External Sprinkler Systems

Sprinkler systems are believed to work by creating a humid and cool environment that makes it difficult for embers blown by the wind to start a fire. External sprinkler systems also keep your home and cabin and surrounding vegetation - the fuels for the wildfire - hydrated so it is harder for a fire to start or spread.

Shoreline of Seagull Lake where intense fire burned up to vegetation. Sprinklers protected the cabin and the surrounding vegetation.

Is an external sprinkler system for you?

- Do you live in an area susceptible to wildfire?
- Do you have access to a nearby water source, such as a lake or river?
- Do you have the ability to start the system when a fire is coming
- Do you have the ability to keep the system maintained and tested?
- Can you accept how the system looks (aesthetics)?
- Can you afford it (cost)?

If you can answer yes to these questions, an external sprinkler system may be appropriate for your home or cabin.

Fire on the Gunflint Trail during evacuation.

In May 2007, a fast wind-driven wildfire overtook homes and cabins in northeastern Minnesota. Many properties were destroyed by the fire. Of 104 homes, cabins, or major structures that were hit by the fire, 39 were destroyed. Of the 65 that survived, 46 had working external sprinkler systems. Some homes without sprinklers survived because they had good defensible space. One home with a working sprinkler system was lost.

This cabin on Seagull Lake was protected by its working sprinkler system during the May 2007 wildfire. The cabins on both sides of this cabin did not have sprinkler systems and were destroyed in the fire.

Remember there is no system that is guaranteed to provide 100% protection for your home or cabin.

External sprinkler systems, along with other Firewise recommendations such as clearing flammable debris, thinning vegetation, and driveways wide enough for a fire engine to access your property, increase the chances that your home will survive a wildfire.

For more information on Firewise or sprinkler systems, visit www.dnr.state.mn.us/firewise

For more information and links related to sprinkler systems on the Gunflint Trail, please visit the Cook County Firewise website at www.boreal.org/fireinfo

All photos courtesy of Jayne Fingerman Johnson (2007), except for the photo of the fire on the Gunflint Trail which is courtesy of Rick Johnson, Gunflint Trail Volunteer Fire Department (2007) and the cover photo which is used with permission from the USFS, Superior Nat'l Forest. Brochure and illustrations created by Sarah Finley.

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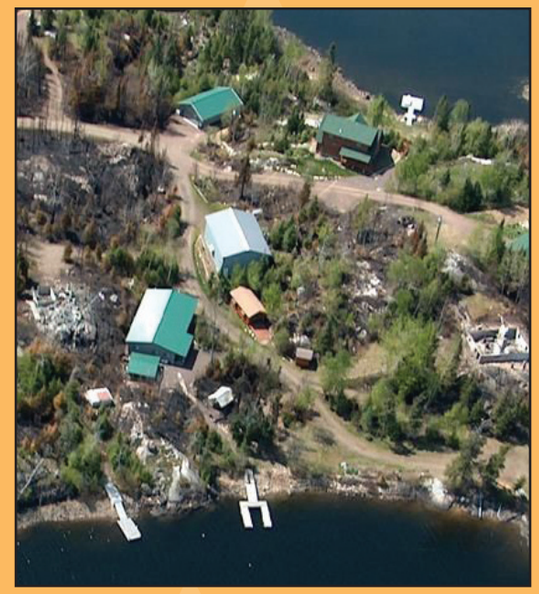
External Wildfire Sprinkler System

Is it right for you?



Minnesota DEPARTMENT OF NATURAL RESOURCES

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Considerations for an External Sprinkler System

Access to a water source is necessary to provide enough water for a system to be effective. A well does not generally provide enough water for a sprinkler system when a wildfire is coming. A well usually requires electricity for the pump, and electricity will likely be cut off in the event of a wildfire.

Starting the system when a wildfire is approaching is another critical factor. If you have a recreational cabin and are not present, who will start your system? A neighbor who lives nearby full time may be a good option. Your local fire department may be able to start your system, but this is not always possible. In the event an evacuation is ordered, it is likely you will not be allowed to go to your cabin to start your system or to retrieve valuables. **Remember: The homeowner is ultimately responsible for starting the system.**

The aesthetics of the system - how it looks - is a consideration for some people.

- The pump at the water source should be easy to locate and start by someone who may not be familiar with your property. The pump should not be hidden from view.
- Water line or hose may be buried or laying on top of the ground. Buried water lines will increase installation cost and may cause increased maintenance effort to find broken pipes or leaks. Exposed water lines are susceptible to burning from the wildfire, and need to be protected by water coverage from the sprinkler system itself. Vegetation should also be cleared from exposed water line to help prevent fire near the line.
- Vegetation needs to be cleared around sprinkler heads far enough to ensure that the heads completely rotate and the water spray reaches the full radius.

Sprinkler system costs can vary greatly depending on location and site characteristics. A range of $4,000 - $6,000 can be used as a starting estimate.

An illustration of an external wildfire sprinkler system.

As seen in these photos, sprinkler heads and hoses can be relatively hidden in existing vegetation, and pumps should be kept covered when not in use. Many homeowners have made the decision that the extra protection offered by sprinkler systems is worth it.

An external sprinkler system is comprised of a pump and engine, water line or hose to draw in water to the pump and distribute it to the sprinkler heads on the roof of the structure(s) to be protected and in vegetation surrounding the structure. The basic system covers approximately one acre. A 60-gallon per minute pump is sufficient to provide water to 10-12 sprinkler heads, depending on the vertical distance from the water to the highest sprinkler head. High elevations (greater than 40-50 feet) will require more powerful pumps or multiple pumps to provide sufficient water pressure.

A sprinkler system or irrigation professional should be consulted when designing a system for your site. Someone with a proficient knowledge of plumbing and hydraulics can install a sprinkler system on an existing property.

External sprinkler systems should not rely on electricity. Electric power will likely be cut off in the event of an approaching wildfire. A 50-pound propane cylinder will run a pump with a 6.5 h.p. engine for approximately 24 hours without refueling. Many systems have been set up to be switched between gasoline and propane fuels: Gasoline is used for testing or short-term (1-2 hours) running of the system, while the propane cylinder is left full in the event of evacuation and approaching wildfire.

Some recommend that systems run for 4 to 24 hours prior to the arrival of a wildfire, though this is not always possible. Experience with the 2007 Ham Lake fire with shifting winds gusting to 30 mph showed that sprinkler systems can work if run for as little as two hours before the fire arrives; however, the equivalent of a 1 inch rainfall in 24 hours is recommended.

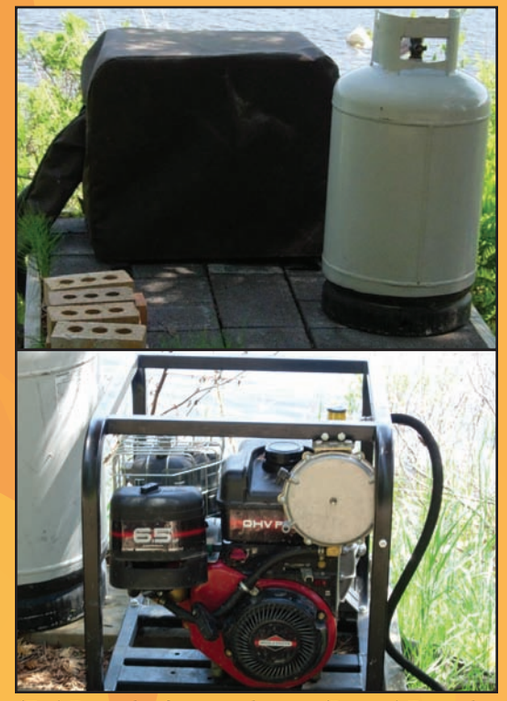
Sprinkler Maintenance

It is the homeowners responsibility to ensure that the external sprinkler system is maintained and regularly tested. When a wildfire is headed your way and an evacuation has been ordered, it is NOT the time to be repairing broken pipes or climbing on the roof to unclog plugged sprinkler heads.

The sprinkler system should be primed and ready to go as soon as the ice is off the lake in the spring and the danger of freezing is minimal.

Run the system to be sure the pump is working and there are no leaks or clogs.

During fire season, test the system monthly to ensure it is working properly. If a dual fuel (gasoline and propane) system is installed, be sure to test the system on both fuel systems.



(Top) Example of a covered pump. (Bottom) Example of an uncovered pump.