earthquakes tend to recur along faults, which are zones of weakness in the crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could occur.

Faults are more likely to have earthquakes on them if they have more rapid rates of movement, have had recent earthquakes along them, experience greater total displacements, and are aligned so that movement can relieve accumulating tectonic stresses.

There are a number of faults running near or through Skagit County—the Bellingham Bay-Lake Chaplain Fault, the Ross Lake Fault, and the Hamilton Fault, which may or may not be active (Skagit County HMP, 2015), and the Devils Mountain Fault.

A direct relationship exists between a fault’s length and location and its ability to generate damaging ground motion at a given site.

What causes earthquake damage?

Earthquakes cause damage by moving and shaking the ground, sometimes for several minutes. The shaking can damage or destroy buildings. Most damage and loss of life is a result of ground shaking.

The shaking can cause landslides, ground cracks, liquefaction, and tsunamis. The combination of all of these is what makes earthquakes such a powerful hazard. Even when an earthquake happens on a fault that doesn’t reach the surface, the ground still shows signs of cracking. This cracking happens because a soft part of the ground liquefies during shaking, a process called liquefaction. Liquefaction is when wet soil loses strength because it is being shaken during an earthquake. The material becomes so weak that it behaves

more like a liquid than a solid.

Liquefaction has caused significant damage during earthquakes in Washington. The softer, or more liquefiable the soil, the greater the damage.

Earthquake and liquefaction

How often do earthquakes occur in our area? Earthquakes occur nearly every day in Washington. Most are too small to be felt. Large earthquakes are less common, but can cause significant damage to the things we count on in everyday life, such as buildings, roads, bridges, dams, and utilities. Washington has the second-highest risk in the U.S. to large and damaging earthquakes because of its geologic setting.

Devils Mountain

One of the most notable faults in Skagit County is the Devils Mountain Fault. Lying near Mt. Vernon, it is roughly 78 miles long and runs east to west through Darrington in Snohomish County to Vancouver Island, Canada. It is an active fault, with at least one earthquake about 2,000 years ago.

If a magnitude seven (M7) or greater the event were to occur, it would affect 15 counties, with Skagit County being the greatest impacted. Any moderate or large earthquake on the fault will likely be followed by numerous felt aftershocks and hundreds to thousands of smaller ones detectable only by sensitive instruments.

Damage levels experienced in an earthquake vary with the intensity of ground shaking and with the seismic capacity of structures. Generalized observations provide qualitative statements about the likely extent of damage for earthquakes with various levels of ground shaking (PGA) at a given site:

- Ground motions of 1 percent g (g-force) or 2 percent g are widely felt; hanging plants and lamps swing strongly; damage levels are low.
- Ground motions below 10 percent g usually cause slight damage.
- Ground motions between 10 percent g and 30 percent g may cause minor to moderate damage in well-designed buildings, with higher levels of damage in more vulnerable buildings. At this level of ground shaking, some poorly built buildings may be subject to collapse.
- Ground motions above about 30 percent g may cause significant damage in well-designed buildings

EARTHQUAKE AND LIQUEFACTION

and very high levels of damage (including collapse) in poorly designed buildings.

- Ground motions above about 50 percent g may cause significant damage in most buildings, even those designed to resist seismic forces.

Is a Devils Mountain Earthquake really possible? It’s not a matter of if, but when it will happen again. During the course of time, scientists recognized that increased building codes can help reduce the impacts of earthquakes. Higher building codes are now in place throughout all of Washington; however, older buildings are still at greater risk to damage. The older the building, the greater the risk of injury and damage.

Skagit County has adopted building codes intended to withstand the level of potential impact countywide. Here’s a brief timeline of building code standards:

- Pre-1974: No standardized earthquake requirements in building codes. Washington State law did not require the issuance of any building permits, or require actual building officials.

- 1975–2003: Uniform Building Code (UBC) seismic construction standards were adopted in Washington.
- 1994–2003: Seismic Risk Zone 3 was established within the Uniform Building Code in 1994, requiring higher standards.
- 2004 to present: Washington State upgrades its building codes to follow the International Building Code Standard. As upgrades occur, the state continues to adopt said standards.

What can you expect the ground motion to be like in a Devils Mountain earthquake? Three source zones exist for Pacific Northwest quakes: a shallow (crustal) zone; the Cascadia Subduction Zone; and a deep, intraplate “Benioff” zone. More than 90 percent of Pacific Northwest earthquakes occur along the boundary between the Juan de Fuca plate and the North American plate.

Sources: *Skagit County Dept. of Emergency Management/Bridgeview Consulting*, *Pacific Northwest Seismic Network*.

SCIENCE, TECHNOLOGY, ENGINEERING AND MATH (STEM)

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Grasmere

The unincorporated community of Grasmere, which is the Urban Growth Area for Town of Concrete, hosts Fire District 10 Station 2 at 44654 SR 20. District 10 Chief Rod Coffell joins with Battalion Chief Mike Hockett to lead this volunteer fire department. The district encompasses 45 square miles around Concrete, with a response area of approximately 200 square miles, and responds to approximately 200 calls per year.

The Grasmere station responds to anything fire-related—structures, vehicles, brush, wildland fires—everything but aid and medical calls.

The Grasmere fire hall siren is usually turned off these days because its firefighters are called into action via pagers and texts, but the squad might flip it on to do a pager test on turnout nights—the 2nd and 4th Mondays of each month, at 7 p.m. If there were to be a test, that would be the most likely time, said Chief Coffell.

In the event of a disaster emergency, listen for the PSE sirens (see p. 7).

Concrete

Town of Concrete responds to emergencies via its volunteer fire department led by Chief Darrel Reed. Other in-town resources include the East Detachment office for the Skagit County Sheriff, with which the town contracts for public safety services, and AeroSkagit, an ambulance service located at 7286 S. Baker St. near Concrete Town Center.

The Fire & Life Safety Facility (fire hall) is located at 45418 Main St.

The fire department responds primarily to in-town calls, but will still respond if an address turns out not to be inside town limits.

The town's fire department and neighboring District 10 are "mutual aid" partners, which means if either department needs assistance or more firefighters at an event, they can reach out to the other. The same holds true if either department can't respond to a call for any reason.

Concrete Volunteer Fire Department responds to all fire-related calls for the town, said Chief Reed, adding that illegal burns have been the bulk of recent calls.

"I chalk that up to new people moving to town, and they're unaware of policy. Campfires, burning leaves or branches—none of that is allowed, so it's education."

Chief Reed's squad has EMTs on duty, so when there's CPR in progress, the department is toned, along with AeroSkagit. The Concrete Fire Dept. also is charged with preparing the landing zone, for medical evacuations at Mears Field, the town's municipal airport.

The fire hall siren doesn't have a set testing schedule, so the rule to remember is that it will sound briefly when firefighters are being called to respond to an emergency.

When a major disaster is occurring, the siren won't stop for several minutes.

Citizen response to disaster

Town of Concrete does not have a formal Emergency Action Plan, but hopes to begin developing one in 2019. Its Hazard Mitigation Plan—which is similar to an EAP in some respects—is available for viewing at Town Hall, located at 45672 Main St. (360.853.8401).

Flooding: The town's Crofoot Neighborhood is the lowest point, and has flooded numerous times during the town's history when the Skagit River swelled during rainy winters. Town and county officials are watchful during periods of intense rain and snowmelt. Citizens who live in Crofoot also are encouraged to remain watchful and to prepare to evacuate if necessary. Read the article on p. 3 of this guide and consult the kit information on p. 16 for more information about how to prepare.

Landslide: The hill above East Concrete has slid in the past, and in 2009, Knott Hill slid toward the Mill Addition neighborhood, almost claiming a life. Residents in both areas should be aware, prepared, and insured against another similar event.

The steep slope bordering SR 20 to the north at the east end of town is prone to slides, but usually without loss of life. Rather, the mud and debris cuts off SR 20, making life less than thrilling for residents who live east of Concrete.

Wildfire: Concrete hasn't been threatened by imminent wildfire for decades, if ever. The greater concern is

smoke inhalation from fires in Eastern Washington (or, in 2015, Newhalem), or the heavy cover of smoke that blanket virtually all of Washington during the summer of 2018, when hundreds of fires burned in British Columbia.

Earthquake: See the guidance provided on p. 6.

Dam failure: Town of Concrete communicates closely with PSE regarding its operation and maintenance of the Upper and Lower Baker dams. For more information about those efforts and how area residents should respond to a dam breach, see p. 7 of this guide.

If any of the five Upper Valley dams failed, the result would likely be similar to a major flood for Concrete residents. A catastrophic failure could compel Concrete residents to flee for high ground:

- East Concrete residents can use North Everett Ave., crossing E. Main Street and heading up the hill.
- Residents who live in or near the middle portion of town north of SR 20 and west of the Baker River can head up Burpee Hill Rd.
- Residents who live south of SR 20 should consider taking Superior Ave. South to the airport and school district area, which also is safe high ground in the event of a catastrophic inundation.

Volcano eruption: See p. 8 of this guide, and pay attention to news reports. Tune your radio to KSVU 90.1 FM and monitor the *Concrete Herald* Facebook page.

Make sure your emergency kits are prepped and ready (see p. 16). If evacuation orders are given, get out of town as quickly as you safely can. Don't force rescuers to come back into a danger zone simply because you didn't want to leave. Your life is more important than any earthly possessions.

Cedar Grove / Cape Horn

The two residential communities of Cedar Grove and Cape Horn lie outside of Concrete town limits, even though their residents have Concrete mailing addresses. This is an important point for anyone who lives in either community, because in the event of a

disaster, aid will more likely come from another source, such as Skagit County Fire District 10, the Skagit County Sheriff's Office or Search-and-Rescue, or AeroSkagit, with Concrete Fire Dept. serving as a backup resource.

For all of the natural disasters noted earlier in this article, Cedar Grove and Cape Horn residents should fine-tune their responses, making logical decisions based on their specific locations.

For example, your high ground south of the Skagit River might be Haystack Mountain. Do not attempt to cross the river for any reason if a dam has failed or if Mt. Baker has erupted.

Have a plan in place and an emergency kit packed and ready to go if you need to evacuate from a residence in Cape Horn, where flooding is an all-too-common occurrence.

Learn where your landslide threats exist, and respond accordingly.

For more information, contact the respective governing bodies in your community.



If an earthquake or other major disaster struck your neighborhood, would you be willing to help rescue people and provide basic first aid until police, fire, and EMS personnel arrive?

If so, then join the Community Emergency Response Team (CERT). The CERT program educates people about disaster preparedness.

CERT training is available in Skagit County. Upcoming training dates and more information can be found online at www.skagitcert.org, by e-mailing dem@co.skagit.wa.us, or by calling 360.416.1850.

Helping Children Cope

Disasters can leave children and teens feeling frightened, confused and insecure. And kids' responses can be quite varied. It's important not only to recognize these reactions, but also help children cope with their emotions.

You are their biggest influence. When you can manage your own feelings, you can make disasters less traumatic for your kids.

- Encourage dialogue. Listen to your kids. Ask them about their feelings. Validate their concerns.
- Answer questions. Give just the amount of information you feel your child needs. Clarify misunderstandings about risk and danger.
- Be calm, be reassuring. Discuss concrete plans for safety. Have children and teens contribute to the family's recovery plan.
- Shut off the TV! News coverage of disasters creates confusion and anxiety. Repeated images may lead younger kids to believe the event is recurring. If your children watch TV or use the Internet, be with them to talk and answer questions.
- Find support. Whether you turn to friends, family, community organizations, or faith-based institutions, building support networks can help you cope, which in turn will help your children cope.

For many kids, reactions to disasters are brief. But some children can be at risk for more enduring psychological distress. Three risk factors for this longer-lasting response are:

1. Direct exposure to the disaster such as being evacuated, observing injuries of others, or experiencing injury.
2. Loss/grief relating to the death or serious injury of family or friends.
3. Ongoing stress from secondary effects, such as temporary housing, loss of social networks, loss of personal property, or parent's unemployment

Q & A

Q: My home suffered damage and my workplace has closed as a result of a major storm. This has been an incredibly stressful time for our family. How can I make sure my toddler is okay?

A: Young children experience stress, too, and are very aware of their parents' reactions and emotions. You may notice your baby startling more, acting withdrawn, or fearing separation from you. It's important to take care of yourself, for your sake and your child's. But at the same time, it's important to make your child feel safe and secure. One of the best ways to do this is by reestablishing normal routines as quickly as possible. Physical contact like hugs and cuddling is also important.

Q: I lost my home in a fire. I'm trying to hold it together in front of my 2-year-old, but am often on the verge of tears. What do I do?

A: It's okay for your child to see you cry, as long as you don't lose control. In fact, when you display your emotions, it gives your child permission to have feelings, too. Explain why you are crying, and reassure your child that even though you are sad, you know things will get better and you will all get through this together. And then share a hug. It may not seem like much, but physical contact is important for both adults and kids, and it's an easy way for even the youngest child to be a helper.

Q: There's a winter storm warning in effect and all we hear about on TV and the radio is "The Blizzard of the Century." My kids are getting scared. Any advice?

A: Turn off the TV. This advice holds true for children of all ages. Unless you need to see coverage of a storm for safety reasons (in which case, try not to do it in view of children) turn off the TV and radio. This is especially true after a disaster when scary images may be shown repeatedly. Young children may think the event is happening over and over and this can be terrifying. Instead, empower kids by enlisting their help to prepare for the storm. Have them gather warm blankets, or check on the pet's food. Giving them a job helps them feel in control, which reduces their anxiety.

Q: I'm dealing with the aftermath of severe flooding in our town. My 8-year-old's room is a total disaster. Clothes are piled on the dresser, he sleeps with every toy on his bed, and I just found a bag of candy in his closet. How can I make him understand that I need him to be on his best behavior?

A: Ask him if he's worried about another flood. Kids often prepare for danger in their own way, without talking about what they are doing. While his behavior may seem irrational, it sounds like your son may be preparing for another flood: saving his toys and building his own emergency kit (albeit an unhealthy one!). Ask him about his concerns, and enlist his help in preparing a better emergency kit. He'll feel good knowing that he is helping the family.

Q: Ever since wildfires threatened our community and forced us to evacuate, my 14-year-old daughter has been obnoxious. How can I make it stop?

A: It can be hard to distinguish between normal teen behavior and anxiety from a traumatic event. Kids don't always talk openly about their feelings; instead, they may seem irritable or forgetful. They may also withdraw or have difficulties concentrating at school. That doesn't mean they don't need to talk. Keep the lines of communication open without forcing it. Casually bring up the subject and say something like, "I've been thinking about those fires all day. Do you ever think about it?" And if your teen really can't open up to you (which can be typical for teens), try to find another trusted adult in which she can confide.

Source: ready.gov

ROCKPORT / MARBLEMOUNT

The unincorporated communities of Rockport and Marblemount are served by Fire District 19, which has a fire hall in both locations.

The Fire District 19 Chief is Denton Moore, who oversees both stations. The Rockport Battalion Chief is Clay Norris. Marblemount's Battalion Chief is Jim Mullen. Both stations are staffed with volunteer firefighters who respond when "toned out."

With its response area of upwards of 144 square miles, District 19 is almost as expansive as District 10. Its coverage area runs from near Alder Lane on SR 20 near Rockport, travels south on SR 530 to just shy of the Sauk-Suiattle Reservation, and moves east through Marblemount, all the way out Cascade River Rd. to the North Cascades National Park boundary. Farther east, it reaches to the Whatcom County line near milepost 117.

District 19 response to fire-related and some medical calls. "It's a mixed-bag," said Marblemount firefighter Bob Hopfield. "Car accidents, difficulty breathing, cardiac, basic and advanced life support ... a messed-up toe, a

gunshot wound, a drug overdose—you name it."

The two stations' air raid-style sirens don't have a regular testing schedule; they are "tested" when the station gets called out. All firefighters carry pagers and also are alerted to calls via text.

The sirens' tone doesn't change based on the type of the call. It ramps up and subsides a few times per call.

In the event of a disaster, station personnel will be alerted via Seattle City Light or Skagit County Dept. of Emergency Management (DEM), and will flip a switch inside the station to change the siren tone to a sustained, continuous blast. That sound will continue throughout the event, so if Rockport or Marblemount residents hear a siren shriek that just won't quit, that's their cue to get to high ground.

Residents also may choose to flee via SR 20, which during emergency situations becomes a two-lane, one-way road heading west.

Marblemount residents are encouraged to head up Cascade River Rd. "Go high," said Hopfield.

GET INVOLVED IN CERT. [Community Emergency Response Team]

WHAT CERT CAN DO:



RESIDENTIAL & COMMUNITY CHECKS
Make sure family members and neighbors are safe and well following disasters.



TRAFFIC & CROWD MANAGEMENT
Control the flow of people during small power outages or large scale concert or sporting events.



EMERGENCY OPS CENTER STAFFING
Staff emergency operations centers to help organize and complete the response effort.



PUBLIC INFORMATION
Inform communities how to prepare and explain resources out there in case of emergency.

For more info, go to
www.skagitcert.org



Hazard Mitigation

What Constitutes Mitigation?

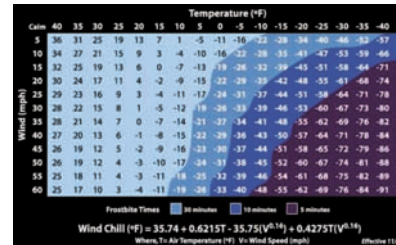
Actions taken which, in the long-term, reduce the risk and/or impact of a hazard.



Hazard Mitigation Plan Update

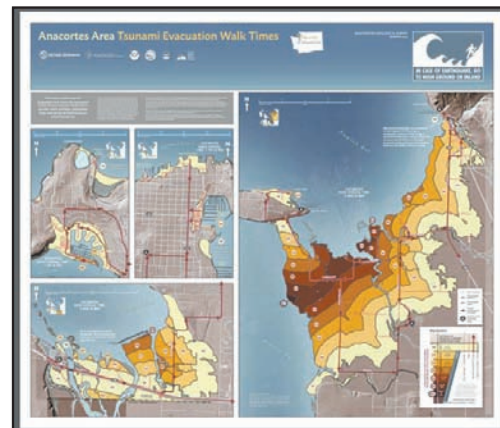
Skagit County, its local municipal jurisdictions, tribes, and special purpose districts are embarking on a planning process to prepare for impacts of natural disasters. Responding to federal mandates in the Disaster Mitigation Act of 2000 (Public Law 106-390), Skagit County Department of Emergency Management is updating its 2015 Hazard Mitigation Plan to enhance resilience throughout the County. During this process, local citizens will be asked to contribute by sharing knowledge of the area's vulnerability to hazards based on past occurrences. Check out the County's Hazard Mitigation Planning Website located on Skagit County's Emergency Management website!.

Skagit County Hazard Mitigation Plan Update Planning Partner Participation List (As of June 20, 2019)		
Cities	Towns	Tribal Nations
Anacortes	Concrete	Swinomish Indian Tribal Community
Burlington	Hamilton	Upper Skagit Indian Tribe
Mount Vernon	La Conner	Sauk-Suiattle Tribe
Sedro-Wolley	Lyman	
Special Purpose Districts		
Concrete School District	Island Hospital	Drainage District #16
Sedro-Woolley School District	Skagit County Conservation District	Dike District #12
La Conner School District	Skagit County Drainage District Consortium	Dike District #17

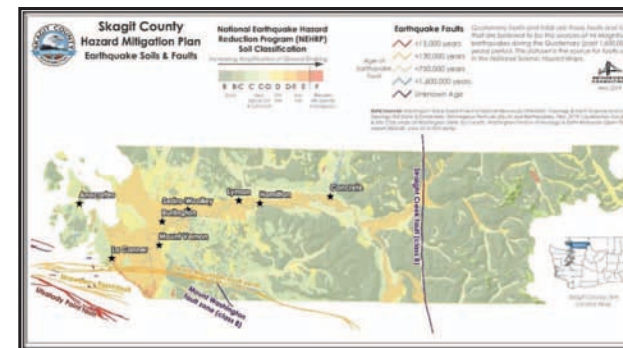


Hazards addressed:

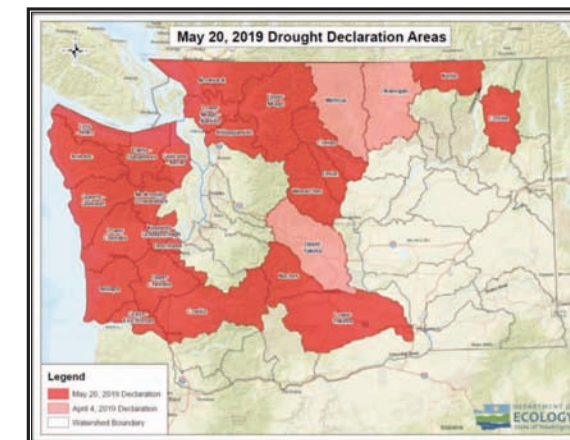
- ☐ Climate Change
- ☐ Drought
- ☐ Earthquake
- ☐ Flood
- ☐ Landslide
- ☐ Severe Weather
- ☐ Tsunami
- ☐ Wildfire
- ☐ Volcano



Tsunami Evacuation



Earthquake Faults and Types of Soils



Drought Declarations as of May 2019

Why Plan? Between 1953 and 2017, Skagit County has experienced 18 Federal Disaster Declarations

Skagit County Disaster History 1971-2018					
Disaster Number	Declaration Date	Incident Type	Title	Incident Begin Date	Incident End Date
1963	3/25/2011	Severe Storm(s)	Severe Winter Storm, Flooding, Landslides, and Mudslides	1/11/2011	1/21/2011
1825	3/2/2009	Severe Storm(s)	Severe Winter Storm, Record- and Near-Record Snow	12/12/2008	1/5/2009
1817	1/30/2009	Flood	Severe Winter Storm, Landslides, Mudslides, and Flooding	1/6/2009	1/16/2009
1734	12/8/2007	Severe Storm(s)	Severe Storms, Flooding, Landslides, and Mudslides	12/1/2007	12/17/2007
1682	2/14/2007	Severe Storm(s)	Severe Winter Storm, Landslides, and Mudslides	12/14/2006	12/15/2006
1671	12/12/2006	Severe Storm(s)	Severe Storms, Flooding, Landslides, and Mudslides	11/2/2006	11/11/2006
3227	9/7/2005	Coastal Storm	Hurricane Katrina Evacuation	8/29/2005	10/1/2005
1499	11/7/2003	Severe Storm(s)	Severe Storms and Flooding	10/15/2003	10/23/2003
1361	3/1/2001	Earthquake	Earthquake	2/28/2001	3/16/2001
1159	1/17/1997	Severe Storm(s)	Severe Winter Storms, Land- and Mud-slides, Flooding	12/26/1996	2/10/1997
1100	2/9/1996	Flood	High Winds, Severe Storms and Flooding	1/26/1996	2/23/1996
1079	1/3/1996	Severe Storm(s)	Severe Storms, High Wind, and Flooding	11/7/1995	12/18/1995
896	3/8/1991	Flood	Severe Storms and High Tides	12/20/1990	12/31/1990
883	11/26/1990	Flood	Severe Storms and Flooding	11/9/1990	12/20/1990
623	5/21/1980	Volcano	Volcanic Eruption - Mt. St. Helens	5/21/1980	5/21/1980
612	12/31/1979	Flood	Storms, High Tides, Mudslides and Flooding	12/31/1979	12/31/1979
492	12/13/1975	Flood	Severe Storms and Flooding	12/13/1975	12/13/1975
300	2/9/1971	Flood	Heavy Rains, Melting Snow and Flooding	2/9/1971	2/9/1971



Family Communication Plan

Let them know you're OK!

Pick the same person for each family member to contact. It might be easier to reach someone who's out of town.

Emergencies can happen at any time. Does your family know how to get in touch with each other if you are not all together?

Before an emergency happens, have a family discussion to determine who would be your out-of-state point of contact, and where you would meet away from your home — both in the neighborhood and within your town.

Important Information

Fill in this information and keep a copy in a safe place, such as your purse or briefcase, your car, your office, and your disaster kit. Be sure to look it over every year and keep it up to date.

Out-of-Town Contact

Name: _____
Home: _____
Cell: _____
Email: _____
Facebook: _____
Twitter: _____

Neighborhood Meeting Place:

Regional Meeting Place:

Work Information

Workplace: _____
Address: _____
Phone: _____
Facebook: _____
Twitter: _____
Evacuation Location: _____

Workplace: _____
Address: _____
Phone: _____
Facebook: _____
Twitter: _____
Evacuation Location: _____

School Information

School: _____
Address: _____
Phone: _____
Facebook: _____
Twitter: _____
Evacuation Location: _____

School: _____
Address: _____
Phone: _____
Facebook: _____
Twitter: _____
Evacuation Location: _____

School: _____
Address: _____
Phone: _____
Facebook: _____
Twitter: _____
Evacuation Location: _____



<http://www.ready.gov/kids>

Public Survey:

Interested in helping shape Skagit County's Hazard Mitigation Plan Update? Take our short survey by either scanning the QR code on your phone, or visit

https://www.surveymonkey.com/r/Skagit_County_Mitigation_Plan_Survey



DARRINGTON

You might say the SR 530 landslide was a wake-up call for the nearby Town of Darrington. After the community joined with Oso to deal with the horror and the aftermath of that event, the town set to developing an Emergency Action Plan (EAP), with assistance from Snohomish County Dept. of Emergency Management (DEM).

The town's EAP is now in place, and is reviewed periodically with the county. What's missing? Adequate monitoring of Glacier Peak, said Darrington Mayor Dan Rankin. "We have adequate measures for the 100-year floods that we endure every 10 years, but as far as a major catastrophe like the SR 530 landslide or a Glacier Peak eruption, we'll be surprised again if we don't get more and adequate equipment in place."

The town contracts with the Snohomish County Sheriff's office for law enforcement and the health, safety, and welfare of the community. "SCSO deputies aren't confined to town limits," said Rankin. "We also have law enforcement through Sauk-Suiattle, and we cross-train with the fire district."

Darrington's water system has a separate generator that can supply the entire town with water, even if the electricity is cut off. The town has two wells from which it pumps water to two separate water tanks. "So if we lose electricity, that generator automatically

comes on. In an earthquake we could shut off our main lines and folks could come and gather water from the well site near the school," said Rankin.

The town was annexed to Fire District 24, which sounds its sirens as needed for calls.

Darrington's EAP lays the groundwork for responses to the disasters covered in this guide.

Floods and winter storms: Darrington has only a few residents who are affected by a flooding Sauk river, said Rankin. Those residents should get to high ground or stay with neighbors or friends.

"Folks should check with local authorities to make sure their transportation routes are clear," said Rankin. "They may need to make alternative plans during a flooding event."

Even though there is little residential impact in Darrington from the Sauk River, there remains the potential to be cut off by the Stillaguamish River. The Hampton Lumber mill near the river would be affected by a severe flood on the Stillaguamish.

Winter storms: Climate change is increasing the intensity of weather conditions, leading to wetter winters and more flooding, and dry/hot summers and wildfires. All of these could cut off the town. Transportation

can be impaired from landslides and trees falling across the highway. Be cautious when traveling during severe weather. Don't go out if you don't have to.

Landslides: Again, transportation could be impaired. "Landslides are so fickle in this area," said Rankin. "The risk is low in town, but depending on the magnitude of the event, the effects can be far reaching and severe. As seen in the SR 530 landslide, people's lives are at risk, property can be destroyed, and transportation routes can be cut off."

Wildfires: Darrington sits in a forested bowl and accumulates smoke from nearby fires all summer long. Poor air quality is a concern (see p. 5). The surrounding forests are vital to both the timber and recreation economies of Darrington.

Earthquake: Darrington sits on the Darrington fault; an earthquake would potentially affect transportation (highways and bridges), which would isolate Darrington. "Infrastructure like our town well would be compromised and building stock would be affected," said Rankin.

Darrington soils are unconsolidated lahar debris, which could contribute to building damage.

Dam failure: A dam breach on the Skagit River can either siphon water out of the Sauk River or cause a backup. "If the Skagit rises crazily, it will choose the path of least resistance, which would send it quite a ways up the Sauk River," said Rankin.

If Mt. Baker erupts, the backup into the Sauk would affect the Darrington School District area and could affect the Town of Darrington too. "These are major, huge events, with a remote likelihood of happening," added Rankin.

Volcano eruption: There is a history of lahars from Glacier Peak. The severity is extreme because a 10,000-year event could wipe out the entire community, but the frequency is low. A smaller event would limit transportation access. A lahar from Mt. Baker could cause the Sauk River to back up and flood, which would affect northerly transportation routes in/out of Darrington.

"We need monitoring so that when Glacier Peak goes—and it will—we can make educated decisions about when we need to hit the highway," said Rankin.

Darrington has identified no threats from avalanche or tsunami, because of its inland location and distance from avalanche-prone slopes.

NATIONAL PREPAREDNESS MONTH 2020


Disasters Happen

PREPARE NOW

LEARN HOW



FEMA



\$700/YEAR
AVERAGE FLOOD
INSURANCE POLICY

\$43,000
AVERAGE FLOOD
INSURANCE CLAIM



FEMA

**THE COST OF
FLOOD
INSURANCE
IS A DROP
IN THE BUCKET
COMPARED TO THE
COST OF
FLOOD
DAMAGE**



4/14/17

NEWHALEM / DIABLO

Newhalem and Diablo are Seattle City Light (SCL) "company towns, populated mainly by employees of the utility, which owns and operates three dams on the Skagit River: Gorge, Diablo, and Ross.

Seven sirens are in play for the Skagit River project: Three in Newhalem, three in Diablo, and one at the Environmental Learning Center near Diablo. There is a daily test at noon for all seven sirens. An annual dam failure siren test generally happens near the beginning of each year.

How to tell the sirens apart

The 911 siren slowly ramp up to a full tone for 60 seconds. The dam failure siren tone ramps up and holds for about three seconds, then repeats. In the event of an actual dam failure, the dam failure siren would continue in perpetuity, certainly longer than 60 seconds.

Evacuation plans

In the event of any dam failure, plan

your possible routes to move uphill—fast. "Get as vertical as you can, as quickly as you can," said SCL dam safety engineer Rachael Brooks.

SCL has its own fire department in Newhalem; when someone calls 911, it goes to SCL emergency dispatchers and an SCL fire unit is dispatched.

The responsibility to instruct Skagit County residents regarding dam failure protocol lies with Skagit County DEM.

"Depending where you live along the river, you will have varying amounts of time to get out of the way," said DEM Chief Bob Dolhanyk. "The event likely will be similar to a severe flood event, and how quickly it will come downriver. If you live close to a dam, have a plan for getting to high ground in the shortest amount of time. If you hear sirens or get an alert that a dam has failed, what is your immediate course of action? And make sure your gas tank is never less than half full."

For more information, contact Skagit County DEM.



Stay healthy during
**WILDFIRE
SEASON**

If your area is affected by wildfire **SMOKE**

Stay informed on air quality



Check local air quality reports.



Listen to the radio for health warnings.

Follow your doctor's directions



If you have a heart or lung condition, smoke might make your symptoms worse.

Dial 911 for emergency assistance if symptoms are serious.

Avoid outdoor physical activities



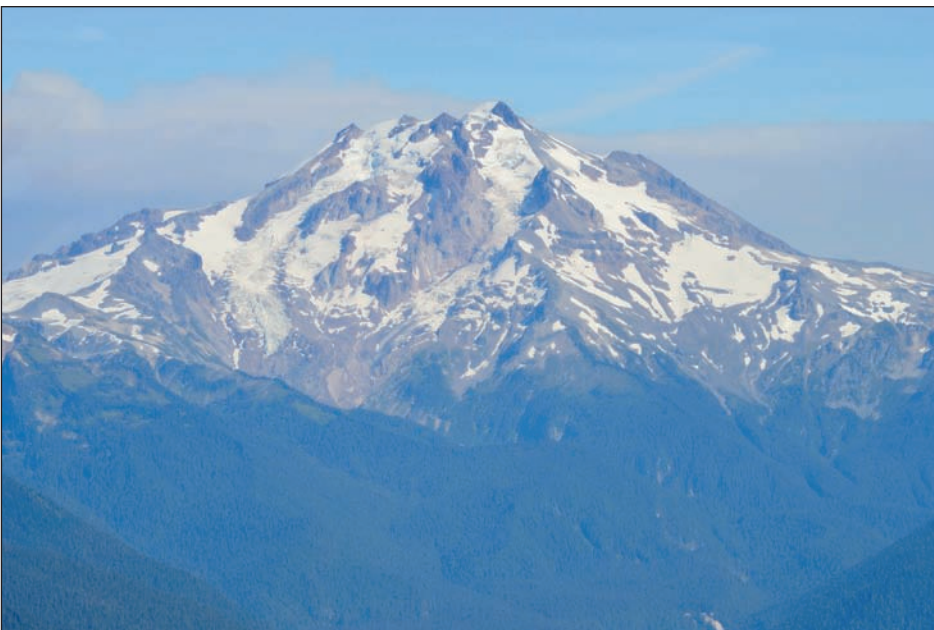
Especially when the air quality is in the "Unhealthy, Very Unhealthy, or Hazardous" categories.

Keep windows & doors closed



Run AC, set it to re-circulate and close the fresh-air intake. If it is too hot to keep windows and doors closed, and you don't have AC, consider leaving the area.

Visit www.doh.wa.gov/smokefromfires for more information



Glacier Peak is unlikely to erupt, but Darrington residents are encouraged to be aware of its status. Image courtesy of Reddit.



Severe Weather

What Constitutes Severe Weather in Skagit County?

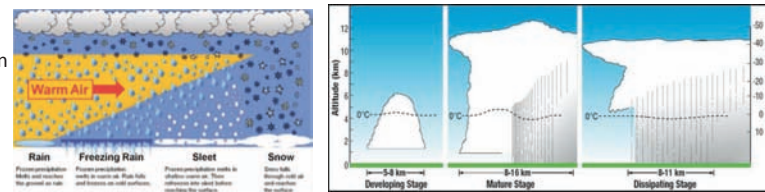


Hazard Description

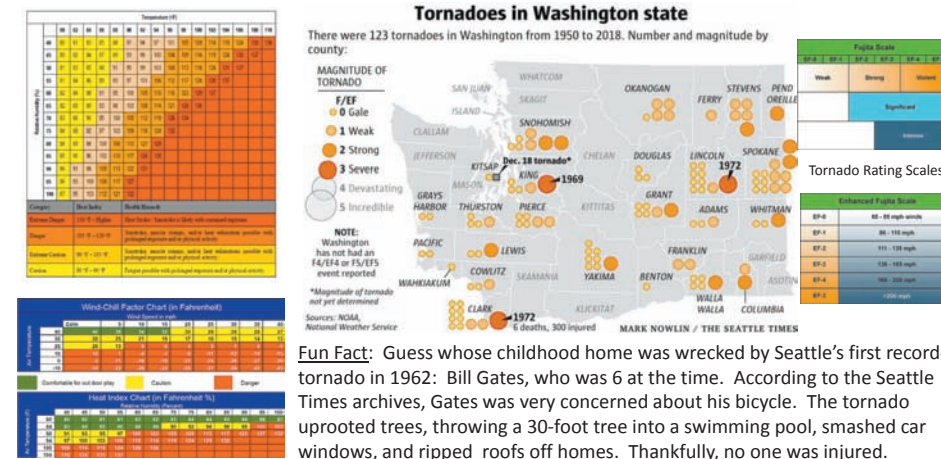
Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, social disruption, or loss of human life.. Severe weather differs from extreme weather, which refers to unusual weather events at the extremes of the historical distribution.

General severe weather covers wide geographic areas; localized severe weather affects more limited areas. The severe weather event that most typically impacts the planning area is a damaging windstorm, which causes storm surges exacerbating coastal erosion. However, the entire County is susceptible to severe weather events.

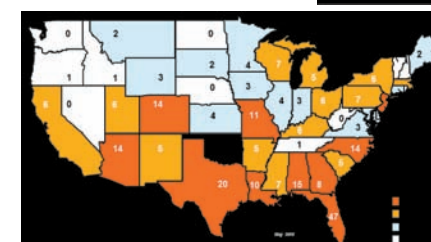
Types of
Precipitation
Impacting
Skagit
County



Life-cycle of Thunderstorm



Did you know that heat impacts the young and elderly differently? These two heat indices identify potential risk. The top chart is for adults. The one beneath is for children.



Fatalities Associated with Lightning Strikes



Nationwide Fatalities for Weather Events

Wind Chill – Do you know what wind speed and temperature can cause frost bite? A temperature of 5° F and a wind speed of 30 mph equals a wind chill of -19, producing frostbite in 30 minutes.

Types of Severe Weather Occurring in Skagit County

Freezing Rain—The result of rain occurring when the temperature is below the freezing point. The rain freezes on impact, resulting in a layer of glaze ice up to an inch thick. In a severe ice storm, an evergreen tree 60 feet high and 30 feet wide can be burdened with up to six tons of ice, creating a threat to power and telephone lines and transportation routes.

Hail Storm—Any thunderstorm which produces hail that reaches the ground is known as a hailstorm. Hail has a diameter of 0.20 inches or more. Hail is composed of transparent ice or alternating layers of transparent and translucent ice at least 0.04 inches thick. Although the diameter of hail is varied, in the United States, the average observation of damaging hail is between 1 inch and golf ball-sized 1.75 inches. Stones larger than 0.75 inches are usually large enough to cause damage.

Severe Local Storm—"Microscale" atmospheric systems, including tornadoes, thunderstorms, windstorms, ice storms and snowstorms. These storms may cause a great deal of destruction and even death, but their impact is generally confined to a small area. Typical impacts are on transportation infrastructure and utilities.

Thunderstorm—A storm featuring heavy rains, strong winds, thunder and lightning, typically about 15 miles in diameter and lasting about 30 minutes. Hail and tornadoes are also dangers associated with thunderstorms. Lightning is a serious threat to human life. Heavy rains over a small area in a short time can lead to flash flooding.

Tornado— Most tornadoes have wind speeds less than 110 miles per hour are about 250 feet across and travel a few miles before dissipating. The most extreme tornadoes can attain wind speeds of more than 300 miles per hour, stretch more than two miles across, and stay on the ground for dozens of miles. They are measured using the Enhanced Fujita Scale, ranging from EF0 to EF5.

Windstorm—A storm featuring violent winds. Southwesterly winds are associated with strong storms moving onto the coast from the Pacific Ocean. Southern winds parallel to the coastal mountains are the strongest and most destructive winds. Windstorms tend to damage ridgelines that face into the winds. See illustrations below of previous wind events to impact the area.

Winter Storm—A storm having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation.



Previous Historic Windstorms Impacting Skagit County



Wildfire Hazard

What Causes Wildfires?



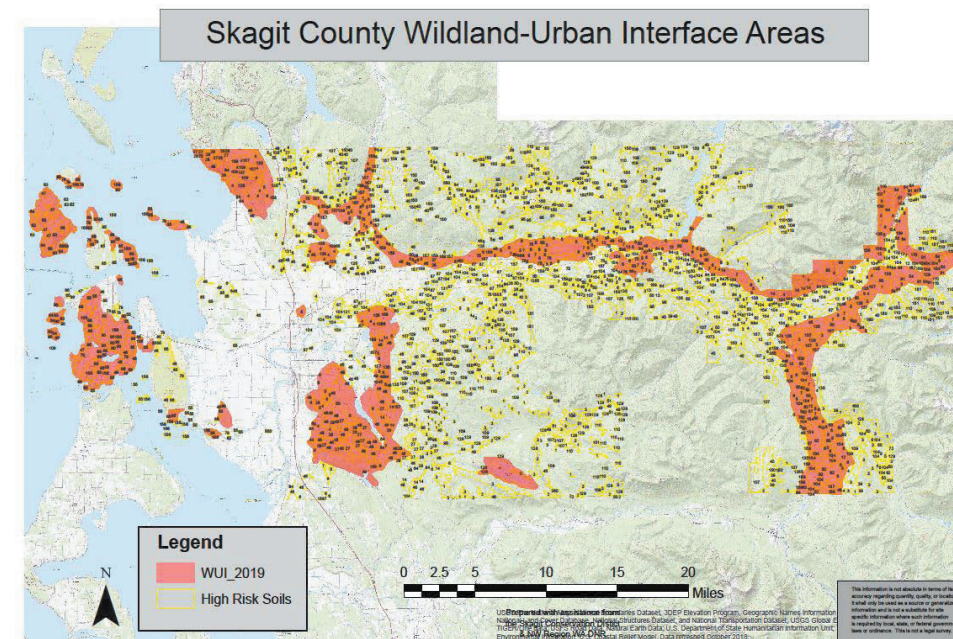
Hazard Description

Wildland fires are uncontrolled fires in forests, woodlands, brush or grasslands. Most are caused by human error.

Wildland fires pose threats to people, pets, and livestock in areas where human development intermixes with, and is adjacent to wildland vegetation. This area is termed the Wildland-Urban Interface (WUI) – Map 1 below is the draft WUI map for Skagit County (2019).

Wildland fires also destroy valuable resource lands, wildlife habitat, powerlines, pipelines, communication and transportation infrastructure. Impacts of a major fire can be amplified by subsequent effects of landslides and flooding during heavy rains.

Map 1



Wildland-Urban Interface Communities at Risk

The areas show in red on the map above represent areas where wildfire risk is a concern. Multiple layers of data were overlaid to determine wildfire risk areas in Skagit County. The data used in this risk map includes:

- Population
- Vegetation types
- Skagit County soil data
- Skagit County geology data
- Available Water Capacity based on soil type
- Slope
- Aspect

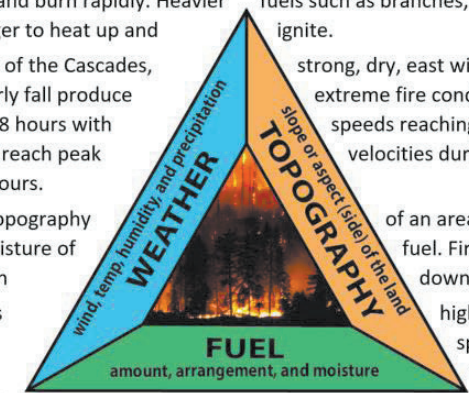
Factors Contributing to Wildfires

Fuel: Lighter fuels such as grass, leaves, and needles (sometimes called litter) quickly expel moisture and burn rapidly. Heavier fuels such as branches, logs, and tree trunks take longer to heat up and ignite.

Weather: West of the Cascades, summer and early fall produce strong, dry, east winds in the late extreme fire conditions. East winds can last 48 hours with speeds reaching 60 mph; these velocities during the night and early morning hours.

Topography: Topography of an area influences the amount and moisture of fuel. Fires spread more easily uphill than downhill.

Barriers, such as highways and lakes, can affect the spread of fire. Limited road access to open spaces increases risk for larger wildland fires. Fewer roads delay response times for firefighters to make contact with the fire. In densely wooded areas, fires can burn for days without anyone knowing the fire exists.



Fire Behavior Triangle

What can you do to reduce wildfire risk around your property?



Action Items to Improve Your Home's Survivability:

- **REMOVE** leaves, pine needles, and other flammable material from the roof, gutters, and on and under the deck to help prevent embers from igniting your home.
- **SCREEN** areas below decks and porches with 1/8" wire mesh to help prevent material from accumulating underneath.
- **COVER** exterior attic and soffit vents with 1/8" wire mesh to help prevent sparks from entering your home.
- **ENCLOSE** eaves to help prevent ember entry.
- **INSPECT** shingles or roof tiles. **REPLACE** missing shingles or tiles. **COVER** ends of tiles with bird stops or cement to help prevent ember penetration during a wildfire.

Tips for Landscaping Around Your Home

- **REMOVE** dead vegetation and other flammable materials, especially within the first 5 feet of the home.
- **KEEP** your lawn hydrated and maintained. If it is brown, cut it down to help reduce fire intensity.
- **PRUNE** tree limbs so the lowest branches are 6 to 10 feet above the ground to help reduce the chance of fire getting into the crowns of the trees.
- **MOVE** construction material, trash, and woodpiles at least 30 feet away from the home and other outbuildings.
- **DISPOSE** of branches, weeds, leaves, pine needles, and grass clippings that you have cut to reduce fuel for fire.



YOU CAN MAKE A DIFFERENCE!

Increase your wildfire safety. Make simple low-cost changes to your home and landscape starting today.



Visit www.firewise.org for more information.

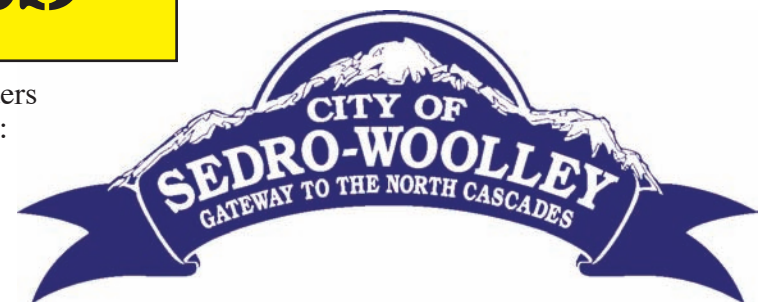




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