

Communications Systems

Gone are the days when park rangers communicated over lines strung from cabin to cabin across the park, or could make do with a weekly volunteer snowmobile courier circling the park's snowed-in lower loop road, towing a sled full of mail, as was the practice less than a decade ago. Now, staff and visitors expect Yellowstone to provide instant information transfer and cellular phone communication. Such technology is considered essential for ensuring human health and safety, and to protect park resources.

While typewriters are still seen on a few park desks, computers are a standard tool for most employees, whether reservations clerks, fee collectors, exhibit designers, or budget analysts. As the park's information systems manager wrote in a 1997 report to the superintendent, "Yellowstone has begun to bring its computer resources forward from a period of stagnation to the cutting edge of technology." To make use of the enormous volume of information available about park resources and users requires up-to-date tools, including geographic information systems (GIS) and Internet access, the capabilities of which Yellowstone has barely tapped.

Along the road to the future, park staff encounter barriers as basic as geography, old wiring, outdated equipment, and insufficient training. But progress into the twenty-first century of technology and communication marches on.



TELECOMMUNICATIONS

The park's telecommunications operation can be thought of as five businesses rolled into one. A staff of nine ensures access to telephone and cellular phone services; installs and maintains two-way radio, alarm, and local area network systems; and supports the audio/visual equipment used in visitor centers, auditoriums, and for off-site presentations about park issues.

On the radio. The park has a large inventory of radio equipment, including more than 400 mobile and 800 portable radios, 58 fixed sites, and 125 remote-control units. However, radio traffic on existing channels of the UHF/VHF two-way radio system has increased three-fold since it was installed nearly 20 years ago. The radio channels are jammed and coverage deficiencies exist in critical areas. The system is unreliable and unable to handle the heavy traffic during the summer season, threatening the adequacy of emergency responses.

The park will need to have a new radio system by 2005 in order to comply with the narrow banding requirements outlined by the National Telecommunications and Information Administration. When this system is complete, it will double or even quadruple the number of radio frequencies available to support mobile land communications.

On the mountain tops. The park is using fee demonstration funds to improve radio coverage and system reliability by installing a new repeater and antenna on Sawtell and Lone Peaks, west of the park, renovating the analog repeaters located in the park on Mount Holmes and Mount Sheridan, and renovating the Mount Washburn radio site.

In the communications hub. Yellowstone runs a 24-hour communications center 365 days of the year, staffed by 8 to 11 dispatchers who serve as the link with employees working out in the field, often alone and sometimes at great personal risk. The multi-channel control consoles, microphones, and paging systems have been strained to capacity in recent years, but use of fee demonstration monies allowed a major renovation of the center in 1999. The redesign and upgrade will provide reliable communications and 911 services to help protect visitors and employees.



Security systems. Alarm systems are installed in more than 160 park buildings, including the communications center, the priceless exhibits located in the Albright Visitor Center, fee collections stations, park concessions' facilities and cash registers. Alarms have been added to various water and sewage plants and lift stations, as these sites require special systems that prevent or warn of wastewater overflows and ensure the safety of human operators. The alarm system computer equipment that is intended to alert the communications center of a problem regularly malfunctions and must be serviced several times a week. Some of the equipment was being upgraded in 1999 with funding from the fee demonstration program.

Phone home. The park owns a private branch exchange (PBX) telephone switching system that provides NPS-owned telephone service to the Mammoth, Tower, Norris, and Madison areas; service to other areas of the park is provided by other phone companies. A local area network system (LANS) at park headquarters, completed in 1996, provides more cost-effective transmission of voice and electronic data, but the park's phone bill in 1998 was \$330,000, up 36 percent from 1988 because of increases in service charges. Efforts were underway to install similar LANS at Lake, Old Faithful, and several other outlying areas in 1999, and link them to headquarters by a wide area network that will substantially improve intrapark phone, radio, and data communications.

Metacom Cellular brought cellular phone service to Yellowstone in 1996 by placing the necessary equipment at Mount Washburn, Grant Village, and Old Faithful. For the first time, Bechler area rangers could call other park staff without driving 20 miles to the nearest phone. CommNet Cellular has installed its own cell phone site atop Mount Washburn and has a right-of-way to put equipment at the former U.S. West microwave site northwest of Mammoth. The park will require companies to share antenna and building installations wherever possible, in order to prevent the proliferation of conspicuous equipment.

Program Needs

The number of telecommunications workers has remained constant for the past 10 years, but as the complexity of the technology increases, so does the need for staff to maintain and support these systems.

A 100-line upgrade is needed for Yellowstone's PBX telephone switching system. The park also hopes to purchase more equipment and build the database needed for an enhanced 911 system, which would enable phone operators to pinpoint the location of an emergency while on the phone with the caller.



TELECOMMUNICATIONS SYSTEMS

STEWARDSHIP GOALS



Professional staff provide reliable, easy-to-use, radio, alarm, and telecommunications systems that are maintained and upgraded, or replaced as necessary to facilitate the demand for such services.



All park offices have computer access to an intrapark communications network.



Yellowstone staff provide instant information transfer through reliable, easy-to-use telecommunications and information systems.



The communications systems infrastructure facilitates protection of cultural and natural resources and helps ensure human health and safety.

CURRENT STATE OF RESOURCES/PROGRAMS



Park radio systems are being upgraded; cell phones provide access to ranger stations previously isolated from park headquarters and other stations; alarm systems protect museums, fee collection stations, and utility systems with special safety requirements.



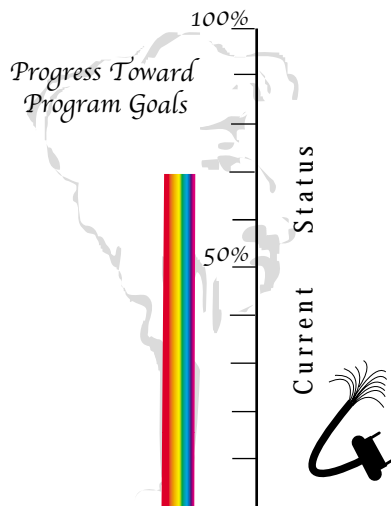
Many park offices lack access to the newly established intrapark network, but hardware and software purchases and system rewiring proceeds toward accomplishing this goal in 1999.



Inadequate systems and infrastructure result in slower response to emergencies and some inefficient use of human resources.



To avoid adverse effects on resources, resource specialists are consulted before new communications systems are installed. Placement of some power poles and lines, communications satellites, and other equipment impairs the esthetics of historic buildings and scenic vistas and poses some safety risk.



1998 FUNDING AND STAFF

Recurring Funds	
Yellowstone N.P. Base Budget	\$ 786,600
Cost Recovery/Special Use Fees	\$ 25,500
Non Recurring Funds	
Fee Demonstration Projects	\$ 96,500
Staff	9.0 FTE

The human resources and funding necessary to professionally and effectively manage the park to stewardship levels will be identified in the park business plan.