6. Water Sources

Water sources are an important part of an overall fire protection strategy, but don't rely on water alone—fuels reduction is more important in most cases.

Since many rural properties lack fire hydrants, firefighting vehicles designed for rural areas typically have water tanks, ranging in size from a hundred to thousands of gallons of water. This water can be quickly depleted. Access to nearby streams, ponds, wells, swimming pools, and even water troughs allows firefighters to quickly refill the tanks and get back to fighting the fire. Access to water facilitates a fast initial attack on the fire, which can make the difference between getting the fire under control while it is still small or letting it become an unmanageable conflagration.

The two basic types of firefighting equipment are ground-based and aerial, each of which has its own special considerations for accessing available water sources.

Ground-based fire engines

Ideally a fire tanker can quickly drive up to a water source, fill its tank, then return to the fire (Figure 18). Fire tankers range from pickup trucks with slip-in 80- to 120-gallon tanks, with pumps and hoses, to fire engines or water tenders that carry from 200 to 1,000 gallons or more. A hard, durable-surface road that can get the tanker close enough to the water source to reach it with a 12-foot-long drafting hose is preferred. Roads that are soft or wet from seeps or other causes can create real problems for heavily loaded vehicles. Some trucks carry portable pumps, allowing them to pump from a water source up to 200 feet away, but that is much more time-consuming and less desirable.

Requirements

Tanker trucks need only one to two feet of depth to pump water, so they can use a wide range of potential sources, such as streams, ponds, and stock tanks. Consider posting signs along the road system that lead fire trucks to available water.

Aerial-based firefighting equipment (helicopters)

Helicopters are frequently used for fighting wildfires in rural areas and can quickly deliver high volumes of water to very precise locations, particularly if a good water source is at hand.

Helicopters most often are equipped with a large bucket hanging from a long tether line, which is used to dip water out of a pond or other water source (Figure 19). A prime consideration for both large Type I helicopters (which carry more than 700 gallons) and smaller Type II helicopters (300 to 700 gallons) is their approach to and departure from the water source. Tall obstacles such as trees, buildings, and power lines close to the water make it more difficult for the helicopter to descend safely. Once their buckets are filled, even the bigger helicopters have limited ability to lift heavy loads straight up for very far. Thus, to generate the lift needed to maximize their load capacities, they need to begin flying forward as quickly as possible, necessitating a clear flight path.

Requirements

Large helicopters using big buckets need fairly deep water to dip from—around 10 to 12 feet. Smaller helicopters can work out of water sources as shallow as 3 to 5

U.S. Forest Service.

Figure 18. Fire pumper filling from creek.

New York Army National Guard.

Figure 19. Helicopter filling from water source.

Stephen Fitzgerald, Oregon State University.

Stephen Fitzgerald, Oregon State University.

Figures 20a and 20b. Pump chance.

feet. The source needs to present a big enough target or "bulls eye" for the pilot to hit it accurately, about 12 feet minimum width. Small ponds and even swimming pools may work very well, if the flight path is acceptable. Keep debris, such as fallen logs, boats, or other obstructions out of the pond if possible.

Water availability

If your water source is a well, consider having an emergency generator to operate the pump during power failure. Auxiliary power should be located separately from the home or outbuildings.

Ponds and creeks can provide water for firefighting and be used for stock water, irrigation, recreation, wildlife habitat, and fishing (Figures 20a and 20b). Before you construct a pond, check with your state water resources department, local Natural Resources Conservation Service office, or other regulatory authority, as permits may be required to construct a dam, depending on its size. Specific construction requirements must also be met.

Developing and diverting spring water into a tank or cistern also provides a valuable water source. For the purposes of firefighting, a 2,500-gallon capacity or more is excellent, although even 500 gallons can be very beneficial. If you do not have a spring, a large tank or cistern can be filled with rainwater shed from the roof of a home or outbuilding, or from a well (Figure 21). Some landowners develop a gravity-feed system to a pressurized hydrant that can be hooked up directly to a fire truck, eliminating the need to pump water. Swimming pools can also be an excellent source of water.

Stephen Fitzgerald, Oregon State University.

Figure 21. Buried water tank.

Adequate access to water sources is critical, so consider the following recommendations:

- Ensure all-weather rocked road access to within 12 feet of the water's edge.
- Provide a 45-foot minimum radius turnaround close to the water source.
- The road grades listed in Table 6 apply.
- Post permanent signs indicating the location of the water source.

No matter what kind of system you have, be sure your hookups utilize hydrant and hose connections that are compatible with firefighting equipment. Consult with the appropriate state or local fire agency for specifications. Additionally, make sure the water sources meet your local fire chief's recommendations.