



United States Department of Agriculture
Rural Development

Rural Business-Cooperative Service • Rural Housing Service • Rural Utilities Service
Washington, DC 20250

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SUBJECT: Fire Protection

TO: State Directors
Rural Development

ATTENTION: RUS Program Managers

FROM: CHRISTOPHER A. McLEAN /s/ Anthony C. Haynes (for)
Administrator
Rural Utilities Service

One of the primary purposes of the Water and Waste Disposal (WWD) Program is to help rural areas and small communities develop and maintain reliable, safe drinking water systems. While meeting the primary needs of the community, water systems should be designed so that water facilities will have sufficient capacity to provide reasonable fire protection to the extent practicable in accordance with RUS Instruction 1780.57(d). It is the policy of the Rural Utilities Service (RUS) Water and Environmental Programs (WEP) to include reasonable fire protection in rural water systems where economically feasible. WEP staff are encouraged to work with local, State, and other Federal agencies to help address the fire protection needs of rural communities. Providing full fire protection in all systems financed with WWD funds would quickly deplete program funds and restrict our ability to assist many of the unserved and underserved residents in rural areas. Therefore, determining reasonable and practicable fire protection is a challenge for both rural communities and WEP and will require creative solutions.

Fire protection consists of many components: water supply, modern fire fighting equipment, fuel management, effective human resources, modern practices and procedures, effective command structure, adequate communications capabilities, and positive interaction with a community.

The component that most concerns WEP is water supply. Because having water available and in sufficient quantities is fundamental to fire protection in rural communities, the water distribution system is an important factor of the fire protection system. The water distribution system for fire protection, like a drinking water system, consists of water supply, storage facilities, and pipelines, but it adds other

appurtenances such as fire hydrants. To support water requirements for domestic use and fire fighting, the water system must be designed to provide adequately sized storage facilities for water reserves and distribution lines of adequate diameter for large fire flows.

In communities that have significant commercial and industrial components, storage may be the only system component that needs to be increased in size to have reasonable fire protection. In residential communities, distribution lines and storage may need to be increased for fire protection. Upgrading distribution lines and storage to meet fire protection standards can increase operation and maintenance complexity: tank and line freezing, stale water, loss of chlorine residual, line deposit build-up, etc.

Water systems could incur additional costs in correcting these operational problems and maintaining the systems so the problems are not recurrent. They would have to evaluate whether their customers could absorb the costs, which, in effect, would determine how reasonable and practicable the fire protection would be. Thus, financial feasibility would be a significant factor in determining the reasonableness and practicability of fire protection, particularly if the water systems would borrow WWD funds to finance the installation or upgrade of fire protection in the systems.

Rural communities, whether local governments or fire departments, should develop goals and objectives for rural fire protection. During the planning stages of a water project, Rural Development can help communities and fire departments identify the fire protection needs of the community. During planning meetings, Rural Development staff can help bring the water systems and fire departments together so that they can discuss the facilities needed and resolve that they are appropriately used.

For example, water system resources such as hydrants should be available to fire departments. However, the fire department personnel must know the difference between fire hydrants and flush hydrants and where each type will be located on the system. Many communities use a color-coding scheme to identify different types of hydrants, the available flow in them, and the available water pressure. The communities and fire departments can work together to develop plans and implement procedures that will ensure that the fire protection facilities are appropriately used.

Rural Development can assist applicants and borrowers by helping them find alternative methods to bring fire protection to their communities. One of the most popular alternatives is the Dry Hydrant Program. A dry hydrant is a non-pressurized pipe system permanently installed in existing lakes, ponds and streams that provides a suction supply of water to a fire department tank truck (see http://www.ncg.nrcs.usda.gov/nhcp_2.html for more details). The advantages to a community in using the Dry Hydrant Program are that homeowners enjoy a drop in insurance, fire departments reduce fuel and transportation costs, and the water

systems save treated water because the dry hydrants use untreated water. All States have access to Economic Assistance Grants that are provided by the National Fire Protection Association. In rural areas, Resource Conservation and Development (RC&D) councils can obtain these grant funds from the State and use them to install dry hydrants.

Proper fire protection can sometimes reduce the amount of homeowner's insurance premiums. Depending on the community's fire rating, this could allow for larger user fees to help finance the water system. There are several levels of fire ratings as established by the Insurance Services Office (ISO). These ratings determine the cost of fire insurance for businesses and homeowners. There are several factors considered in developing a fire rating, but the main factors are: water system, 39 percent; type of fire department, 39 percent, communication, 19 percent; and other, 3 percent. Therefore, the water system may be sized to provide full municipal fire flows, but the fire rating would never get above a specific level if the fire department was all volunteers. Once outside a community, a big factor in fire rating is the time it takes the fire department to get to the structure.

When it is feasible to provide fire protection in one of our rural water systems, the fire department's use of the system must be limited to the capacity of the water system to handle large fire flows. Excessive fire flows can cause low-pressure conditions. In the worst case, negative line pressure will be generated and many undesirable things can happen: the distribution line may collapse or contaminated water may be pulled in through joints not designed for negative pressure or a garden hose filling a spray tank. Any of these conditions can cause significant health risks to all customers on the water system.

Rural Development staff can assist communities to determine the appropriate level of fire protection and by helping them explore other sources of funds such as general tax revenues to fund the fire protection aspect of the water system. Talking to fire protection leaders in rural communities may give you other alternatives to help communities obtain affordable fire protection.