Sprinkler Protection Systems
Guidelines for Gunflint Trail Fire District

All sprinkler systems must be capable of providing at least 60 gallons per minute over an area of approximately 1 acre. Pump must be capable of running unattended for 18 to 26 hours with a goal of imitating a 2-inch rainfall.

1. Sprinkler system pumps must be capable of running on propane.
   a. Dual-fuel (gasoline and/or propane) sprinkler system pumps are acceptable. (See recommendation #2 on dual fuel)
   b. All pumps must be on a level base and easily accessible by well-maintained path or easy access by water if land access is unavailable.

2. Sprinkler system pump engines must be supplied by at least one 50# propane cylinder. An additional 20# cylinder is recommended. The #20 cylinder should be used for testing and regular use and the #50 left full in case of evacuation.

3. All sprinkler systems must have a flexible LP gas line hose from the pump to any tank or rigid pipelines. A valve for disconnect must be supplied near pump for any rigid gas line.

4. Sprinkler heads must be positioned to insure protection of pump and delivery lines as well as primary structures and surrounding vegetation.

5. Sprinkler systems must utilize full-circle professional quality irrigation sprinkler heads.
   a. Adjustable circle impact or gear driven irrigation sprinkler heads are acceptable if heads are adjusted to full circle in sprinkler system stand-by mode.
   b. Valves on supply lines to sprinkler heads are acceptable, but must be open in sprinkler system stand-by mode.
   c. Sprinkler system full-circle brass impact sprinkler heads that surround primary structure should be at least ¾" in size.

6. Sprinkler system water supply lines and fittings must be professional quality irrigation components. They should utilize irrigation pressure fittings and not D-W-V (drain-waste-vent) plumbing fittings. PVC should be painted to protect from UV light. Rubber hose should be UV protected. (Ex. Goodyear Horizon 200)

7. Pump intake and discharge must have 2" NPSH or 2" NPT connections and should have a short flexible line between pump and rigid lines. The use of 2" cam and groove fittings on rigid discharge and intake lines is recommended for easy release and attachment of lines. Foot valve with suspended strainer is required on intake.

8. It is imperative that the installer properly size the pump to the system requirements. A pump too small or too large will compromise the effectiveness of the overall system.

9. Special consideration must be given to installations on water sources with fluctuating water levels. Intake lines must have a sufficient length of suction hose or pipe so that the foot valve or strainer is completely submerged at the lowest water level. Also the pump must be set on a location above the highest water level.

10. All sprinkler system installations must have at least one valved 1-1/2" NH/NST male threaded Fire Department standpipe hook up.
    a. Stand-pipe hook up must be painted yellow and plainly visible.
    b. Standpipe hook up location must be easily accessible by the fire dept. when possible.

11. It should be understood that this is a dynamic document that will occasionally be modified as technology and experience lead us to more improvements.

Recommendations

1. All sprinkler installations have the best chance of saving structures when used in addition to Fire-wise® recommendations.

2. The installation of dual fuel pumps is recommended for the following reasons.
    - Gasoline can be used as an alternative fuel if propane is unavailable
    - Gasoline can be used if the pump fails to run on propane due to malfunctions (Ex: regulators, break in fuel supply line, etc.)
    - Gasoline is readily available on most properties
    - Gasoline can be run for 1 hour and will shut off automatically

3. Pumps with dual-fuel and/or dedicated propane should be tested monthly on propane only. Gasoline fuel tanks on pumps should be run empty and be empty while on stand-by or fuel must be treated with a stabilizer.

4. At the end of the season the system should be run for a few minutes to insure that it is fully operational. Then the system should be completely drained and left in stand-by mode. Stand-by mode allows for immediate activation of the system by priming the pump and putting the intake line in the water. Flexible suction hose with foot valves should be reconnected to pump intake and stored adjacent to main supply line with foot valve end facing uphill.
    i. Rigid suction hose must be disconnected from pump and stored adjacent to pump and main supply line with all openings properly covered to keep out animals or debris. Intake and discharge opening on the pump should also be covered.
    ii. Once the pump has been completely drained, drain plug should be screwed back in place.
    iii. Pump must be covered with weatherproof fabric cover that is easy to remove. A rigid board should be placed on the top of the pump under the cover to shed water and snow.
    iv. All lines to sprinkler heads should be completely drained and reattached to the supply fittings. All auxiliary shut-off valves must be in the open position.
    v. The #50 propane cylinder must be full and in the closed position.
5. When you activate your system each season, you should run it to check for malfunctions. The pump should remain primed with the intake line in the water. The system should remain primed until it is drained in the fall.
6. Most existing systems are equipped with ½" full-circle brass impact sprinkler heads. There have been some issues with the breaking of the flapper and it is recommended that owners have 2-3 spare heads on hand. Change over to ¾ inch sprinkler heads is highly recommended.
7. Oil should be changed according to the engine manufacture's recommendation of runtime. During a fire incident this will not necessarily be done. Although during an incident the oil will be checked and oil will be added if needed.

Pump frames should be secured to the base and elevated on to allow access of oil pan for draining engine oil. (Ex: attach frame to treated 4X4s)