

Wildlife

Ungulate- animals that are mammals having hooves; for example, bison, elk, bighorn sheep.

Yellowstone has documented 67 species of mammals, more than 300 species of birds, 13 species and subspecies of native fish, five species of nonnative fish, six species of reptiles, and four species of amphibians (Yellowstone Resources and Issues Handbook 2007). Among the 67 species of mammals, there are seven native ungulates and two bear species. The Tower-Roosevelt area is within the habitat and range of the ungulate population of Yellowstone. There are also small mammals and a wide variety of birds.

Mammals: Mammals living in and around the Tower-Roosevelt area include bison, elk, moose, bighorn sheep, mule deer, whitetail deer (scarce), pronghorn, black and grizzly bears, cougars, coyotes, bobcats, and small mammals such as Uinta ground squirrels, pocket gophers, and jackrabbits.

Bison: The 2008 summer bison population for Yellowstone was approximately 3,000 bison, with 1,500 bison in the Northern Range. Bison are commonly seen in and around the Tower-Roosevelt area. The area serves as both year-round habitat for adult males as well as wintering range for mixed groups (bulls, cows and calves). Blacktail Deer Plateau (west of the Tower-Roosevelt area) is a major wintering range for bison. Movements of bison between winter range areas of Blacktail Deer Plateau and Little America (northeast of the Yellowstone River) and the Lamar Valley occur on either side of the Tower-Roosevelt area.

Elk: The northern Yellowstone elk herd is one of the largest free-ranging herds in North America. Habitat in the Tower-Roosevelt area, with mixed forest and grassland, is ideal for elk. Rutting season occurs during September and October, and bulls tend to seek open meadows to be highly visible and maintain their harems (groups of elk cows). The meadows are also used for calving. Population counts show the elk population on the Northern Range, inside and outside the park, has decreased four to nine percent annually since 1994. Predation by wolves and other large carnivores, hunting of elk migrating outside the park, and drought effects are factors contributing to this trend (Barber et al. 2005, Hamlin 2005, Vucetich et al. 2005, White and Garrott 2005).

Moose: In the 1970s, an estimated 1,000 moose inhabited the park. It is estimated that less than 500 moose currently live in the park (Yellowstone Resources and Issues Handbook 2007). Moose populations decreased after the fires of 1988 that burned important winter habitat (i.e., mature spruce/fir forests) in the northern portion of the park (Tyers and Irby 1995, Alces 31:35-43). Moose have been seen in the Tower-Roosevelt area, from Floating Island Lake west of Tower to Antelope Creek south of the Tower Fall Trailhead location, but good moose habitat—riparian bottom lands with mature spruce/fir slopes—is not abundant in the area.

Bighorn Sheep: A small resident band of ten to twenty bighorn sheep frequent the cliffs east of Calcite Springs across the Yellowstone River and have their lambs there. Both resident and migratory sheep use the area. Typical habitat for Bighorn Sheep is steep rocky cliffs. In the Tower-Roosevelt area, this habitat exists along the Grand Canyon of the Yellowstone River. During the autumn, ewes are observed near the Tower Fall Trailhead location, where they graze and move along the road as they migrate from Mount Washburn to Mount Everts.

Mule Deer: Mule deer are often seen in the Tower-Roosevelt area in the summer months, as individuals or in small family groups, but they cannot survive winters with deep snow at this elevation. The population growth rate appears to be increasing. Less severe winters in recent years may contribute to their increase in the area (Yellowstone Resources and Issues Handbook, 2007).

White-tailed Deer: White-tailed deer are native to the northern Rocky Mountains but have never been abundant in or near Yellowstone. The occasional white-tailed deer is seen in the Tower-Roosevelt area.

Pronghorn Antelope: Pronghorn antelope frequently use the area around the Tower-Roosevelt area during the summer. Yellowstone pronghorn antelope are partially migratory, with more than 70 percent of the population migrating to summer areas between Mount Everts and the upper Lamar Valley. Sagebrush-grassland areas near the Tower Junction location are used by migratory pronghorn antelope during the migration, fawning, and initial rearing periods.

Black Bear: The Tower-Roosevelt area is mostly medium and low quality bear habitat in the spring, summer, and fall based on vegetation present. However, the presence of winter-killed ungulate carrion and elk calving areas in the spring and early summer significantly increase the value of the area to bears during these seasons. Black bears are known to den in the rocky cliffs near the Yancey's Hole location and on the steep slopes of the Tower Creek drainage near the Tower Fall Campground. Yellowstone scientists estimate 500–650 black bears live in the park (Yellowstone Resources and Issues Handbook, 2007). Before 1970, black bears were involved in more bear-human conflicts than grizzlies. However, since then, black bears have been involved in fewer conflicts because regulations prohibiting the feeding of bears have been strictly enforced. Most bear-human conflicts that have occurred in recent years were in the Tower Fall Campground where bears were attracted to improperly stored human foods.

Due to the very low level of human-caused black bear mortality, benign encounters between bears and park visitors are common. After frequent exposure to visitors, bears often habituate to the presence of people. Habituated black bears frequently forage for native foods in roadside meadows in the area from Floating Island Lake to the Tower Fall Trailhead location and the Yellowstone River Bridge, causing large traffic jams as park visitors stop to view and photograph bears. A major bear management challenge in the Tower-Roosevelt area is managing park visitors so that they do not approach or feed habituated bears.

Grizzly Bear: The park is responsible for protecting grizzly bear populations and habitat as mandated by the Yellowstone Park Act (1872) creating the park, the National Park Service Organic Act (1916), the National Environmental Policy Act (1969), the Endangered Species Act (1973) (EIS), and the National Parks Omnibus Management Act (1998). National Park Service policy mandates that the park perpetuate native animal populations as part of the natural ecosystem and protect native animal populations against destruction, removal, harassment, or harm through human actions (NPS 1998, 1991). A recovery plan for grizzly bear populations in the lower forty eight contiguous United States was implemented because grizzly bears were listed in 1975 under the Endangered Species Act (USFWS 1982). The plan was developed to provide direction for the conservation of grizzly bears and their habitat to federal agencies responsible for managing land within the recovery zone. That same year, YNP completed an Environmental Impact Statement (EIS) for a grizzly bear management program specifically designed to recover the subpopulation of grizzly bears inhabiting the park (NPS 1982).

Management of grizzly bears in YNP has been successful in enabling grizzly bear recovery and reducing bear-human conflicts (e.g., property damage, incidents of bears obtaining human food, bear-inflicted human injuries) and human-caused bear mortalities in the park (Gunther 1994, Gunther and Hoekstra 1998, Gunther et al. 2000, Gunther et al. in press). The U.S. Fish and Wildlife Service removed grizzly

bears in the Greater Yellowstone Ecosystem from the Federal List of Threatened and Endangered Wildlife on April 30, 2007.

Grizzly bear activity, cub production, habitat quality, and conflicts with people occur near the Tower-Roosevelt area (Gunther et al. 1998). Based on vegetation cover types, the area within 1.9 miles (3 km) of the Tower-Roosevelt area is medium and low quality grizzly bear habitat. However, the presence of winter-killed ungulate carrion, elk calving areas, and wolf-killed ungulate carcasses significantly increases the value of the area to bears (Robison and Gunther 1996).

Cougars: Cougars (mountain lions) are common residents of the Northern Range and occur in Tower-Roosevelt area. Based on studies of radio-marked cougars conducted from 1987 to 2006, each year about four cougars are expected to have home ranges that encompass these areas. Four cougar dens were documented within five miles of the Tower-Roosevelt area during the 1987 to 2006 study (Murphy 2008). On the Northern Range, cougars prey primarily on elk calves and mule deer, and use conifer forests and rocky areas extensively.

Other carnivores: Other carnivores in the area include coyotes, red foxes, bobcats, raccoons, pine martens, badgers, weasels, and mink. Observations of coyotes are common. Badgers are occasionally seen digging for Uinta ground squirrels in nearby meadows.

Fish: Fish, both native and introduced, are an important component of the park's wildlife. The Yellowstone fishery is comprised of 13 native and five introduced species, including the native westslope and Yellowstone cutthroat trout, longnose dace, mountain whitefish, arctic grayling, longnose sucker, and introduced brown, brook, and rainbow trout. This mixture provides high-quality angling opportunities for visitors as well as food for birds, otters, grizzly bears, and other wildlife. Introduced brook trout are found in Lost Creek, Yancey's Creek, and Elk Creek in the Tower-Roosevelt area. These streams are high priority targets for native cutthroat trout restoration in the future.

Reptiles and Amphibian: The U.S. Geological Survey's Amphibian Research and Monitoring Initiative and the National Park Service's Inventory and Monitoring program conducted amphibian and reptile surveys from 2000 to 2003 (Patla and Peterson 2004). Four species of amphibians (Columbia spotted frog, boreal chorus frog, boreal toad, blotched tiger salamander) and six species of reptiles (intermountain wandering garter snake, prairie rattlesnake, bull snake, valley garter snake, rubber boa, and northern sagebrush lizard) were found to be present in Yellowstone. The inventory looked at random catchments; the closest to the Tower-Roosevelt area was in the vicinity of Pleasant Valley (north of the Tower Junction to Yancey's Hole locations), where boreal chorus frogs and Columbia spotted frogs were found. The Fisheries and Aquatics Section of the Yellowstone Center for Resources conducted amphibian surveys in the Elk Creek drainage near the Yancey's Hole location during 2006–2007. Most of these surveys took place north of the Grand Loop Road. Surveys were conducted in wetlands designated by the National Wetland Inventory. Habitat is suitable for the same four species above and for adult amphibians in wetlands in the immediate vicinity of the Tower-Roosevelt area, though surveys were not conducted there. Breeding populations of three amphibian species were observed during the Elk Creek survey; the blotched tiger salamander, Columbia spotted frog, and boreal chorus frog. The nearest breeding area for amphibians is immediately across the Grand Loop Road, north of the Tower Ranger Station location, where the Columbia spotted frog was observed to breed. Boreal toads were the only amphibian species in the park not observed during the Elk Creek survey, but they may be present because of their wide distribution. Boreal toads have limited areas where they breed; these areas usually include waters with some hydrothermal inputs. The wandering garter snake was the only reptile species observed in the Elk Creek drainage survey.

Birds: A wide variety of birdlife is found in the Tower-Roosevelt area. Some of the birds observed are mountain chickadee, western tanager, red-tailed hawk, Hammond's flycatcher, American crow, common raven, Williamson's sapsucker, red-naped sapsucker, warbling vireo, yellow-rumped warbler, chipping sparrow, mountain bluebird, northern flicker, vesper sparrow, savannah sparrow, green-tailed towhee, Brewer's blackbird, Brewer's sparrow, Wilson's snipe, ruby-crowned kinglet, brown creeper, red-breasted nuthatch, hairy woodpecker, Clark's nutcracker, killdeer, Cassin's finch, red crossbill, MacGillivray's warbler, and rufous hummingbird (Yellowstone Bird Report, 2008). Harlequin ducks nest on the Yellowstone River near the Tower Junction location. Peregrine falcons and ospreys nest near Tower Fall. Bald eagles winter throughout the Northern Range. Two to twelve bald eagles winter in the Tower-Roosevelt area, depending on winter conditions. The U.S. Fish and Wildlife Service removed bald eagles in the Greater Yellowstone Ecosystem from the Federal List of Threatened and Endangered Wildlife on April 30, 2007.

Threatened and Endangered Species

Canada Lynx: Historic information suggests that lynx were present but uncommon in the park from 1880 to 1980 (Murphy et al. 2004). No lynx were detected in the Tower-Roosevelt area during a lynx survey conducted 2001–2004, or during cougar surveys conducted 1988–1992 and 1998–2007. A 30-acre area of potential lynx habitat occurs within 328 feet (100 m) of the Tower-Roosevelt area, but it is not a suspected travel corridor for lynx (Murphy 2007). The 7,600-acre Tower Creek lynx analysis unit (LAU) occurs primarily to the south and west of the Tower Junction location. It does not encompass the Tower Junction, Roosevelt Lodge, or Yancey's Hole locations.

Gray Wolf: Gray wolves were native to the Yellowstone area when the park was established in 1872. Historically hunted for their hides and as predators, they were eliminated from the ecosystem by the 1930s. The United States Fish and Wildlife Service released an environmental impact statement on wolf reintroduction in May 1994. In 1995 and 1996, 31 gray wolves from Canada were released in the park. As of December 2007, 11 packs with 155-160 wolves were residing largely in the park.

The park's Northern Range is important habitat for wolves and wolf use in the vicinity of the Tower Junction location is heavy. Mid-winter breeding has centered in this general area, where four packs currently den and use rendezvous sites. Many elk kills occur in the Tower-Roosevelt area, including the Tower Junction location. Most of the kills made during winter were found near the Lamar River and Pleasant Valley. The gray wolf was delisted in March 2008, but a federal court reinstated Endangered Species Act protection in July 2008.

Natural Soundscapes

Although natural soundscape monitoring has not been conducted in the Tower-Roosevelt area, current activities create sounds typical of road travel corridors and developed areas with normal operations. These sources of non-natural noise are generally acceptable noise. The area is quiet enough that noise is not of concern for local resources and values. In the summer, traffic noise is the greatest from trucks and motorcycles and likely reaches up to several miles from the road corridors. The road from Mammoth to the Northeast Entrance remains open to wheeled vehicles in the winter and traffic is frequent through the Tower Junction location. Noises from construction projects can affect the natural soundscape. The natural soundscape of this area would include the common sounds of wind in the vegetation, animal

vocalizations (bird songs, insects buzzing, elk bugling, wolves howling, bison grunting), thunder, rain and flowing water sounds of waterfalls and rapids.

CULTURAL RESOURCES

All Cultural resources maps are referenced in Appendix B.

Historic property—a district, site, building, structure or object significant in the history of American archeology, architecture, culture, engineering, or politics at the national, state, or local level.

Yellowstone National Park has many cultural resources, including archeological sites, historic districts, buildings, structures, cultural landscapes, and ethnographic resources. Section 106 of the National Historic Preservation Act of 1966 (NHPA) provides the framework for federal review and protection of cultural resources, and ensures that they are considered during federal project planning and implementation.

Archeological Resources

The park's archeological sites provide evidence of human occupation for approximately 11,000-13,000 years. These tangible remains are viable means of understanding past cultures without written records and provide the basis for continued scientific research.

An archeological inventory was carried out in October 2004 in the Tower Ranger Station, Roosevelt Lodge, and Yancey's Hole locations in conjunction with the Tower-Roosevelt Comprehensive Plan (Dowd et al (ArcheoLOGIC USA) 2005).

Roosevelt Lodge, Roosevelt Corral and Tower Junction locations have been surveyed intensively by multiple inventories, including:

- An intensive archeological survey conducted in 1990 in the Roosevelt Lodge and Roosevelt Corral locations (Cannon and Phillips 1991).
- The Roosevelt Lodge Sewer Upgrade Project Area, Class III Archeological Inventory Results (Aaberg et al. 1995).
- An archeological inventory conducted in 1998 in and around the Roosevelt Corral location in conjunction with concessions projects, particularly the Roosevelt Water System Project (Aaberg and Crofutt 1999).

The Roosevelt Lodge, Roosevelt Corrals and Tower Junction locations: The 1991 survey recorded two prehistoric lithic scatters within and adjacent to the Tower Junction, Roosevelt Lodge and Roosevelt Corral locations that were determined eligible for inclusion in the National Register of Historic Places (WY SHPO concurred, November 15, 1996). These sites have had partial data recovered (See Cultural Resource Map, Appendix B Map).

Tower Ranger Station Location: No prehistoric sites were identified during the 2004 inventory. The Tower Ranger Station (circa 1908) and other contributing elements to the historic district may have

associated subsurface archeological components. The report states, "The alluvial nature of the deposits in the Tower Ranger Station location makes buried subsurface deposits a distinct possibility there. Subsurface 20th century historic archeological deposits could exist that contribute to the historic district's significance" (Dowd et al. 2005).

Tower Junction, Tower Fall Trailhead and Tower Fall Campground Locations: Site-specific surveys have been conducted along the Grand Loop Road between Tower Junction and Canyon Junction. This survey was conducted for the Canyon Junction to Tower Junction Road Improvement project that included 18.5 miles of road edges. In 1995, the Office of the Wyoming State Archaeologist conducted an intensive pedestrian inventory of up to 328 feet (100 m) on either side of the road (unless prevented by topographic barriers) that identified both previously recorded sites and undocumented archeological resources. One prehistoric site near the Tower Fall Trailhead location was identified and determined not eligible for the National Register. A Class III resource inventory of the Tower Fall Campground road was completed in May 2003 to identify and evaluate resources for the National Register that might be impacted by road improvements. No new sites were identified, but a file search indicated that two previously recorded and eligible sites occur within the Tower Fall Campground location. The most important site in this area is a small surface lithic scatter with a buried prehistoric campsite component from the late archaic period and two surface scatters of historic trash. The prehistoric component of the site is eligible for the National Register.

Yancey's Hole Location: Archival research and field survey information from the 2004 survey (Dowd et al. 2005) located two previously recorded sites near the Yancey's Hole location, one prehistoric and the other historic.

The prehistoric site is located in the same vicinity of the Yancey's Hole location. The site was first recorded in 1989 by the Midwest Archeological Center as a surface scatter of obsidian and chert flakes. Shovel testing was conducted in the 2004 survey to determine National Register eligibility. Shovel pit tests turned up additional prehistoric artifacts, including obsidian and chert flakes and fire-cracked rock. The site appears to have been used for a short duration. This site has been determined eligible for the National Register.

John Yancey erected a rustic hotel in Pleasant Valley in 1884. Remains of the hotel are evident in a structural stone foundation at the base of a grassy slope. The foundation is 25 by 30 feet, constructed from fieldstones (Dowd et. al. 2005). This site is eligible for the National Register, but has not yet been inventoried.

Historic Resources

Yellowstone's historic resources reflect a number of historical themes, including the growth of tourism, Yellowstone as a "proving ground" for America's national park system, army protection and management of the park's resources, and the park's pioneer road transportation system. The stage road from Gardiner, Montana, brought European settlers and pioneers, especially gold miners, through the area on their way to Cooke City, Montana (Yellowstone Resources and Issues Handbook 2007). There are three historic districts within the Tower-Roosevelt area: Grand Loop Road Historic District, Roosevelt Lodge Historic District, and Tower Junction Ranger Station Historic District. The following discussion chronicles a history of the project area, with some descriptions of historic districts.

Grand Loop Road Historic District: The Grand Loop Road was listed on the National Register in 2004. The period of significance for the Grand Loop Road Historic District spans from 1872, when Yellowstone National Park was established and the idea of building roads was conceived, to 1944, after the completion of the Grand Loop Road. The significance of the roads is based on three criteria: A) their contribution to the broad pattern of Yellowstone history; B) their association with a significant person (Hiram Chittenden); and C) the distinctive characteristics of the road elements and structures. A systematic survey of the road through the Tower-Roosevelt area was conducted in 1997 (Historic American Engineering Record). Documentation of the historic bridges, retaining walls, box culverts, masonry culvert headwalls, and other landscape elements was combined with information from the historic resource study, *The History of the Construction of the Road System in Yellowstone National Park, 1872–1966* (Culpin 1994) and used to evaluate the historic district. All prehistoric and historic archeological sites and historic structures, including road features, were evaluated for National Register status. Consultation with the Wyoming State Historic Preservation Office provided concurrence on the National Register eligible archeological sites and structures found within the area of potential effect along the portion of the Grand Loop Road over Dunraven Pass between Tower Junction and Canyon Junction.

Roosevelt Lodge Historic District: (see Cultural Resource Map Appendix B)

National Register Information: Roosevelt Lodge Historic District was listed on the National Register of Historic Places on April 4, 1983. It is shown on the Cultural Resources map in Appendix B. This district supports the park's nationally significant role in the areas of NPS development under Criterion A, in the areas of education and the accommodation of guests. Under Criterion A this historic district is associated with the historic context, "Development of Concessions, Yellowstone National Park: 1827-1955," under the Multiple Property listing *Historic Resources of Yellowstone National Park, 1872-1955*. Specifically, the role of the district is in the areas of education and guest accommodations. The historic district is also locally significant under Criterion C in the area of architecture. It embodies the distinctive characteristics of the Rustic style. The buildings were the focus of the 1983 nomination and the historic district boundary was drawn accordingly. The period of significance given the district was 1906-1942; beginning with the establishment of Camp Roosevelt and ending with the conclusion of an extensive period of development. In September 2008, the Wyoming State Historic Preservation Office concurred that cultural landscape features and patterns were also eligible as contributing to the historic district under the Multiple Property Listing *Historic Park Landscapes in National and State Parks*. It is also associated with the historic context, "Historic Landscape Design of the National Park Service, 1916-1942." This required an expansion of the historic district boundary to the north to include these features and patterns. It also required an extension of the period of significance to 1948 in order to include the removal of the barn and corral dating to the Wylie era, and the relocation of housekeeping cabins in their place, as was customary for the NPS during the 1920s and 1930s. This change was the final stage of fulfilling the 1939 development plan for the Roosevelt Lodge area. The cultural landscape features and patterns are discussed in the next section of this chapter.

History and Historic Buildings: Historically, the Roosevelt Lodge area was used by fur trappers, explorers, and Native Americans who followed the Bannock Trail. The scenic qualities and accessibility to excellent fishing waters prompted this area to be developed as an overnight stopping point (NR Nomination Form). Located at an important crossroads, Camp Roosevelt was a convenient yet picturesque stopping place for the Wylie Semi-Permanent Tent-Camping Company, which conducted economical stagecoach tours of a string of tent camps that were located about a day's travel from one another. While there were interesting geologic formations within walking and hiking distance, Camp Roosevelt was not developed around a particular feature such as were the lodges at Old Faithful, Canyon and Lake. Camp Roosevelt

historically provided a place for “enjoying outdoor life,” as a 1907 advertisement notes. It was modest and secluded, taking advantage of bathing in the small Nymph Hot Springs, access to riding and hiking trails, and good fishing.

In 1919-1920, this Wylie Tent-Camp was the first of the camps to be converted into a lodge. The lodge system developed throughout the park during the 1920s and 1930s in response to the advent of the automobile. Tents were converted to frame and log structures that could be accessed by personal automobiles rather than stagecoach tours. As a variation from other park lodges however, park officials recorded their intention of "making this camp something on the order of the 'dude ranch' of the west," capitalizing on this popular form of tourism at that time. What this meant for Roosevelt Lodge was that the barn and corrals would remain an important land use and the architectural style would be unadorned as a more vernacular version of rustic. In line with the “dude ranch” experience, this also meant that horseback riding and fishing opportunities would be highlighted. A typical dude ranch was composed of little groups of cabins, corrals, and bunkhouses. They were usually located in remote, picturesque areas. Both of these characteristics were present at Roosevelt Lodge.

Roosevelt lodge, the largest structure within the complex, is the smallest of all the park lodges. The front porch was a focal point for relaxing, informal socializing, and viewing of the distant mountain range. In 1918, the NPS promoted the use of parks for field laboratory work and as a place for students to conduct studies of natural features. The daily nature field trips for guests and lectures on natural resource topics became the forerunner to the interpretive and educational programs in the park today.

Adhering to 1930s-40s Master Plans, a more orderly and higher density “housekeeping cabins” area was added to the area northwest of the lodge. In 1936-37 the housekeeping cabin area developed by relocating 70 frame cabins from Mammoth Lodge, which had been recently dismantled. This plan, as well as a shift in the Lost Creek’s course, spurred the removal of the original barn and corrals. The new barn and corrals in their new location were not built until the late 1950s. A less orderly, lower density cabin area with larger cabins was built according to the 1930s-40s Master Plans to the northeast of the lodge. North of the lodge is a cluster of rustic, logs-out, frame cabins arranged in 3 orderly rows. This cluster had assumed its general form, with most of the current buildings in place, by at least 1929. There is a cluster of cabins, most of which are log structures, arranged at the base of a steep slope some distance east/northeast of the lodge. This early group of tourist cabins was in place by the early 1920s. The cluster immediately northeast of the lodge generally forms a wide “v” because most of its cabins are arranged at an angle. In total, there were four separate groupings of cabins. Many of the cabins added to Roosevelt Lodge during this time were brought in from other areas of the park, representing different construction types. To this day, the Roosevelt Lodge Historic District preserves some aspects of the earlier tent camp such as in the organization of a central dining and gathering facility surrounded by clusters of individual camping units.

The Roosevelt Lodge location has become a repository for historic cabins. Some cabins have been moved into the area from other parts of the park, while others were constructed on site between the 1920s and 1940s. The historic integrity of the moved cabins is considered intact despite their change in location. In 2005, the Wyoming State Historic Preservation Office gave a consensus determination to list 30 more cabins at Roosevelt in the historic district, though no formal addendum to the National Register nomination has been made. Although the district does not contain any exceptional or unique examples of rustic architecture, it does preserve the types of cabin construction used throughout the park.

Individually, many of the buildings (other than the lodge) do not qualify for the National Register, but collectively they contribute to the historic district, which is now composed of 124 contributing buildings and six non-contributing buildings. Roosevelt Lodge and the surrounding cabins and service buildings are all within the historic district. A Historic Structures Report for the Roosevelt Lodge (1997) documents the history, contributing features, and treatment plan for the district. Cultural landscape features and patterns that contribute to the district are described in the Cultural Landscape impact topic following this section.

Tower Junction Ranger Station Historic District:

National Register Information: The Tower Junction Ranger Station Historic District was determined to be eligible for the National Register in 1997. It is shown on the Cultural Resources map in Appendix B. Historic survey forms record the district as eligible at the local level under National Register Criteria A. The area of significance for the district is “government” and the historic context is “Administrative and Concessions Development in Yellowstone National Park.” The period of significance for the district is 1914 to 1945. In September 2008, the Wyoming State Historic Preservation Office concurred that cultural landscape features and patterns were also eligible as contributing to the historic district under the Multiple Property Listing *Historic Park Landscapes in National and State Parks*. It is also associated with the historic context, “Historic Landscape Design of the National Park Service, 1916-1942.” The period of significance was revised to begin earlier, at 1907; beginning with the establishment of the soldier station on that site in 1907. The historic district boundary was expanded to incorporate contributing landscape features and patterns; namely the horse corrals, the open space in front of the ranger station, and the creek.

History and Historic Buildings: Sited where Lost Creek crosses the Grand Loop Road, near the intersection with the Northeast Entrance Road, the Tower Junction Ranger Station Historic District is a government administrative area that also has a visitor contact function. The former ranger station (now the ranger residence) sits prominently near the road, overlooking the broad sweeping views of meadow and forest mosaics of Pleasant Valley within the Northern Range. It provides a NPS ranger presence at this part of the park. The former station has a simple setting that is relatively uncluttered; its foreground is open space with a simple entry. A very heavy and overly tall planting of large coniferous trees (planted in the 1940s) has diminished the presence and weight of the former station in this area. The district developed incrementally since 1907, and has a variety of buildings from different times in the park’s history; a former army soldier station, a former road camp, and park operations during the lean years of WW II. It has always retained an administrative and operational function for this part of the park. It has also retained the public contact component at the ranger stations. The untidiness that naturally accompanies the maintenance, housing and operational area is hidden behind a screen of Douglas-fir and aspen trees. The adjacent Roosevelt Lodge Historic District separated visually from this administrative area by a natural topographic feature, was the first development at this crossroads (1906).

The first administrative development at this junction occurred the next year, in 1907, when the original Tower Falls Soldier Station, established near Calcite Springs Overlook in 1901, was abandoned and the detachment moved to the location of the inventory unit. Between 1914 and 1916, the Interior Department constructed the building currently known as the ranger’s residence. This building is described as the “Tower Falls Soldier Station,” Building No. 78, with a capacity of five men. In 1916, other buildings recorded at this site included a stable, an officer’s quarters, and other small structures. After the establishment of the National Park Service in 1916, the use of the area remained administrative and for public contact, although the name of the station was changed from “soldier station” to “ranger station.” In keeping with an important trend to blend buildings into the landscape, the NPS transformed the

appearance of the Tower Falls Ranger Station in 1924 to the NPS Rustic Style, applying stone around the base and logs to the exterior walls, and changing the light exterior color to dark brown.

In 1926, the facilities of more than twenty park-wide road camps were recommended for improvement, one of them being at Tower Junction. There is not much information on the establishment of the road camp at Tower Junction. However it is known that some camps were established in the park as early as 1901 to feed and house personnel who constructed park roads. As part of the improvements, the current barn and (probably) the corrals were constructed in 1929. The mess hall was used as a bunkhouse until 1945 when a Civilian Conservation Corps building was moved into the site. The garage next to the ranger station was probably also a modified CCC structure. Both were constructed in the Rustic style. By 1945, all of the principle buildings were in place. The Tower Administrative location currently includes six major buildings that date to the historic period: the bunkhouse, the barn, the mess hall, the garage, the fire cache, and the ranger residence. Cultural landscape features and patterns that contribute to the district are described in the Cultural Landscape impact topic.

The following locations are not historic resources. These descriptions serve as background for the TRCP/EA.

Roosevelt Corral Location History: The corral was relocated to its present location by 1958, spurred by Lost Creek shifting course and by the goal of moving the operation away from guest cabins in 1947. A corral was developed as part of the early Wiley Camp (circa 1906) and has remained a fixture within the Roosevelt Lodge vicinity since then (Shapins 2005). However, the original corral location was to the immediate north of Lost Creek, west of the Roosevelt Lodge and part of the cabin area. The Roosevelt Corral area has been determined ineligible to the National Register of Historic Places (July 2008)

Tower Junction Location History: The existing service station was built in 1961 by the Continental Oil Company (Conoco) and it remains unchanged. In December 1952, Charles A. Hamilton approached Superintendent Lon Garrison about his plan for building a service station at the Tower Fall Trailhead location, but Garrison insisted that a station be built at the Tower Junction location instead. Prior to the service station at the Tower Junction location, there was a single pump adjacent to Roosevelt Lodge, which was a very small operation that mostly provided emergency service to visitors who didn't have enough gas to get to the next station.

Tower Fall Trailhead and Campground Locations History: The Grand Loop Road, which originally ran through what is now the Tower Fall Campground was relocated in 1930, and a new store was built adjacent to it in 1936. The interior and exterior of this building was extensively remodeled in 1959. Parts of the 1936 store remain beneath the existing store.

The first development in the Tower Fall Trailhead location area is of the same era as the Wiley Tent Camp and the Roosevelt Lodge. The first building (1916) in this general location was a repair shop and auto supply center used by the Yellowstone Western Transportation Office, particularly for vehicles coming down from Dunraven Pass that needed to cool their brakes. The building was constructed in the Tower Fall Trailhead location near the existing dormitory, next to the Tower Fall Campground, where it was on the alignment of the original road. In 1917, the Haynes Picture Shop was established. "It was the need for brake bands at Tower Fall that put Jack E. Haynes in business there." Haynes volunteered to provide the service, which ultimately developed into his profitable Tower Fall Picture Shop (Haines 1977).

The Tower Fall Campground and associated employee living quarters were built in 1922. In 1932, the Haynes Store was remodeled into a dormitory. In 1941, a new mess hall and power house were built. The dormitory was replaced by today's dormitory in 1985. The mess hall now serves as the employee recreation hall.

Yancey's Hole Location History: The foundations of what was once the Yancey's hotel and saloon were uncovered during the 2004 archeological survey. The first development was constructed in 1884, when John Yancey built a hotel and mail station in Pleasant Valley to serve travelers on the stage road from Gardiner to Cooke City. These buildings remained in operation with the addition of some other structures and corrals through 1906, when the hotel burned to the ground.

Cultural Landscapes

A cultural landscape recognizes the influence of human beliefs and actions over time on the natural landscape; it is an indicator of cultural patterns, values, and heritage. In the broadest sense, a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions (NPS Director's Order-28 p.87).

The contributing features and patterns of a cultural landscape may include, as appropriate: natural systems and features; spatial organization; topography and landforms; vegetation; circulation systems and features; land use; buildings and structures; building cluster arrangement; water features; small scale features; and views and vistas. In July 2008, the existing historic districts at Roosevelt Lodge and Tower Junction Ranger Station were determined eligible through consensus with the Wyoming State Historic Preservation Office.

Roosevelt Lodge Historic District

Cultural landscape features and patterns that contribute to the significance of the district and were determined eligible in July 2008. The significance of the Roosevelt Lodge Historic District and its history is described under Historic Resources section above; serving as a basis for why the cultural landscape features, below, have been determined eligible. The Roosevelt Lodge Historic District Cultural Landscape Inventory (Shapins 2007) documented the significance and integrity of the cultural landscape features and patterns, which are described below.

Contributing Features and Patterns: Landscape patterns at the Roosevelt Lodge are representative of Rustic Style design precepts. These patterns include the siting of facilities in a natural setting, with emphasis on preserving natural features and views. Typically, the Rustic Style would achieve objectives by preserving specimen trees for dramatic effect and employing existing stands of vegetation as natural screens. At Roosevelt Lodge, the complex is sited far from the Grand Loop road, above a distinct ledge, and behind a natural screen of Douglas-firs and lodgepole pines. Through this siting, major facilities were relatively hidden from view from the road. One landmark tree was carefully preserved during the lodge construction, though it has since succumbed to age. The proximity of this tree to the lodge emphasized the lodge's picturesque setting. Finally, the lodge building itself – the dominant features of the Roosevelt Lodge landscape – was sited and oriented to take advantage of views. It was designed with a wide, spacious porch so that guests could rest while admiring the scenery of Pleasant Valley and the hills beyond. The foreground view from the porch has been compromised by an asphalt parking area. The distant views from the porch have been retained, however. Surviving small-scale landscape features include a heavy log footbridge that spans the small ditch/swale west and north of the lodge building. A peeled-log flagpole is also consistent with the Rustic aesthetic, though it appears to be a later

replacement. The over-sized log curbing and the large asphalt parking area are not contributing features of the district.

Summary of contributing patterns and features (CLI 2007):

Natural Systems and Features:

- Lost Creek
- Dry stream channel

Spatial Organization/Topography:

- Pattern of spatial organization largely determined by topography, with development at the base of slopes and obscured from sight by ridges
- Division of district into zones based on land and building use: lodge/services complex and guest accommodations cabins clusters
- Topographic features such as hills and ridges employed in screening development

Vegetation

- Secluded natural setting in area of native vegetation
- Mature stands of Douglas-fir, lodgepole pine, and quaking aspen including those used for screening development from road
- Grassy meadow with sagebrush as organizing feature
- Specimen Douglas-fir tree preserved off NW corner of lodge building
- Specimen leaning Douglas-fir in meadow

Circulation

- Two narrow entry and exit drives where they retain original narrow, informal alignment (from Roosevelt corral to main parking lot, and from main parking lot to curve where road was realigned)
- Gravel roads throughout guest cabins
- Informal footpath network throughout cabin areas
- Hiking/bridle trails leading toward Lost Lake on Lost Creek

Views and Vistas

- Pattern of setting back facilities behind natural screens of topography and vegetation
- Views from Roosevelt Lodge porch, Cabins Group C (north west cluster of cabins), and from trails behind lodge

Buildings and Structures

- NPS Rustic Style design of structures (native materials, small scale, etc.)
- Established contributing resources of Roosevelt Lodge Historic District

Building Cluster Arrangement

- Organization of district into five major building clusters, each with distinctive characteristics:
 - Lodge and services/utilitarian (center of complex)
 - Cabins group A with linear arrangement at northeast portions of district

- Cabin group B (V-shaped arrangement at center-east portion of district)
- Cabin group C (linear arrangement at north western portion of district)
- Housekeeping cabins area (formal arrangement at southwestern portion of district)

Small-scale Features

- Rustic log footbridge to Cabin Group C

Tower Junction Ranger Station Historic District

Cultural landscape features and patterns that contribute to the significance of the district and were determined eligible in July 2008. The significance of the Tower Junction Ranger Station Historic District and its history is described under Historic Resources section above; serving as a basis for why the cultural landscape features, below, have been determined eligible. The Tower Junction Ranger Station Historic District Cultural Landscape Inventory (Shapins 2007) documented the significance and integrity of the cultural landscape features and patterns, which are described below.

Contributing Features and Patterns: Landscape architectural patterns and features at the Tower Ranger Station Historic District also represent tenets of the Rustic Style employed by the NPS between 1916 and 1942. Patterns include siting facilities in a natural setting, with an emphasis on preserving natural features and views. Typically, these objectives would be achieved by preserving existing stands of vegetation as natural screens and topography. The Tower Ranger Station Historic District is divided into two zones; a visitor services zone adjacent to the Grand Loop Road and a utilities and operations zone a few hundred yards south. The more operational zone is hidden behind a natural screen of evergreens and aspen trees. The more public face or visitor services zone contains the ranger station; which was not only embellished with rustic style architectural features, but sometime in the early 1940s, trees were placed at the building corners; a common naturalistic landscaping technique of the time. The log fences in the corral are also Rustic Style features.

Summary of contributing patterns and features (CLI 2007)

Natural Systems and Features

- Lost Creek

Spatial Organization/Topography

- Pattern of special organization with development at the base of slopes and obscured by ridges
- Low ridge that visually and physically separates district from the service station and Roosevelt Lodge
- Division of district into two building cluster arrangements with two uses: visitor service and operational/residential
- General layout of corral and rustic log rail fences in corral
- Open natural area in front of and around ranger residence

Vegetation

- Location in natural setting with native vegetation: mosaic of meadow, forest, sage brush
- Screen of native vegetation that obscures view of operations
- Specimen Douglas-fir near ranger residence
- Pattern of grounding buildings through naturalistic planting (poorly executed)

Circulation

- General alignment of access drive from Grand Loop Road to Tower Administrative location

Views and Vistas

- Pattern of setting back facilities behind natural screens
- Views of natural landscape, especially Pleasant Valley from the Tower Ranger Station

Buildings and Structures

- NPS rustic style design of structures
- Buildings determined eligible to proposed district
- Consistent colors on building exteriors

Small-Scale Features

- Gas pump island

HUMAN HEALTH AND SAFETY

The NPS is committed to providing appropriate, high-quality opportunities for visitors and employees to enjoy the parks in a safe and healthful environment. Further, the NPS strives to protect human life and provide for injury-free visits. Employee and volunteers safety within the workplace for the park and concessioners is a high priority. Visitation to Yellowstone has averaged 2.8-3.1 million visitors each year from 1993-2006; most visitations occur during the summer months. Many facilities in the Tower Roosevelt area are open from May to early September. Human health and safety concerns associated with activities and services in the Tower Roosevelt area include:

- potential for increased traffic accidents
- conflicts with vehicles, pedestrians, wagons and horses
- potential debris flows into visitor and administrative areas
- contact with hazardous gases from thermal vents below the Tower Fall.
- exposure to climatic elements for visitors waiting for wagon rides on open benches

Although the Tower-Roosevelt area is small and traffic circulation is straightforward, vehicle accidents occur, visitors experience traffic congestion, and access and egress can be confusing at the Tower Fall Trailhead parking area. Parking areas at the Roosevelt Lodge and Tower Ranger Station locations do not easily accommodate oversized vehicles and can present difficulties in maneuvering and parking. Several parking areas in the Tower-Roosevelt area experience congestion. The Tower Fall Trailhead location and Calcite Springs parking areas were evaluated in the Tower to Canyon Road EA and changes were recommended to both. Tower Junction is a busy intersection where visitors make decisions relating to four directions. The Tower Junction location accommodates the entrance to Roosevelt Lodge, the existing fuel service station, Lost Creek trailhead, the junction of the road to Mammoth Hot Springs, the road to Tower Fall and Dunraven Pass, and the Northeast Entrance road to Cooke City and the Beartooth Highway.

Potential conflicts between vehicles, wagons, horses, and pedestrians are also a concern at Tower Junction where wagons and horses cross main roads in two areas. Wranglers stop traffic for each crossing.

The corral operations accommodate waiting visitors with open, uncovered benches. Visitors are exposed to the climatic elements at high elevations.

There are two separate developments in the Tower-Roosevelt area that are potentially subject to debris flow conditions; 1) western parts of the Roosevelt Lodge location (40 cabins) and 2) Parts of the Tower Administrative location (See geologic Map, Appendix B). These areas are not in the regulated 100 year floodplain. The channel is easily contained by the surrounding topography in a 100 year flood. However, if a slope failure or sediment rich debris flow occurred, the channel could possibly fill in and the flow could be re-directed into the developments (Floodplain Analysis Results for the Tower Junction Developed Area (Michael Martin (NPS) 2006)..

Harmful hydrogen sulfide gases produced by thermal vents have been identified at the base of Tower Fall waterfall near the Yellowstone River(beyond the planning boundary but within the project area) due to the concentration of gases that are heavier than air. However, the air circulation in the area prevents the gases from accumulating in most cases (*Geologic Concerns at Roosevelt, Tower Fall and the Lamar River Bridge* - Jaworowski and Heasler (NPS) 2006).

VISUAL RESOURCES

All visual resource maps are referenced in the Appendix B.

Outstanding scenic character has distinguished national parks from other natural areas and is often an integral part of their fundamental resources and values. Yellowstone's enabling legislation preserves the park as a "pleasuring-ground for the benefit and enjoyment of the people." The 1916 Organic Act that created the National Park Service sought to "conserve the scenery...and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Thomas Moran's paintings and William Henry Jackson's photographs of Yellowstone scenery were instrumental in convincing Congress to set this area aside and "preserve it from injury or spoliation."

Yellowstone National Park abounds with impressive views. Despite being one of the oldest units in the park system, most landscapes appear in their natural state. Less than two percent of the park is developed and facilities are predominantly grouped along the historic figure-eight Grand Loop Road and in a handful of small developments, leaving substantial areas of the park in their natural condition. Wide vistas of scenery such as geyser basins, with a backdrop of forest and blue sky, have attained iconic status representing not only Yellowstone, but the entire National Park Service.

Part of the allure and expectations associated with Yellowstone Park involve the impression that the park is predominantly in its natural condition. Visitors experience facilities that are grouped together and screened by vegetation, and infrastructure that does not dominate the landscape. Because the primary views are natural, built structures often stand out in contrast to the scenery. Visual quality affects visitor enjoyment and an overall perception of Yellowstone; its importance, resource conditions, and management. The architectural styles of most buildings in the Tower-Roosevelt area harmonize with the

natural environment. However, structures that are not architecturally compatible do not harmonize with the natural environment and focal viewsheds.

The Roosevelt Lodge Location: The Roosevelt Lodge location is largely screened from the Grand Loop Road by changes in topography and stands of aspen, Douglas-fir, and lodgepole pine. The road leading to the lodge ascends a small hill from the sagebrush flats and grasslands to the fringe of the forest. The lodge is visually dominant in this area and the log construction of the lodge and cabins defines the rustic character. These buildings are situated among large evergreen trees, which help blend them with the natural surroundings. The guest cabins west of the lodge have views of the Tower Administrative location and the back of employee housing that are not consistent with the area's overall rustic character.

The Roosevelt Corral Location: The Roosevelt Corral location is adjacent to the Grand Loop Road and highly visible. The utilitarian character and "Old West" flavor of the buildings define this built environment and achieve compatibility with its surrounding natural setting. The corral parking area is prominent when it is full of vehicles.

Tower Ranger Station Location The Tower Ranger Station location, including the historic ranger station, the pump-house, and the current ranger station/backcountry office are adjacent to the road and are visually dominant, but the rustic design and dark color of these buildings compliments the natural landscape.

Tower Administrative location: Buildings and maintenance vehicles in the Tower Administrative location are visible through the sparse tree cover. The NPS barn, corral, and other historic buildings and structures are rustic and blend in, while trailers and recreational vehicles used for housing are lighter in color, with reflective metallic siding, and they degrade the visual character of the surrounding area.

Tower Junction Location: The landscape surrounding the Tower Junction location reflects a transition from densely forested hills to a glacially formed valley. The Grand Loop Road descends from the west into this valley. From vantage points along the road, most of the Tower-Roosevelt area developments are highly visible. The fuel service station at the Tower Junction location is a Mission 66 building constructed of concrete blocks with a large, flat lean-to style roof. The building style and materials are distinctly different from that of the surrounding historic districts and the natural setting. Because of its prominence and the open terrain at the Tower Junction location, the fuel service station is visible from all directions including the Yancey's Hole wagon road, both day and night. Night lighting is often visible during the wagon ride for the entirety of the return trip and from the Grand Loop Road in several directions. The fuel service station parking area, which is adjacent to the entrance road to the Roosevelt Lodge location, includes a vault toilet, pay phones, and recycling containers, which minimally integrate with the natural setting.

Tower Fall Trailhead Location: The visual character of the Tower Fall Trailhead location is steep, forested slopes interspersed with meadows. Views from the Grand Loop Road through the Tower Fall location are distinctive. Distant mountains are a backdrop to the steep Yellowstone River canyon to the north, with dramatic basalt cliffs rising above the south side of the road. At the Tower Fall location, the general store and large parking area are adjacent to and visible from the Grand Loop Road. The store is a Mission 66 architectural style and is more modern than the other structures along the Grand Loop Road in the Tower-Roosevelt area, including the Tower Creek Bridge, crenellated (notched masonry) guard walls, and the Tower Ranger Station. However, the store has a low profile and is built into the hillside, which helps diminish its visual impact. Tower Fall waterfall cannot be seen from the Grand Loop Road. Visitors walk to the overlook for a view of the waterfall.

Tower Fall Administrative Location: The Tower Fall Administrative location including the dormitory, RV sites, and the small Tower Fall campground are not visible from the Grand Loop Road because of the dense trees and steep slopes. The dormitory development and associated night lighting are visible from the campground.

Yancey's Hole Location: The Yancey's Hole location is located in a grassy meadow surrounded by forested slopes. The only building visible from the Grand Loop Road is the serving shelter, and it is only visible from one short stretch of road immediately south of the cookout site. The serving shelter is visible from the wagon road when approaching the area. All structures can be seen from the Garnet Hill Trail that crosses the hill to the north and circles back through the Yancey's Hole location. Structures blend well with the surroundings, and the topography and natural views to the north give visitors to the Yancey's Hole location an impression of a remote setting.

Lightscaapes

Exterior night lighting in the Tower-Roosevelt area is generally at a minimum within its historic setting. However, some fixtures, such as those at the service station, create upward light pollution and horizontal glare. These fixtures are not energy efficient and do not comply with Yellowstone's lighting guidelines (2004). During the winter, there is no lighting at the Tower Junction service station, the Roosevelt Lodge, the corrals, or the Tower Fall developments because they are closed. Night lighting is not an issue at the Yancey's Hole location but visitors view the lights at the Tower Junction location on their return trip from the cookout.

VISITOR USE AND EXPERIENCE

All visitor use and experience maps are referenced in the Appendix B.

Tower-Roosevelt area has the highest percentage of visitors staying in one area for three days. Visitors who are familiar with the Tower-Roosevelt area come for its particular charm, and often return and stay for longer periods of time (YNP visitor study 2006). Of the summertime activities that visitors can book in advance, the Roosevelt horseback rides and cowboy cookouts have the highest percentage of reservations of any activities offered in the park in 2006 (YNP Visitor Study 2006).

Visitor use activities in Yellowstone are highly seasonal. June, July, and August are the months of highest use. Use in the winter months is relatively low. However winter use has increased in the park from 140,000 visitors in 2000-2001 to approximately 298,000 in 2006-2007 (NPS Public Use Statistics Office)

The Tower-Roosevelt area is a haven for wildlife-watching enthusiasts. For visitors passing through the Tower-Roosevelt area along the Grand Loop Road, the open meadows of the Northern Range provide frequent opportunities for viewing wildlife. Black bears are particularly abundant in this area due to the diverse habitat of the forest edge. Visitors often have close up views of black bears, foraging for food in the spring and summer, and causing traffic jams along the roads. The Tower-Roosevelt area is also a popular place to view grizzly bears (See Black and Grizzly Bear Sighting Map, Appendix A).

Visitor use in the Tower-Roosevelt area is based on the outdoor experience. *Expedition: Yellowstone!*, the parks curriculum based residential program, regularly uses the Tower-Roosevelt area for its outdoor education programs. Many visitors take short hikes to see petrified trees or Tower Fall with its rock spires. Hiking is popular because stunning views can be seen from most trails. There are several popular hiking

trails in the immediate vicinity of Tower-Roosevelt including Lost Lake trail, Lost Creek Falls trail, Garnet Hill trail, and Tower Fall trail. Fishing is popular in the streams and rivers. The Tower-Roosevelt area had 45 overnight Commercial Use Angler fishing trips in 2006 out of 172 (26.2%) for Yellowstone overall (YNP Visitor Study 2006). Visitors who want to fish or camp in the backcountry often go to the Tower Backcountry Office to obtain their permit or information. Cross-country skiing is popular in the winter, with several groomed ski and snow shoe trails in the Tower-Roosevelt area including Lost Lake trail, Blacktail Deer Plateau, and the Tower Fall road and Chittenden Loop.

Organized concession activities in the summer include horseback rides along designated trails, and stagecoach rides and wagon rides to the Yancey's Hole location for an evening cookout. These activities leave from the Roosevelt Corral location and are very popular with visitors, many of whom come to the area specifically to participate in them. Outfitter horse use is also popular on several trails in the area. Commercial stock outfitters in the Roosevelt-Tower area had 18 overnight trips (16.5% of the Yellowstone total) and 175 day trips (25.7% of the Yellowstone total) in 2006 (YNP Visitor Study 2006).

Visitor opportunities for interpretation of natural and cultural resources in the area are available. There are one to three evening programs a week at the Tower Fall amphitheater near the Tower Fall Campground, formal talks at Tower Fall, impromptu talks and other informal interpretation events at Tower Fall and Calcite Springs overlooks and daily roving at wildlife jams and at the Tower Fall Trailhead location. Ranger adventure hikes (fee hikes) have been conducted in the Tower-Roosevelt area once or twice a week for the past four years. Interpretation provided by concessioners involves information presented while horseback riding or on wagon rides. Interpretation is also provided through several handouts available at the Tower Ranger Station location in the backcountry office and wayside exhibits at Calcite Springs and the Tower Fall Trailhead location. (See Appendix B for more information.) The *Long Range Interpretive Plan* (2000) suggests developing a contact station/winter warming hut to provide year-round interpretation and information for visitors. It also emphasizes interpretation in context with the Northern Range (especially wolves, bears and ungulates) and human history (especially Yancey's Hole and the Wylie tent camps). The *Long Range Interpretive Plan* also recommends expanding *Expedition: Yellowstone!* and constructing a central exhibit area to provide supplementary interpretation and orientation.

Accommodations at the Roosevelt Lodge location are small rustic cabins. Many returning guests like the basic amenities and intimate atmosphere (YNP visitor survey 2006). Both visitors and staff describe Tower-Roosevelt area as being "relaxed, laid-back and affordable". Visitors appreciate the natural soundscapes the Tower-Roosevelt area offers year round. Many guests are wolf watchers and anglers. Campers will often stay at Roosevelt cabins between campground stays. The Roosevelt Lodge dining room provides meals for both guests and day-use visitors on a first-come first-served basis. Visitors relax on the large front porch where they can enjoy the view. The other overnight facility for visitors is the 32-campsite Tower Fall Campground, which is open from mid-May until the end of September.

PARK OPERATIONS

All park operations maps are referenced in the Appendix B.

Park operations consist of both NPS and concessions operations that support visitor facilities and services in the Tower-Roosevelt Area.

National Park Service Operations

The NPS provides support operations and maintenance for visitor facilities, visitor protection, and emergency services from the Tower Ranger Station and the Tower Administrative locations. NPS employee housing and administrative offices are also located there.

Maintenance Operations/Facility Management: NPS operations for the Tower-Roosevelt area are carried out by the park's Maintenance Division. Operations include maintenance of Tower Fall campground, vault toilets, water and sewage systems, building and road maintenance and garbage collection. The 32-campsite Tower Fall Campground is staffed by volunteer campground hosts who stay at the campground and do some maintenance.

During the winter, the road from Mammoth to the Northeast Entrance is plowed to provide an automobile route to Cooke City and Silver Gate. Plowing and road maintenance services are provided by the NPS.

Support facilities, consisting of many small buildings, are in the Tower Administrative location for equipment and vehicles. They include separate buildings for administrative functions, offices and equipment. Shop space for maintenance activities is scattered throughout different buildings and many supplies and materials are stored outside. There is one inside bay with restricted space for the ambulance and one for the snowplow. Other vehicles are housed outside year-round.

The 1992 Housing Plan and the 2005 Housing Management Plan recommended construction of a new maintenance facility to provide necessary vehicle, equipment, and supply storage, office space, restrooms, and meeting rooms. They also state that buildings should be screened from the Roosevelt Lodge location that is just across the creek.

The Tower-Roosevelt area has the two spring boxes for supplying drinking water and four waste water systems (three leach field type and one re-circulating type with a subsurface disposal field).

The drinking water supply for the Roosevelt Lodge, Roosevelt Corral, Tower Ranger Station, Tower Administrative and Tower Junction locations is obtained from a spring and there is 200,000 gallons of storage. Drinking water excellent quality and supply is adequate, but recent dry summers have lowered storage tank levels. Water restrictions were imposed in 1997. Further drought conditions may affect future water supplies.

The drinking water quality and supply at Tower Fall Trailhead and Tower Fall Campground locations is excellent, consisting of a spring and 100,000-gallons of storage. Water is piped approximately five miles from a spring. The Tower Fall Trailhead and Tower Campground locations water supply system cannot be used in winter because the shallow lines are susceptible to freezing.

The Tower Ranger Station and Tower Administrative locations have a separate septic tank/leach field systems as does the Tower Junction location. The Roosevelt Lodge and Roosevelt Corral locations use a re-circulating sand-filter system with a subsurface disposal field. The re-circulating sand-filter portion of the system is located east of the Roosevelt Lodge entrance road and the disposal field is located to the north, across the Grand Loop Road. The re-circulating septic system is not designed to be activated for winter use and is deactivated from October to May when facilities are closed. Its capacity to handle additional loading may need to be evaluated. The septic tank/leach fields systems for the Tower Ranger Station, Tower Administrative and Tower Junction location are also on the north side of the Grand Loop

Road. Further analysis is needed to determine if these systems could accommodate increased loads if future construction .

The Tower Fall Trailhead and Tower Administrative locations septic tank/leach field system is at capacity. The system has not shown signs of failure, but requires pumping every year due to heavy use and accumulation of grease. There are no additional areas for replacement or expansion due to topographic constraints. The leach field is east of the dormitory and sewage from the general store and public toilets is pumped by a lift station from a septic tank at the Tower Fall Trailhead location to the waste water system at the Tower fall Campground location. There is an old septic system below the store, currently used as a backup during power or equipment failures. This system has a septic tank and spray field adjacent to Tower Creek. Only the tank is used as a backup. This system could not handle high use for an entire summer, is subject to below-freezing winter temperatures, and would not meet Environmental Protection Agency standards for long-term use. Tanks are emptied based on the number and length of power outages.

A new primary (3 phase) electrical cable was buried from Mammoth Hot Springs area to Tower-Roosevelt area in 1987 (Northwestern Energy). The electricity is transformed down to single phase 400 watt/240v-120v service for the entire Tower-Roosevelt area. A backup generator at the Tower Administrative location provides electricity for the Tower-Roosevelt and Mammoth Hot Springs areas during power outages.

NPS Employee Housing: NPS employee housing consists of seven housing units and four trailers in the Tower Administrative location. A four-plex was built in 1998, but housing remains inadequate, according to the 2005 Housing Management Plan and district staff based park staff housing needs and the conditions of existing housing especially the trailers. Several NPS employees live in 40-year-old trailers that can only be used for seasonal employees. The trailers have leaking roofs and rodent infestations. Further, the trailers detract from the historic character of the Tower Ranger Station and Roosevelt Lodge Historic Districts. The 2005 YNP Housing Management Plan for Tower-Roosevelt area showed a deficit of 3 year-round quarters and 9 seasonal quarters.

Emergency Services: Law enforcement rangers are responsible for visitor and resource protection, emergency service, and structural fire response. These functions are provided from the Tower Ranger Station and Tower Administrative locations. Additional duties from these locations include responding to wildlife traffic jams, issuing fishing and backcountry permits, and providing information out of the Tower backcountry office. The 1992 Draft EA Employee Housing and Community Plan for Tower recommended additional space for emergency services vehicles since some of the emergency vehicles at the Tower Administration location are stored outdoors, year round.

Concession Operations

Xanterra Parks and Resorts, Delaware North Park Services, and Yellowstone Park Service Stations are the three park concessioners currently providing visitor services and operating facilities in the Tower-Roosevelt area.

Xanterra Parks and Resorts: At the Roosevelt Lodge location, Xanterra Parks and Resorts operates full-service facilities with cabins, dining room, corral operation, and retail sales, which are open from early June to early September. The lodge contains a lobby and dining room with seating for 82 people. There are 80 guest cabins (with and without bath), with a pillow count of 264. Electric heat is in 14 cabins and wood-burning stoves are in 66 cabins. Two cabins are accessible for persons with disabilities. The occupancy rate for Roosevelt cabins is 99 percent. The lodge also has an employee dining room with seating for 46. Fifty-five employee cabins house 132 employees. Support structures include three guest

shower facilities, one employee shower facilities, a maintenance building, and a linen building. Facilities are closed during the winter.

Roosevelt Lodge and cabins have traditionally been summer facilities; however in the past few years both the lodge and the cabins have been used in September by the Yellowstone Association for an interpretive program called "Roosevelt Rendezvous" that is a four-day adult education session.

The Roosevelt Corrals location includes a hay barn, saddling barn, two harness sheds, tack shed, wrangler office, employee and guest restrooms, and a ticket sales building. Horseback riding (six rides per day), stagecoach rides (five or six per day), and a nightly western cookout are popular activities. The Roosevelt corral operation has stagecoaches, wagons, and horses. The concessioner provides one-hour stagecoach rides using two coaches modeled after the Tally-Ho coaches in the park's museum collection. The corrals also provide one and two-hour trail rides several times in the morning and afternoon.

Xanterra provides an evening cookout at the Yancey's Hole location for approximately 200 guests. Visitors travel to the cookout on horseback or in wagons. The cookout occurs rain or shine, and sells out nearly every night. The Yancey's Hole location includes six buildings and hitching rails for wagon teams and saddle horses. The dining shelter and serving shelter are open log frame structures with canvas tops and without walls. Two small log buildings are used for storage. There are two small, log-sided vault toilets on the site.

Delaware North: Delaware North Park Services operates a general store at the Tower Fall Trailhead location and a small store adjacent to Roosevelt Lodge. The Tower Fall store operates from mid-May to mid-September. The store sells retail items, camping supplies, and ice cream. It also has a small food service with an outside seating area. The existing building size is approximately 8,250 square feet.

The Roosevelt store is approximately 1,100 square feet. It is primarily used by guests staying at Roosevelt Lodge, and has the same operating season as the Roosevelt Lodge (early June to early September). The store offers limited retail items for visitors staying in the Roosevelt cabins.

Yellowstone Park Service Stations: The Tower Junction service station is open from early June until early September, matching the Roosevelt Lodge season. The station is directly adjacent to the Grand Loop Road in the Tower Junction location. It has four self-serve 24-hour credit card gas pumps.

Concession Employee Housing: During the peak season, approximately 138 Xanterra employees work in the Roosevelt Lodge location, 110 at the Roosevelt Lodge, cabins and dining room, and 28 wranglers with the corral operation. Most of these employees live in cabins at Roosevelt, but a few commute from Gardiner, Montana. YPSS has four employees working at the Tower Junction service station and are housed in Roosevelt Lodge employee cabins. Four-plex cabins for concessions staff were moved into the Roosevelt Lodge location in lieu of constructing new dormitories. However, 45 of the 56 cabins used for concession employee housing do not have running water or bathrooms, so common restrooms and a shower facility are used. There are typically 45 employees working at the Tower Fall general store and six employees working at the Roosevelt general store. Delaware North houses approximately 40 employees in a 19-room dormitory at the Tower Fall Administrative location. Six RV sites adjacent to the dormitory provide accommodation for an additional 12 employees, and there is an RV site next to the Tower Fall store. The dormitory includes an employee dining room that seats 40.

Chapter 4: ENVIRONMENTAL CONSEQUENCES

IMPAIRMENT

NPS Management Policies 2006 require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the NPS Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS Management Policies 2006 states: "NPS managers must seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, laws do give the NPS management the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values."

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact to a park resource or value may constitute impairment to the extent that it has a major adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact that may, but would not necessarily, lead to impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the Conclusion section for each of the resource topics in Chapter 4, Environmental Consequences. No impairment of resources would occur under any of the alternatives in this plan.

UNACCEPTABLE IMPACTS

According to NPS Management Policies 2006, "The impact threshold at which impairment occurs is not always readily apparent. Therefore, the Service will apply a standard that offers greater assurance that impairment will not occur. The Service will do this by avoiding impacts that it determines to be unacceptable. These are impacts that fall short of impairment, but are still unacceptable within the park's environment. Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or proposed uses and determine whether the associated impacts on park resource and values are acceptable."

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be

disallowed. Therefore, for purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would meet the following criteria:

- inconsistent with a park's purposes or values,
- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the parks planning process,
- create an unsafe or unhealthful environment for visitors or employees,
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values,
- unreasonably interfere with
 - park programs or activities;
 - an appropriate use;
 - the atmosphere of peace and tranquility or the natural soundscape maintained in wilderness and in natural, historic, or commemorative locations within the park;
 - NPS concessioner or contractor operations or services.

In accordance with NPS Management Policies 2006, park managers must not allow uses that would cause unacceptable impacts to park resources. To determine if unacceptable impacts could occur to the resources and values of Yellowstone National Park, the impacts of proposed actions in this Environmental Assessment were evaluated based on the above criteria. A determination on unacceptable impacts is made in the Conclusion section for each of the resource topics in Chapter 4, Environmental Consequences. No unacceptable impacts would occur under any of the alternatives in this plan.

NATURAL RESOURCES

All natural resource survey maps are referenced in Appendix B.

Geologic, Paleontological and Soils Resources

Guiding Regulations and Policies

The geologic setting is the fundamental underlying factor for the behavior and characteristics of a landscape. NPS geologic resources are important for their role in the ecosystem, their scenic grandeur, and their contribution to visitor enjoyment. Yellowstone National Park was established specifically to protect geologic resources. The park contains geologic resources of international renown, including both geologic features and processes. For the purpose of this discussion, this topic includes topography, fluvial features, geothermal resources, and glacial features, volcanoes, arid land features, geologic hazards, other unique geologic resources, soils and the processes which support these resources. NPS has developed policies and guidance on geologic resource management. Section 4.8 of 2006 Management Policies addresses geologic resource management including geologic features and processes. This policy states that NPS will maintain, preserve and protect geologic resources as integral components of park natural systems.

Paleontological resources (fossils and their associated data) are evidence of past life. They are the basis for our understanding of the history of life on Earth, and are an integral part of our planet's biodiversity. NPS regulations at 36 CFR §2 prohibit possessing, destroying, injuring, defacing, removing, digging, or disturbing paleontological resources from their natural state on federally-owned NPS lands.

Methodology and Intensity Thresholds

Analyses of the potential impacts on geologic, paleontological and soils resources were derived from available information of the impacts from both visitor use and possible projects activities.

The thresholds for the intensity of impact to geologic, paleontological and soils resources are defined as follows:

Negligible: An action that could result in a change to a natural physical resource, but the change would be so small that it would not be of any measurable or perceptible consequence. Soils would not be affected or the effects on soils would not be detectable.

Minor: An action that could result in a change to a natural physical resource, but the change would be small and localized and of little consequence. Mitigation measures proposed to offset adverse effects would include measures to reduce the appearance of the physical disturbance, to reshape landscape contours, and to minimize the effects to physical properties (e.g., permeability, porosity, thermal conductivity).

Effects on soils would be detectable, although these effects would be localized and short-term. There could be some slight physical disturbance, some removal of soil material, and/or some compaction. Mitigation measures proposed to offset adverse effects would include ensuring that topsoil is preserved, ground is reshaped into the natural contours, the ground is de-compacted, and that there is no unnatural erosion of soils.

Moderate: An action that would result in a change to a natural physical resource; the change would be measurable and of consequence. Effects on geologic resources would be readily apparent and measurable. The appearance of a geologic resource would be modified or its physical properties (e.g., permeability, porosity, thermal conductivity) compromised. Mitigation measures proposed to offset adverse effects would be extensive and would include measures to reduce the appearance of the physical disturbance, to reshape landscape contours, and to minimize the effects to physical properties.

Effects on soils would be readily detectable, localized, and possibly long-term. Measurable effects could include physical disturbance, removal of large amounts of soil, compaction, and/or unnatural erosion of soils. Mitigation measures proposed to offset adverse effects would be extensive and would include measures to ensure that topsoil is preserved, ground is reshaped into the natural contours, ground is de-compacted, and that there is no unnatural erosion of soils.

Major: An action that would result in a noticeable change to a natural physical resource; the change would be measurable and result in a severely adverse or major beneficial impact. Effects on geologic resources would be readily apparent, measurable, severe, and long-term. Entire features could be removed or the physical properties significantly altered. Mitigation measures proposed to offset adverse effects would be extensive, but the effect would remain.

Effects on soils would be widespread, readily detectable, and long-term. Significant measurable effects would include the physical disturbance and removal of large amounts of soil, severe compaction, and the unnatural erosion of soils. Mitigation measures proposed to offset adverse effects would be extensive.

Duration: Short-term effects would last only during the implementation of the project including its mitigation and monitoring measures. Long-term effects would typically constitute a permanent impact.

Impacts of Alternative A to Geologic, Paleontological, and Soils Resources

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are no guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones which use resource surveys and then locate proposed projects in areas that avoid or mitigate impacts. Without a comprehensive plan, impacts to geologic, paleontological and soil resources such as excavation or construction disturbances could occur and could be more than if a comprehensive plan is not adopted.

Impacts to geologic resources could occur without a planning boundary that limits where development can occur within the comprehensive plan. Important geologic resources such as the Tower Fall and the Yellowstone River Canyon occur outside the planning boundary in the Tower/Roosevelt area and thus, could be impacted.

Impacts to paleontological resources (fossil wood, trees, and leaves) are a concern. Presently, visitors at the Yancey's Hole location find and illegally collect paleontological resources from the 50 million year old Absaroka volcanic rocks. Paleontological resources at the Yancey's Hole location could be affected if facilities are constructed without mitigation measures found in the comprehensive plan's design standards.

Impacts to soils from future construction projects, including updates to utility systems would require reclamation and site restoration and would be guided by successful topsoil conservation and natural site contouring following policy in "Vegetation Management for Construction Disturbance in Yellowstone National Park" (1995). These impacts would not necessarily be minimized. All laws and policies would be followed for construction projects, including the use of standard approved erosion control and topsoil salvaging techniques.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for moderate adverse impacts from projects are likely due to the lack of a comprehensive set of guidelines or mitigation measures. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

In Alternative A, the combined impacts to geologic, paleontological, and soils resources are expected to long term moderate and adverse.

Cumulative Impacts

The past reconstruction of the Canyon to Tower (phase 1), Northeast Entrance and Beartooth Roads affected sensitive geologic and soils resources. Future reconstruction of the Grand Loop, Northeast

Entrance and Beartooth roads around the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on geologic and soil resources due to the amount of excavation required and where the construction will occur. Geologic impacts could occur at Overhanging Cliff for phase two of Canyon Junction to Tower Junction Road Improvement Project (EA, 2001). Soil impacts and hillside instability could occur at Tower Fall Trailhead parking, which could require fill material. Ongoing visitation in the Yancey's Hole location could affect important paleontological resources such as fossils and petrified trees through surface disturbance and vandalism. Erosion, compaction, fire suppression, maintenance, and rehabilitation of trails are likely activities that have and could affect soils. Because of these impacts, the above projects would be expected to have long-term, moderate impacts adverse to geologic, paleontological and soil resources. There are no other known construction projects planned in the northeast area of the park that would affect geologic, paleontological and soil resources. Cumulative impacts from these past, present, and future actions would have long-term moderate adverse impacts to geologic, paleontological and soils resources.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. There would be no restrictions or limitations on the characteristics of the development, its placement or quantity. Future projects would go through separate environmental analysis process. The impacts to geologic, paleontological and soils from these projects and utilities associated with these projects are expected to be long-term, moderate, and adverse due to the lack of a comprehensive set of guidelines or mitigation measures. When combined with past, present, and foreseeable future actions, Alternative A could have long-term, moderate adverse impacts to geological, paleontological, and soils resources.

Because there would be no major adverse impacts to geologic, paleontological, and soils resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Yellowstone National Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Geologic, Paleontological, and Soils Resources Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. With the adoption of buildable planning zones, development in the Tower-Roosevelt area mostly avoids geologic resources. By using resource surveys, these zones limit the location of development, thereby avoiding geologic, paleontological and soils resources. The development footprint accommodates a net gain of up to 21,225 square feet for buildings, 41,250 square feet for paved parking and no net gain for unpaved parking further restricting the size of development and thus, impacts associated with expanded disturbances. This compares with the existing development footprint of 115,005 square feet for buildings or 19 % net gain, and 142,322 square feet for paved parking or 29% net gain. Tower Fall general store, restrooms and parking area are developed on top of unstable and low permeability lake sediments which could be a limiting factor to future development in this location. Important geologic resources such as the Tower Fall, the Yellowstone River Canyon, standing petrified trees, and Overhanging Cliffs are considered to be outside the planning boundary and not part of future development identified in the comprehensive plan. Impacts to paleontological resources (fossil wood, trees, and leaves) are a geologic concern. Presently, visitors at the Yancey's Hole location find and illegally collect paleontological resources from the 50

million year old Absaroka volcanic rocks. Paleontological resources at the Yancey's Hole location would be protected or mitigated due to limits of construction and excavation of facilities and mitigation measures for buried resources stated in Chapter 2.

In Alternative B, a potential increase in development of facilities with underground utilities at the Tower Junction, Roosevelt Lodge, Roosevelt Corrals, Tower Ranger Station, and Tower Administrative locations and a potential decrease in development at the Tower Fall trailhead location could have moderate adverse impacts to soils and hillside instability. New facilities may occur at the Tower Junction location to accommodate visitor services and parking. This construction at the Tower Junction location has the greatest potential for soil disturbance, including excavation for up to 9,000 square feet additional building foundations and up to 35,400 square feet for additional parking. This development could require substantial excavation for cut slopes, and trenching for new utilities. The impacts are potential increased erosion, soil instability and surface runoff. Construction staging would occur within the existing disturbance, mitigating this impact. Reclamation and site restoration would implement topsoil conservation and natural site contouring following the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). All laws and policies would be followed for construction projects, including the use of standard approved erosion control techniques.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Planning Zone*, impacts to geologic, paleontological, and soils would need to be less than impacts described in this EA for this alternative as long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

The past reconstruction of the Canyon to Tower, Northeast Entrance and Beartooth Roads affected sensitive geologic and soils resources. Future reconstruction of the Grand Loop, Northeast Entrance and Beartooth roads around the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on geologic and soil resources. Geologic impacts could occur at Overhanging Cliff for phase two of Canyon Junction to Tower Junction Road Improvement Project (EA, 2001). Soil impacts and hillside instability could occur at Tower Fall Trailhead parking, which could require fill material. Ongoing visitation in the area could affect important paleontological resources such as fossils and petrified trees through surface disturbance and vandalism. Erosion and compaction could result from activities such as fire suppression, maintenance, and rehabilitation of trails that have and could affect soils. The design standards in the comprehensive plan provide for the use of fire resistant materials including roofing materials which may reduce the fire hazards in the area and therefore, reduce the potential impacts to soils from fire suppression. Consolidation of development which is a design standard, will reduce surface runoff by reducing the amount of paved surface. Utilizing native vegetation and specialized techniques to minimize disturbance to topsoil in disturbed areas is another design standard which will reduce the amount of soil erosion because the vegetation will quickly stabilize the area reducing erosion. Because of these impacts, the above projects would be expected to have long-term, moderate impacts adverse to geologic, paleontological and soil resources. There are no other known construction projects planned in the northeast area of the park that would affect geologic, paleontological and soil resources. Cumulative impacts from these past, present, and future actions would have long-term moderate adverse impacts to geologic, paleontological and soils resources.

Conclusion

In Alternative B, future projects would proceed with the guidance of a comprehensive plan and would avoid or mitigate impacts to geologic, paleontological and soil resources. The impacts to geologic, paleontological and soils from these projects and utilities associated with these projects are expected to be long-term, moderate, and adverse. Possible projects at the Tower Junction and Tower Fall Trailhead locations are most likely to generate impacts to geologic, paleontological and soils resources through excavation for foundations, removal of structures, construction staging within the sites and excavation for utilities associated with expansion in these locations. Because of design standards within the plan that utilize fire resistant materials which avoid soil erosion due to fire suppression activities; excavation restrictions which lessen the potential impact to paleontological resources due to soil disturbance; development footprint restrictions which lessen the amount of cut to slope reducing the amount of slope instability and erosion, these impacts are minimized. Alternative B does allow more excavation to soils at Yancey's Hole by allowing replacement with minor expansion in this area as compared to Alternative C which does not allow for expansion. Buried resources could be impacted by soil disturbing activities. The design standards mitigate this by limiting the excavation to areas which are less sensitive reducing the possibility of disturbance. Topsoil conservation techniques and native revegetation less the impacts of exotic infestations and erosion as revegetation stabilizes disturbed areas. Because the locations where these impacts occur avoid resources, the amount of expansion is limited and the character of the impacts is guided through the comprehensive plan, impacts to these resources are lessened. When combined with past, present, and foreseeable future actions, Alternative B could have long-term, moderate adverse impacts to geologic, paleontological and soils resources.

Because there would be no major adverse impacts to geologic, paleontological, and soils resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Yellowstone National Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Geologic, Paleontological, and Soils Resources

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. With the adoption of buildable, development in the Tower-Roosevelt area mostly avoids geologic, paleontological and soils resources. The development footprint accommodates a net gain of up to 8,050 square feet for buildings, 31,000 square feet for paved parking and no net gain for unpaved parking. This compares with the existing development footprint of 115,005 square feet for buildings or 7% net gain and 142,322 square feet for paved parking for a net gain of 22%. The net gain in Alternative is less than the net gain identified in Alternative B. Tower Fall general store, restrooms and parking lot are developed on unstable and low permeability lake sediments which could be a limiting factor to future development in this location. Important geologic resources such as the Tower Fall, the Yellowstone River Canyon, standing petrified trees, and Overhanging Cliffs are all considered to be outside the planning boundary; future development would not be identified in this plan. Impacts to paleontological resources (fossil wood, trees, and leaves) are a geologic concern. Presently, visitors at the Yancey's Hole location find and illegally collect paleontological resources from the 50 million year old Absaroka volcanic rocks. Paleontological resources at the Yancey's Hole location would be protected or mitigated due to impacts of the construction of facilities and excavation using the mitigation measures found in Chapter 2 and in the design standards for this location. Development footprint is limited in this location further reducing the potential impacts.

In Alternative C, new facilities may occur at the Tower Junction location to accommodate visitor services and parking. A potential increase in development with underground utilities at the Tower Junction, Roosevelt Lodge, Roosevelt Lodge, Tower Ranger Station, and Tower Administrative and a potential decrease in development at the Tower Fall trailhead locations could have minor adverse impacts to soils and hillside instability. Future construction at the Tower Junction location has the greatest potential for soil disturbance, including excavation for building foundations and parking areas, excavation for up to 2,000 square feet additional building foundations and up to 15,000 square feet for additional parking, excavation for cut slopes, and trenching for new utilities. Erosion and compaction could result from activities such as fire suppression, maintenance, and rehabilitation of trails that have and could affect soils. The design standards in the comprehensive plan provide for the use of fire resistant materials including roofing materials which may reduce the fire hazards in the area and therefore, reduce the potential impacts to soils from fire suppression. Consolidation of development which is a design standard, will reduce surface runoff by reducing the amount of paved surface. Utilizing native vegetation and specialized techniques to minimize disturbance to topsoil in disturbed areas is another design standard which will reduce the amount of soil erosion because the vegetation will quickly stabilize the area reducing erosion. Reclamation and site restoration would implement topsoil conservation and encourage native revegetation following the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). This would minimize the impacts to exotic infestation in soils in this alternative. All laws and policies would be followed for construction projects, including the use of standard approved erosion control techniques.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Planning Zone*, impacts to geologic, paleontological, and soils would need to be less than or equal to the impacts described in this EA for this alternative as long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

The past reconstruction of the Canyon to Tower, Northeast Entrance and Beartooth Roads affected sensitive geologic and soils resources. Future Reconstruction of the Grand Loop, Northeast Entrance and Beartooth roads around the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on geologic and soil resources due to erosion and slope instability. Geologic impacts could occur at Overhanging Cliff for phase two of Canyon Junction to Tower Junction Road Improvement Project (EA, 2001). Soil impacts and hillside instability could occur at Tower Fall Trailhead parking, which could require fill material. Ongoing visitation in the area could affect important paleontological resources such as fossils and petrified trees through surface disturbance and vandalism. Erosion, compaction, fire suppression, maintenance, and rehabilitation of trails are the most likely activities that have and could affect soils. The application of design standards that include revegetation with native materials minimizes impacts in these locations because exotic infestation and soil erosion would be minimized. Because of these impacts, the above projects would be expected to have long-term, minor impacts adverse to geologic, paleontological and soil resources. There are no other known construction projects planned in the northeast area of the park that would affect geologic, paleontological and soil resources. Cumulative impacts from these past, present, and future actions would have long-term minor adverse impacts to geologic, paleontological and soils resources.

Conclusion

In Alternative C, future projects would proceed with the guidance of a comprehensive plan. The impacts to geologic, paleontological and soils from these projects and utilities associated with these projects are

expected to be long-term, minor, and adverse. Buildable planning zones locate development where resources are less impacted, development footprint limits the amount of impact and design standards restores native vegetation and natural contours to areas where geologic, paleontological and soils resources are affected. Possible projects in the Tower Junction location have a smaller development footprint in Alternative C than in Alternative B, so impacts would be reduced to geologic, paleontological and soils resources such as excavation for foundations or utilities. Since the development footprint is smaller in these locations, and in the Roosevelt Corral location, less impact would occur to soil movement or removal. Only a minor amount of development footprint is allowed for the Roosevelt Lodge location (650 square feet for buildings) so the impacts to soils would be minimal. The paved parking could be reconfigured in this location, impacts would be mitigated according to Chapter 2 and to the design standards in this location. Because of the implementation of design standards that support reduced impacts due to consolidated development which reduces surface runoff; the use of fire resistant materials which reduces the potential impacts to soils from fire suppression activities and the use of techniques which manage topsoil disturbance and restore native vegetation reducing erosion and exotic infestations, overall impacts are minimized. Cuts and fills are less in Alternative C at the Tower Junction location because the plan calls for a reduced development footprint, reducing the potential for slope instability and erosion. Alternative C allows replacement in kind using no additional excavation at the Yancey's Hole location which lessens the potential for paleontological disturbances due to excavation of materials below the surface. This impact is reduced by both the development footprint and the design standards in the plan compared to Alternative B which allows for some additional excavation in this location. When combined with past, present, and foreseeable future actions, Alternative C could have long-term, minor adverse impacts to geologic, paleontological and soils resources.

Because there would be no major adverse impacts to geologic, paleontological, and soils resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Yellowstone National Park; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of the park's resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Floodplains, Wetlands and Other Waters of the U.S.

Guiding Regulations and Policies

NPS Management Policies (2006) Section 9.1.1.5 Siting Facilities to Avoid Natural Hazards states "The Service will strive to site facilities where they will not be damaged or destroyed by natural physical processes. Natural hazard areas include...floodplains, flash-flood zones....park development that is damaged or destroyed by a hazardous or catastrophic natural event will be thoroughly evaluated for relocation or replacement by new construction at a different location...that is believed to be free from natural hazards."

Director's Order #77-2 (Floodplain Protection) and the accompanying Procedural Manual #77-2: Floodplain Management establish NPS procedures for implementing floodplain protection and management actions in units of the National Park System as required by Executive Order 22988, "Floodplain Management." If a proposed action is found to be in an applicable regulatory floodplain and locating the action to a non-floodplain site is considered not to be a viable alternative, then flood conditions and associated hazards must be quantified as a basis for management decision making and a formal Statement of Findings (SOF) must be prepared and be made available for public review. The SOF

must describe the rationale for selection of a floodplain site, disclose the amount of risk associated with the chosen site, and explain flood mitigation plans.

Executive Order 11990 – Protection of Wetlands (42 Fed. Reg. 26961) directs the NPS: 1) to provide leadership and to take actions to minimize the destruction, loss, or degradation of wetlands 2) to preserve and enhance the natural and beneficial values of wetlands; and 3) to avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable measures to minimize harm to wetlands.

Director's Order #77-1 and Director's Order #77-1: WETLAND PROTECTION and the accompanying Procedural Manual #77-1: Wetland Protection (Reissued February 2008) These documents establish NPS policies, requirements, and standards for implementing Executive Order (E.O.) 11990: "Protection of Wetlands" (421 Fed Reg.26961). Included in Director's Order #77-1 is adoption of a "no net loss of wetlands" goal, which was first proclaimed in 1989 by President George Bush and has been sustained by subsequent Administrations.

Section 404 of the Clean Water Act: Under Section 404 of the Clean Water Act: The U.S. Army Corps of Engineers issues permits for activities that result in the discharge of dredged or fill material into waters of the United States, including wetlands. Regulated activities range from depositing fill for building pads or roads to discharges associated with mechanized landclearing. The NPS #77 -1 procedural manual for wetland protection explains the relationship between Section 404 and the requirements of D.O. #77-1:

"Although portions of the Corps of Engineers 404 permit procedures (33 CFR 320-330) are similar to some of the requirements found in D.O. #77-1 and these implementing procedures, there are significant differences in scope that warrant a separate NPS wetland protection process. First, the 404 permit program regulates only the discharge of dredged or fill material, while Executive Order 11990 covers a much broader range of actions that can have adverse impacts on wetlands, including ground water withdrawals, water diversions, nutrient enrichment, and other examples listed in Section 4.1.2 of these procedures. Second, the wetland definition used for the 404 permit program (33 CFR 328.3) is narrower than the Cowardin et al. (1979) wetland definition used for NPS compliance with E.O. 11990 (see Section 4.1.1 of these procedures). Therefore, a broader range of aquatic habitat types fall under these procedures than under the wetland procedures of the 404 permit program. Third, the Corps of Engineers has "general permit" provisions that allow many projects affecting wetlands to proceed with minimal review.

All NPS actions with the potential to have adverse impacts on wetlands (as defined in Section 4.1.1) and must comply with D.O. #77-1 and these procedures, and those actions that involve placing dredged or fill material in wetlands or other "waters of the U.S." (as defined in 33 CFR 320-330) must comply with Section 404 of the Clean Water Act as well. In cases where both NPS and Corps of Engineers procedures apply, it is important to avoid duplication of effort by coordinating with the appropriate Corps of Engineers office early in the process of developing alternatives to assure that they are workable under both these procedures and Section 404 regulations. Also, if wetland compensation is necessary (Section 5.2.3 of these procedures), every effort should be made to assure that the same wetland restoration proposal meets the compensation requirements of both processes (NPS #77-1 2008).

Methodology and Intensity Thresholds

The methodology used for assessing impacts to floodplains, wetlands and other waters of the U.S. are based upon the results of the 2006 floodplain analysis and the 2005 wetland survey for the Tower Junction developed area in comparison to the planning components for buildable planning zones, planning prescriptions and design guidelines.

The thresholds of change for the intensity of impacts to floodplains, wetlands and other waters of the U.S. are defined as follows:

Negligible: Impacts would occur outside the regulatory floodplain, or there would be no measureable or perceptible effect on floodplain functions or values and no measurable or perceptible risk to facilities or visitors. No measureable or detectable effect on the timing or intensity of stream flow would occur. No measureable or perceptible changes in wetland or other waters of the U.S. size, integrity, or continuity would occur.

Minor: Actions within the regulatory floodplain would potentially interfere with floodplain functions/values or facility/visitor risks in a limited way or in a localized area. The impact would be measureable or perceptible, but slight. A small change in size, integrity, or continuity could occur due to short-term indirect effects such as construction-related runoff. An action would have measureable effects on the timing or intensity of flows. The overall viability of the wetland or other water of the U.S. would not be affected.

Moderate: Actions within the regulatory floodplain would interfere with floodplain function/values or facility/visitor risks in a substantial way or in a large area. Action would clearly have detectable effects on the timing of intensity of flows and potentially would affect organism or natural ecological processes. The impact would be sufficient to cause a measureable change in the size, integrity, or continuity of the wetland or would result in a small, but permanent loss or gain in wetland acreage.

Major: Actions within the regulatory floodplain would permanently and significant alter floodplain functions/values or facility/visitor risks. An action would have substantial effects on the timing or intensity of flows and potentially would affect organisms or natural processes. The action would result in a measurable change in size, integrity, and continuity (all three) or a permanent loss of large wetland areas. The impact would be substantial and highly noticeable.

Duration: Short-term effects would last only during the implementation of the project including its mitigation and monitoring measures. Long-term effects would typically constitute a permanent impact.

Impacts of Alternative A to Floodplains, Wetlands and other Waters of the U.S.

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without restrictions of buildable planning zones which use floodplain, wetland and other waters of the U.S. surveys and then avoid or mitigate these resources.

Without a comprehensive plan, impacts to floodplain, wetland and other waters of the U.S. could occur and could be more than if a comprehensive plan is not adopted because the comprehensive plan contains mitigation measures, design standards which guide the character of the development (such as consolidating creek crossing for utilities) and limitations on the development footprint (how much development can occur).

Surveys of floodplains, wetlands and other waters of the U.S. resources have been recently done within the planning boundary of the Tower-Roosevelt area and then mapped, therefore resource information would be readily available to guide environmental compliance analyses for future project proposals; potentially resulting in an improvement in efficiency and effectiveness of separate compliance actions. The cumulative impacts of the compliance would be uncertain. Surveys of floodplains, wetlands and other waters of the U.S. outside the planning boundary would be done on a case-by-case basis and efforts to avoid or minimize impacts to floodplains, wetlands and other waters of the U.S. would occur on a case by case basis. Future development may impact identified floodplains, wetlands and other waters of the U.S. within the planning boundary and unidentified floodplains, wetlands and other waters of the U.S. outside the planning boundary.

Guests at the Yancey's Hole location would continue to cross the creek to be served dinner. Horse crossings of Lost Creek and Yancey's Creek would continue. Impacts to floodplains, wetlands and other waters of the U.S. from crossing the creek would continue to be minor and long term. Utility crossings could occur wherever feasible without consolidation. Increased development along the entrance route to the Tower Administrative location which parallels the creek could encroach on wetland areas; impacts would be addressed in separate compliance actions. Impacts to wetlands in the Tower Fall Campground location would be managed on a case by case basis without direction for future change. The combined impacts to floodplains, wetlands and other waters of the U.S. under the no action alternative are expected to be short and long-term minor and adverse.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor impacts from projects are likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

In Alternative A, the combined impacts to floodplains, wetlands and other waters of the U.S. resources are expected to long term minor and adverse.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impacts to floodplains, wetlands and other waters of the U.S. resources. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long term, minor impacts to floodplains, wetlands and other waters of the U.S. resources. Possible prolonged drought could have impacts on stream flow, wetlands, and riparian zones and could lead to a decrease in ground and surface water and associated flora and fauna. Additional potable water sources may be needed if water levels in the existing spring continue to drop. Because of these impacts, the above projects would be expected to have minor and adverse impacts to floodplains, wetlands and other waters of the U.S. resources. There are no other known construction projects planned in the northeast area of the park that would affect floodplains, wetlands and other waters of the U.S. resources. Cumulative impacts resulting from these past, present, and future actions would have minor impacts to floodplains, wetlands and other waters of the U.S. resources.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis. The impacts to floodplains, wetlands and other waters of the U.S. from these projects and utilities associated with these projects are expected to be long-term, minor, and adverse. Due to development and utility expansion that is not constrained and

mitigated by the comprehensive plan, impacts would be evaluated on a case by case basis. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term, minor adverse impacts to floodplains, wetlands and other waters of the U.S. resources.

Because there would be no major adverse impacts to floodplains, wetlands and other waters of the U.S. whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Floodplains, Wetlands and other Waters of the U.S.

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. With the adoption of buildable planning zones, development that could impact floodplains, wetlands and other waters of the U.S. are mostly avoided in the Tower-Roosevelt area but minor impacts could occur from increased development in the Tower Administration and Tower Ranger Station locations due to an expanded parking lot and utility crossings in Lost Creek. By using resource surveys, these zones limit the location of development by avoiding these resources. Design standards provide for consolidation of both parking areas and of utility crossings so that impacts are minimized. Development footprint is limited by the planning prescriptions in the comprehensive plan which also limits impacts.

In the buildable planning zones other than the *Natural Buildable Zone*, there would not be any impacts to floodplains, wetlands and other waters of the U.S., other than short-term disturbance from the maintenance or construction of utility systems in stream crossings. All disturbances would be permitted and mitigated according to existing regulations and policy. New utility systems would follow existing corridors when crossing Lost Creek and would avoid floodplains, wetlands and other waters of the U.S. when possible. Natural channel morphology, river and stream flow, deposition, erosion, and flood patterns would be maintained. There would be no long-term disturbance within the 100 year floodplain, which is entirely within the active Lost Creek channel.

A small wetland to the south of the Tower Ranger Station location could be disturbed in order to accommodate parking for an improved visitor contact station. Impacts on this wetland could result in minor effects and would be permitted and mitigated according to regulation and policy.

Guests at the Yancey's Hole location would continue to cross the creek to be served dinner. Horse crossings of Lost Creek and Yancey's Creek would continue. Impacts to floodplains and wetlands from crossing the creek would continue to be minor.

For implementation of possible projects in the TRCP buildable planning, especially utilities in the *Natural Buildable Zone*, impacts to floodplains, wetlands and other waters of the U.S. would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impacts to floodplains, wetlands and other waters of

the U.S. resources. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long term, minor impacts to floodplains, wetlands and other waters of the U.S. resources. Possible prolonged drought could have impacts on stream flow, wetlands, and riparian zones and could lead to a decrease in ground and surface water and associated flora and fauna. Additional potable water sources may be needed if water levels in the existing spring continue to drop. Because of these impacts, the above projects would be expected to have minor, localized impacts on floodplains, wetlands and other waters of the U.S. resources. There are no other known construction projects planned in the northeast area of the park that would affect floodplains, wetlands and other waters of the U.S. resources. Cumulative impacts resulting from these past, present, and future actions would have long-term minor impacts to floodplains, wetlands and other waters of the U.S. resources.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to floodplains, wetlands and other waters of the U.S. from these projects and utilities associated with these projects are expected to be short and long-term, minor, and adverse. Restrictions on the location, amount and character of development in Alternative B reduces the possible impacts because there is less development and mitigation is provided. Utility corridors are consolidated and minimized through the plan; development is located where impacts can be mitigated. Future change is guided by the plan so that development is sited where impacts are less. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse impacts to floodplains, wetlands and other waters of the U.S. resources.

Because there would be no major adverse impacts to floodplains, wetlands and other waters of the U.S. resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Floodplains Wetlands and other Waters of the U.S.

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. With the adoption of buildable planning zones, development that could impact floodplains, wetlands and other waters of the U.S. are mostly avoided in the Tower-Roosevelt area. By using resource surveys, these zones limit the location of development by avoiding these resources.

In the buildable planning zones other than the *Natural Buildable Zone*, there would not be any impacts to floodplains, wetlands and other waters of the U.S., other than short-term disturbance from the maintenance or construction of utility systems in stream crossings. All disturbances would be permitted and mitigated according to existing regulations and policy. New utility systems would follow existing corridors when crossing Lost Creek and would avoid floodplains, wetlands and other waters of the U.S. when possible. Natural channel morphology, river and stream flow, deposition, erosion, and flood patterns would be maintained. There would be no long-term disturbance within the 100 year floodplain, which is entirely within the active Lost Creek channel.

Guests at the Yancey's Hole location would continue to cross the creek to be served dinner. Horse crossings of Lost Creek and Yancey's Creek would continue. Impacts to floodplains and wetlands from

crossing the creek would continue to be minor. Utility corridors would be consolidated and minimized so that disturbance is minimized. Siting of development would avoid resource impacts by locating buildings where revegetation can occur.

For implementation of possible projects in the TRCP buildable planning, especially utilities in the *Natural Buildable Zones*, impacts to floodplains, wetlands and other waters of the U.S. would need to be less than or equal to impacts described in this EA for this alternative as short and long term negligible to minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impacts to floodplains, wetlands and other waters of the U.S. resources. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long term, minor impacts to floodplains, wetlands and other waters of the U.S. resources. Possible prolonged drought could have impacts on stream flow, wetlands, and riparian zones and could lead to a decrease in ground and surface water and associated flora and fauna. Additional potable water sources may be needed if water levels in the existing spring continue to drop. Because of these impacts, the above projects would be expected to have minor, localized impacts on floodplains, wetlands and other waters of the U.S. resources. There are no other known construction projects planned in the northeast area of the park that would affect floodplains, wetlands and other waters of the U.S. resources. Cumulative impacts resulting from these past, present, and future actions would have long-term minor impacts to floodplains, wetlands and other waters of the U.S. resources.

Conclusion

In Alternative C future projects would proceed with the guidance of the comprehensive plan. Alternative C has less allowable development footprint than Alternative B and therefore, less impacts to resources. Utility corridors would be consolidated and minimized so that impacts would be reduced. Mitigation measures described in Chapter 2 would be applied such as revegetation with native materials. The impacts to floodplains, wetlands and other waters of the U.S. from these projects and utilities associated with these projects are expected to be short and long-term, negligible to minor, and adverse. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, minor adverse impacts to floodplains, wetlands and other waters of the U.S. resources.

Because there would be no major adverse impacts to floodplains and wetlands whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Vegetation and Rare Plants

Guiding Regulations and Policies

Section 4.4 of the NPS Management Policies (2006) addresses biological resource management including general vegetation management. This policy states that the NPS will maintain all plants native to

park ecosystems. This will be done by preserving native plant populations, restoring native plant populations in parks when they have been extirpated by past human-caused actions and minimizing human impacts on native plants, populations, communities and ecosystems and the process that sustain them.

Guidance for management of rare plants is found in NPS Management Policies Section 4.4.2.3 (Management of Threatened or Endangered Plants and Animals): "The National Park Service will inventory, monitor, and manage state and locally listed species plant species of concern in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the Service will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance." Adverse impacts to rare plants will be avoided to the extent possible. Impacts that cannot be avoided will be minimized and if possible mitigated via seed collection and plant salvage from on-site or nearby suitable habitats prior to disturbance and re-established following construction. Revegetation, utilizing existing native plant species found in the area, would occur wherever possible according to *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995).

Methodology and Intensity Thresholds

The methodology used for assessing impacts to vegetation and rare plants are based upon the results of the 2006 rare plant survey within the Tower-Roosevelt area planning boundary for the proposed TRCP/EA (see Natural Resource Map Appendix B). This plan compares these survey results with the planning components of buildable planning, planning prescriptions and design guidelines in the action alternatives B and C but not for the no action alternative A. Included in the evaluation of the vegetative communities is the introduction or promotion of non-native species.

The thresholds of change for the intensity of an impact to vegetation and rare plants are defined as follows:

Negligible: The effects to vegetation would not be measurable. Ecological processes would not be affected. No rare plant species or uncommon plant communities would be affected. Individual native plants might be affected, but impacts would be localized, short-term, and of no consequence to the species.

Minor: The action would affect individual native plants in a localized area but would not affect the viability of local or regional populations of rare, endemic, or other plant species of concern. Native vegetation would be affected, but impacts would occur in a relatively minor portion of the species' occurrence(s) within the park. Mitigation measures to offset adverse effects would be proposed. Rare plants or uncommon plant communities could be present and individual plants could be affected, but proposed mitigation measures to avoid adverse impacts to the species or community would be effective.

Moderate: The action would affect the local population sufficiently to cause a change in abundance or distribution on a local scale but would not affect the viability of the regional population of rare, endemic, or other plant species of concern. Changes to localized ecological processes would be of limited extent. A sizable segment of native vegetation within the park would be affected, and proposed mitigation measures would be extensive. Rare plant species or uncommon plant communities could be affected, and proposed mitigation measures to offset adverse effects could be extensive.

Major: the action would affect a regional or local population of a species sufficiently to cause a change in abundance or distribution to the extent that the population would not be likely to return to its former level.

Significant ecological processes would be altered, and landscape-level changes would be expected. Effects on native vegetation within the park, potentially including rare plants or uncommon plant communities would be extensive and long-term. Proposed mitigation measures to offset the adverse effects would be extensive, and success of the mitigation measures would not be guaranteed.

Duration: Short-term effects would last only during the implementation of the project including its mitigation and monitoring measures. Long-term effects would typically constitute a permanent impact.

Impacts of Alternative A to Vegetation and Rare Plants

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones which use rare plant surveys and then avoid or mitigate impacts to these resources. Future projects could occur without design standards that would consolidate facilities and thus mitigate impacts to vegetation resources.

Without a comprehensive plan, impacts to vegetation and rare plants resources could occur and could be more than if a comprehensive plan is not adopted.

Since vegetation and rare plants resources have been surveyed within the planning boundary of the Tower-Roosevelt area and then mapped, resource information would be readily available to guide environmental compliance analyses for these project proposals; potentially resulting in an improvement in efficiency and effectiveness of these separate compliance actions.

Surveys for rare plants outside the planning boundary would be done on a case-by-case basis and efforts to avoid or minimize impacts to rare plants would occur on a case by case basis. Future development may impact identified rare plant sites within the planning boundary and unidentified rare plant sites outside the planning boundary. Guidance for maintaining important vegetation, including trees serving as screening or those contributing to cultural landscapes would be given on a case-by-case basis. The combined impacts to vegetation and rare plants under Alternative A are expected to be short and long-term moderate and adverse.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for moderate impacts from projects are more likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

In Alternative A the combined impacts to vegetation and rare plants are expected to be long-term moderate and adverse.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impacts to vegetation and rare plants. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to vegetation and rare plants. Construction projects in the northeast area of the park would not have more than minor impacts to vegetation and rare plants. Management practices for hazard tree removal, fire suppression, or fire may affect vegetation in the Tower-Roosevelt area. Increased noxious and invasive weed infestations could occur due to increase ground disturbance in the Tower-Roosevelt area. Because of these impacts, the above projects would be expected to have minor, localized impacts to vegetation and rare plants resources. There are no other known construction projects planned in the northeast area of the park that would affect vegetation resources. Cumulative impacts from these past, present, and future actions would have long-term adverse moderate impacts to vegetation and rare plants resources.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. The impacts to vegetation and rare plants from these projects and utilities associated with these projects are expected to be short and long-term, moderate, and adverse. Because there are no planning zones that limit the location of projects, no restrictions on the amount of development footprint that limits the amount of development and no design standards that provide mitigating measures that lessen impacts, impacts are expected to be uncertain and likely increased. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term, moderate adverse impacts to vegetation and rare plants resources.

Because there would be no major adverse impacts to vegetation and rare plants whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Vegetation and Rare Plants Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Most impacts to vegetation would result from increased development and excavation in the Tower-Roosevelt area especially in the Tower Junction and Tower Ranger Station locations. There would be some long-term vegetation loss from possible realignment of the Grand Loop Road. Vegetation loss would occur from possible building and parking construction within undisturbed and existing disturbed areas. Development or redevelopment of utilities within the buildable planning zones would affect vegetation and could affect rare plants.

Most of the vegetation lost would be sagebrush/meadow due to increase development for buildings, parking and utilities. The development footprint accommodates a net gain of up to 21,225 square feet for buildings, 41,250 square feet for paved parking and no net gain for unpaved parking. This compares with the existing development footprint of 115,005 square feet for buildings or 19 % net gain, and 142,322 square feet for paved parking or 29% net gain. This future disturbance could have minor to moderate impacts to vegetation and rare plants due to time for re-growth and the potential increase spreading of exotic plants. Very little, if any, loss of trees is anticipated. Few trees exist in areas that would accommodate future development. Trees important for screening, cultural landscapes, and the forest

edge, would be protected and enhanced. Aspen groves south of the Roosevelt Corrals location would be protected so that only minor impacts would occur. Revegetation, utilizing existing native plant species found in the area, would occur wherever possible and would be undertaken according to *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995).

Rare plant sites would be avoided if at all possible. With the adoption of buildable planning zones, development in the Tower-Roosevelt area mostly avoids rare plants resources. By using resource surveys, these zones limit the location of development. If appropriate, plant and topsoil salvaging would take place according to the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). There may be effects on rare plant sites near the Roosevelt Corrals, the service station and Grand Loop Road with utility projects within the *Natural Buildable Zone*. There may be effects on the Suksdorf's broomrape sites near the service station and the Grand Loop Road in the Circulation Zone. Because the circulation zone and possible road realignment overlaps this rare plant site by approximately 6 %, the impact to this site would be minor.

The potential for spreading exotic plant species during construction would be mitigated by adhering to proper construction practices. A weed control and revegetation plan would incorporate the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). Plant materials used for revegetation would utilize existing native vegetation of the area.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to vegetation and rare plants would need to be less than impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

In alternative B the combined impacts to vegetation and rare plants are expected to be long-term minor to moderate and adverse.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impacts to vegetation and rare plants. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to vegetation and rare plants. Construction projects in the northeast area of the park would not have more than minor impacts to vegetation and rare plants. Management practices for hazard tree removal, fire suppression, or fire may affect vegetation and rare plants in the Tower-Roosevelt area. Increased noxious and invasive weed infestations could occur due to increase ground disturbance in the Tower-Roosevelt area. Because of these impacts, the above projects would be expected to have minor, localized impacts on vegetation and rare plants resources. There are no other known construction projects planned in the northeast area of the park that would affect vegetation and rare plants resources. Cumulative impacts from these past, present, and future actions would have long-term minor impacts to vegetation and rare plants resources.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to vegetation and rare plants from these projects and utilities associated with these projects are expected to be short and long-term, minor to moderate, and adverse. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term minor to moderate adverse

impacts to vegetation and rare plants resources. The guidance provided through the comprehensive planning components minimizes the impacts to vegetation through limited development footprint and vegetation guidelines that support native plant restoration. Planning zones provide locations where resources are least affected.

Because there would be no major adverse impacts to vegetation and rare plants whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Vegetation Rare Plants Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Most impacts to vegetation would result from increased development and excavation in the Tower-Roosevelt area especially the Tower Junction location. Vegetation loss would occur from possible building and parking construction within undisturbed and existing disturbed areas.

Most of the vegetation lost would be sagebrush/meadow due to increase development for buildings, parking and utilities. The development footprint accommodates a net gain of up to 8,050 square feet for buildings, 31,000 square feet for paved parking and no net gain for unpaved parking. This compares with the existing development footprint of 115,005 square feet for buildings or 7% net gain, and 142,322 square feet for paved parking or 22% net gain. This future disturbance could have minor impacts to vegetation and rare plants due to time for re-growth and the potential increase spreading of exotic plants.. Very little, if any, loss of tree cover is anticipated. Trees grow in natural clusters and screen the Roosevelt Lodge location from the Grand Loop Road. Few trees exist in areas that plan for future development. Trees important for screening, cultural landscapes, and maintaining forest edge would be protected and enhanced. Aspen groves south of the Roosevelt Corral location would be protected so that only negligible impacts would occur. Revegetation, utilizing exiting native plant species found in the area, would occur wherever possible and would be undertaken according to *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995).

Rare plant sites would be avoided if at all possible. With the adoption of buildable planning zones, development in the Tower-Roosevelt area mostly avoids rare plants resources. By using resource surveys, these zones limit the location of development. If appropriate, plant and topsoil salvaging would take place according to the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). There may be effects on rare plant sites near the Roosevelt Corrals, the service station and Grand Loop Road with utility projects within the *Natural Buildable Zone*.

The potential for spreading exotic plant species during construction would be mitigated by adhering to proper construction practices. A weed control and revegetation plan would incorporate the *Vegetation Management for Construction Disturbance in Yellowstone National Park* (1995). Plant materials used for revegetation would utilize existing native vegetation of the area.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to vegetation and rare plants would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for

future projects proposed outside the planning boundary are not included in this EA and additional surveys would be required.

In alternative C, the combined impacts to vegetation and rare plants are expected to be long-term minor and adverse.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have impact to vegetation and rare plants. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to vegetation and rare plants. Construction projects in the northeast area of the park that would not have more than minor impacts to vegetation and rare plants. Management practices for hazard tree removal, fire suppression, or fire may affect vegetation in the Tower-Roosevelt area. Increased noxious and invasive weed infestations could occur due to increase ground disturbance in the Tower-Roosevelt area. Because of these impacts, the above projects would be expected to have minor, localized impacts on vegetation and rare plants resources. There are no other known construction projects planned in the northeast area of the park that would affect vegetation and rare plants resources. Cumulative impacts from these past, present, and future actions would have long-term minor impacts to vegetation and rare plants resources.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. The impacts to vegetation and rare plants from these projects and utilities associated with these projects are expected to be short and long term, minor and adverse. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, minor, adverse impacts to vegetation and rare plants resources. Components of the comprehensive plan, such as planning zones provide for facility locations that least impact resources. Design standards consolidate development footprint and provide for native plant restoration to mitigate impacts from construction. Alternative C has less allowable development footprint compared to Alternative B and therefore, less impacts.

Because there would be no major adverse impacts to vegetation and rare plants whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Wildlife

Guiding Regulations and Policies

There are federal laws governing other wildlife not protected by the Endangered Species Act (1973) including the Migratory Bird Protection Act, The Bald Eagle protection Act, and the Lacey act. *Note that threatened and endangered species are considered separately under a separate impact topic. NPS has policies and guidance on the topic of wildlife management. Section 4.4 of 2006 Management Policies addresses biological resource management including general wildlife management. This policy states that NPS will maintain as parts of the natural ecosystems of parks all native plants and animals. More specific

topics covered in this policy include native species, species harvesting, exotic species, and pest management.

Methodology and Intensity Thresholds

Yellowstone National Park wildlife biologists used scientific literature, site-specific information, and professional knowledge to define intensity thresholds (i.e., degree of change) for impacts to wildlife. For these thresholds, the term habitat is defined as the resources (e.g., food, shelter, and range) and environmental conditions (e.g., precipitation, predators) that enable the presence, survival, and reproduction of a population, even if potentially suitable areas are currently unoccupied. Short-term effects are defined as those occurring during the implementation of the project, including conservation measures and monitoring of effects and effectiveness, while longer-term effects are considered permanent.

The thresholds of change for the intensity of impacts to wildlife are defined as follows:

Negligible: Adverse or beneficial impacts on individuals, their habitat, or the key ecosystem processes sustaining them would be extremely unlikely to occur or not measurable.

Minor: Adverse or beneficial impacts on individuals, their habitat, or the key ecosystem processes sustaining them would affect a small, localized portion of the species/ range in the park. Short or long-term disturbances to individuals may occur and/or a small amount of habitat could be permanently modified or removed. Impacts would not measurably affect the migration patterns, or other demographic characteristics of the population (i.e., age/sex structure, recruitment rates, survival rates, movement rates, population sizes, population rates of change).

Moderate: Adverse or beneficial impacts on populations, their habitat, or the key ecosystem processes sustaining them would affect a moderate portion of the species/range in the park. Short or long-term disturbances could measurably affect the migration patterns, or other demographic characteristics of the population (i.e., age/sex structure, recruitment rates, survival rates, movement rates, population sizes, population rates of change). Impacts would not significantly increase the susceptibility of population(s) in or near the park to environmental or demographic uncertainty (e.g., severe winters, droughts, disease epidemics, skewed age or sex ratios).

Major: Adverse or beneficial impacts on populations, their habitat, or the key ecosystem processes sustaining would be long-term and affect a large proportion of a species range in the park. The susceptibility of population(s) in or near the park to environmental or demographic uncertainty would significantly increase.

Duration: Short-term effects would last only during the implementation of the project including its mitigation and monitoring measures. Long-term effects would typically constitute a permanent impact.

Impacts of Alternative A to Wildlife

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to wildlife resources could occur and could be more than if a comprehensive plan is not adopted.

The Yancey's Hole location is good habitat for bears and has seen increased use in recent years. Bears or other wildlife are attracted to food sources associated with the cook out facilities. Changes to facilities at the Yancey's Hole location would not have long-term adverse effect to wildlife and could have long-term beneficial effect due to better food hygiene with improved surfaces. There is a local effect at the Yancey's Hole location when bears are hazed from the area to protect visitors safety. This effect could be short or long term disturbance to individuals.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for moderate impacts from projects are more likely. This assumption is due to the possibility of year round use for new development at the Tower Junction location. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

An increase in visitation in the northeast part of the park, including the Tower-Roosevelt area, due to the popularity of wildlife watching, has created minor effects to wildlife due to increase wildlife traffic jams, vehicle strikes to wildlife and other human-wildlife interactions.

The Tower-Roosevelt area is popular for viewing black and grizzly bears close to the road. Roads affect bears through a variety of human activities associated with and facilitated by improved access (McLellan 1990). Park roads within or adjacent to bear habitat can affect individual bears both directly and indirectly. Direct effects include human-caused bear mortality, including vehicle strike losses, and loss of habitat due to expanding development. In particular, road reconstruction projects in YNP including the Tower-Roosevelt area are expected to increase vehicle strike mortality of grizzly and black bears due increase speeds from road widening and new surfaces. Indirect effects include reduction of habitat effectiveness due to human-caused displacement of bears from high quality habitat adjacent to road corridors. Bears may also be indirectly affected by roads through habituation to humans and other behavior modifications.

Reconstruction of the Grand Loop and Northeast Entrance Roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have additional impacts on wildlife. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to wildlife. Wildlife could be temporarily displaced due to ground disturbance and noise during construction projects. Improved road surface and wider road widths could increase traffic speed and collisions with animals, resulting in increased wildlife mortalities. Other road construction projects would continue in and near the park, including reconstruction of the four mile section of the Northeast Entrance Road of road between the Northeast Entrance Gate and the park boundary, the Lamar River Bridge and the Beartooth Highway. These construction projects would cause short-term, minor impacts to wildlife due to ground disturbance and noise.

There are no other known construction projects planned in the northeast area of the park that would affect wildlife resources. Because of these impacts, the above projects would be expected to have long-term, minor, and adverse impacts to wildlife resources. Cumulative impacts resulting from these past, present, and future actions would have short and long-term minor impacts to wildlife.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. Construction projects could cause short-term, minor impacts to wildlife due to ground disturbance and noise. The possibility of year round use for new development at the Tower Junction location could cause long-term, moderate impacts to wildlife. The impacts to wildlife from these projects and utilities associated with these projects are expected to be short and long-term, minor to moderate, and adverse. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term, minor to moderate adverse impacts to wildlife resources.

Because there would be no major adverse impacts to wildlife whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Wildlife Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. There would be no measurable disturbance of non-habituated resident or migratory wildlife such as pronghorn, bison, deer, elk, bighorn sheep, black bears, peregrine falcons, and osprey, including the distribution, reproduction, or survival of wildlife species or the demography of populations. Important wildlife habitat would remain intact.

An increase in development at the Tower Junction location could lead to a minor displacement of wildlife and could result in a minor loss of wildlife habitat. This could have an increased effect on localized wildlife movements. The spring, fall and particularly winter months are when wildlife are most susceptible to impacts. Because the development at the Tower Junction location would remain closed in the winter months in this action alternative, the adverse impacts to wildlife are minor. Realignment of the Grand Loop Road could reduce important wildlife habitat north of the road in Pleasant Valley, however, the maximum 100 foot offset from centerline is considered a minor effect.

There could be increases to facilities in the Roosevelt Lodge and in the Tower Administrative locations. These areas are already developed and are not considered important wildlife habitat.

Changes to the Tower Fall Store, including removal or reduction, would not affect wildlife in the Tower Fall Trailhead location because it is not prime wildlife habitat and most migration through the area occurs when the existing store is closed.

The Yancey's Hole location is good habitat for bears and has seen increased use in recent years. Bears or other wildlife are attracted to food sources associated with the cook out facilities. Changes to facilities at the Yancey's Hole location would not have long-term adverse effect to wildlife and could have long-term beneficial effect due to better food hygiene with improved surfaces. There is a local effect at the

Yancey's Hole location when bears are hazed from the area to protect visitors safety. This effect could be short or long term disturbance to individuals.

Short-term displacement of wildlife could occur due to construction activity. Wildlife could be temporarily displaced from habitat adjacent to the development sites due to construction equipment and activity for the duration of a project. No increases in wildlife mortalities are anticipated. Construction workers would follow park protocols to minimize effects on wildlife.

Building design could minimize human-made wildlife habitat, such as decks and wide roof-overhangs, which often attract birds and rodents.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to wildlife would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

An increase in visitation in the northeast part of the park, including the Tower-Roosevelt area, due to the popularity of wildlife watching, has created minor effects to wildlife due to increase wildlife traffic jams, vehicle strikes to wildlife and other human-wildlife interactions.

The Tower-Roosevelt area is popular for viewing black and grizzly bears close to the road. Roads affect bears through a variety of human activities associated with and facilitated by improved access (McLellan 1990). Park roads within or adjacent to bear habitat can affect individual bears both directly and indirectly. Direct effects include human-caused bear mortality, including vehicle strike losses, and loss of habitat due to expanding development. In particular, road reconstruction projects in YNP including the Tower-Roosevelt area are expected to increase vehicle strike mortality of grizzly and black bears due increase speeds from road widening and new surfaces. Indirect effects include reduction of habitat effectiveness due to human-caused displacement of bears from high quality habitat adjacent to road corridors. Bears may also be indirectly affected by roads through habituation to humans and other behavior modifications.

Reconstruction of the Grand Loop and Northeast Entrance Roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have additional impacts on wildlife. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to wildlife. Wildlife could be temporarily displaced due to ground disturbance and noise during construction projects. Improved road surface and wider road widths could increase traffic speed and collisions with animals, resulting in increased wildlife mortalities. Other road construction projects would continue in and near the park, including reconstruction of the four mile section of the Northeast Entrance Road of road between the Northeast Entrance Gate and the park boundary, the Lamar River Bridge and the Beartooth Highway. These construction projects would cause short-term, minor impacts to wildlife due to ground disturbance and noise.

There are no other known construction projects planned in the northeast area of the park that would affect wildlife resources. Because of these impacts, the above projects would be expected to have long-term, minor, and adverse impacts to wildlife resources. Cumulative impacts resulting from these past, present, and future actions would have short and long-term minor impacts to wildlife.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. Some long term displacement of individual wildlife could occur due to a minor increase in visitor services and visitation at Tower Junction. Increase development at Tower Junction could affect movements of individual wildlife. Construction projects would cause short-term, minor impacts due to ground disturbance and noise. The impacts to wildlife from these projects and utilities associated with these projects are expected to be short and long-term, minor, and adverse. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse impacts to wildlife resources.

Because there would be no major adverse impacts to wildlife whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Wildlife

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to development could have a minor effect to wildlife and their natural habitat. There would be no measurable disturbance of non-habituated resident or migratory wildlife such as pronghorn, bison, deer, elk, bighorn sheep, black bears, peregrine falcons, and osprey, including the distribution, reproduction, or survival of wildlife species or the demography of populations. Important wildlife habitat would remain intact.

An increase in development at the Tower Junction location could lead to a minor displacement of wildlife and would result in a minor loss of wildlife habitat. This could have an increased effect on localized wildlife movements. The spring, fall and particularly winter months are when wildlife are most susceptible to impacts. Because the development at the Tower Junction location would remain closed in the winter months in this action alternative, the adverse impacts to wildlife are minor. Realignment of the Grand Loop Road could reduce important wildlife habitat north of the road in Pleasant Valley, however, the maximum 100 foot offset from centerline is considered a minor effect.

There could be increases to facilities in the Roosevelt Lodge and in the Tower Administrative locations. These areas are already developed and are not considered important wildlife habitat.

Short-term displacement of wildlife could occur due to construction activity. Wildlife could be temporarily displaced from habitat adjacent to the development sites due to construction equipment and activity for the duration of a project; however displacement is less in Alternative C than in Alternative B because less development is anticipated. No increases in wildlife mortalities are anticipated. Construction workers would follow park protocols to minimize effects on wildlife.

Building design would minimize the creation of human-made wildlife habitat, such as decks and wide roof overhangs that often attract rodents and birds. Other changes in development in Alternative C are not significant enough to have affects on wildlife.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to wildlife would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects

proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

An increase in visitation in the northeast part of the park, including the Tower-Roosevelt area, due to the popularity of wildlife watching, has created minor effects to wildlife due to increase wildlife traffic jams, vehicle strikes to wildlife and other human-wildlife interactions.

The Tower-Roosevelt area is popular for viewing black and grizzly bears close to the road. Roads affect bears through a variety of human activities associated with and facilitated by improved access (McLellan 1990). Park roads within or adjacent to bear habitat can affect individual bears both directly and indirectly. Direct effects include human-caused bear mortality, including vehicle strike losses, and loss of habitat due to expanding development. In particular, road reconstruction projects in YNP including the Tower-Roosevelt area are expected to increase vehicle strike mortality of grizzly and black bears due increase speeds from road widening and new surfaces. Indirect effects include reduction of habitat effectiveness due to human-caused displacement of bears from high quality habitat adjacent to road corridors. Bears may also be indirectly affected by roads through habituation to humans and other behavior modifications. (Parkwide Road Biological Assessment, 2007)

Reconstruction of the Grand Loop and Northeast Entrance Roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, would have additional impacts on wildlife. The Canyon Junction to Tower Junction Road Improvement EA (2001) found long-term, minor impacts to wildlife. Wildlife could be temporarily displaced due to ground disturbance and noise during construction projects. Improved road surface and wider road widths could increase traffic speed and collisions with animals, resulting in increased wildlife mortalities. Other road construction projects would continue in and near the park, including reconstruction of the four mile section of the Northeast Entrance Road of road between the Northeast Entrance Gate and the park boundary, the Lamar River Bridge and the Beartooth Highway. These construction projects would cause short-term, minor impacts to wildlife due to ground disturbance and noise.

There are no other known construction projects planned in the northeast area of the park that would affect wildlife resources. Because of these impacts, the above projects would be expected to have long-term, minor, and adverse impacts to wildlife resources. Cumulative impacts resulting from these past, present, and future actions would have short and long-term minor impacts to wildlife.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Some long term displacement of individual wildlife could occur due to a minor increase in visitor services and visitation at Tower Junction. Increase development at Tower Junction could affect movements of individual wildlife. Construction projects would cause short-term, minor impacts due to ground disturbance and noise. The impacts to wildlife from these projects and utilities associated with these projects are expected to be short and long-term, minor, and adverse. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse impacts to wildlife resources.

Because there would be no major adverse impacts to wildlife whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be

no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Threatened and Endangered Species

(Canada Lynx and Gray Wolves)

Guiding Regulations and Policies

Protective measures for threatened and endangered species are provided pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). Section 7(c) of the Endangered Species Act of 1973, as amended, requires the preparation of a biological assessment for any federal action that is a major construction activity to determine the effects of the proposed action on listed and proposed species. If a biological assessment is not required (i.e., all other actions), the lead federal agency is responsible for review of proposed activities to determine whether listed species will be affected. If it is determined that the proposed activities may affect a listed species, then federal agencies should contact the U.S. Fish and Wildlife Service to discuss consultation requirements. If it is determined that any federal agency program or project “is likely to adversely affect” any listed species, then formal consultation should be initiated with the U.S. Fish and Wildlife Service. Alternatively, informal consultation can be continued so the U.S. Fish and Wildlife Service can assist with determining how the project could be modified to reduce impacts to listed species to the “not likely to adversely affect” threshold. If it is concluded that the project “is not likely to adversely affect” listed species, then the federal agency should request that the U.S. Fish and Wildlife Service review the assessment and concur with the determination of not likely to adversely affect.

Methodology and Intensity Thresholds

Impacts to threatened species in Yellowstone National Park were evaluated by YNP wildlife biologists. Evaluations of threatened and endangered species were completed using records sightings within at least three miles (5 km) of Tower-Roosevelt area, records of sightings, and knowledge of habitats. The evaluation of effects included direct, indirect, interrelated, interdependent, and cumulative impacts as defined by the Endangered Species Act (ESA).

Consultation with the U.S. Fish and Wildlife Service (USFWS) will occur for this plan. Mitigation proposed by the park for impacts on threatened or endangered species could include avoidance, minimization, and conservation measures as agreed upon by the USFWS.

The thresholds of change for the intensity of impacts to threatened and endangered species are defined as follows:

Negligible: No federally listed species or its proposed or designated critical habitat would be affected. A “negligible effect” corresponds to a “no effect” determination by the park for §7, ESA purposes. Informal consultation with the USFWS might occur, but would not be required.

Minor: Effects are insignificant, discountable, or beneficial to individual members of the species, or effects tend to be localized, temporary, and of little negative consequence to individuals particularly those stemming from human disturbance or habitat modification. A “minor effect” corresponds to a determination by the park of “may affect, but not likely to adversely affect” the species (or adversely modify proposed or designated critical habitat) for §7, ESA purposes. The USFWS must concur with this determination during consultation.

Moderate: Adverse effects are readily detectable and localized for individuals. A “moderate” effect corresponds to a determination by the park of “may affect, likely to adversely affect” the species (or adversely modify proposed or designated critical habitat) for §7, ESA purposes and requires formal consultation with the USFWS. Mitigation would include measures proposed by the park and terms and conditions required by the USFWS to minimize the adverse effects to individuals.

Major: Adverse effects are readily detectable at the population level and widespread. A “major effect” corresponds to a determination by the park of “may affect, likely to adversely affect” the species (or adversely modify proposed or designated critical habitat) for §7, ESA purposes and requires formal consultation with the USFWS. Numerous mitigations proposed by the park and terms and conditions required by the USFWS would result in significant changes to the project to reduce the adverse impacts. However, if it is determined that the project (even after implementing the avoidance, minimization, and conservation measures) would jeopardize the continued existence of the species, the USFWS could issue reasonable and prudent alternatives to the project.

Duration: Short-term effects would last only during the implementation of the project including its mitigation and monitoring measures. Long-term effects would typically constitute a permanent impact.

Impacts of Alternative A to Threatened and Endangered Species

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to Canada lynx and gray wolves could occur and could be more than if a comprehensive plan is not adopted.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor impacts from projects are more likely. This assumption is due to the possibility of year round use for new development at the Tower Junction location. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts to threatened and endangered species. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no impairment to threatened and endangered species. Overall widening and improvement of the road surface, together with loss of habitat, could lead to cumulative impacts. No other known construction projects are planned in this area. Park-

wide projects that could contribute to cumulative effects include roads and facilities reconstruction or improvement projects, subsequent visitor use of improved roads and facilities, and fire management. Because of these impacts, the above projects would be expected to have minor (may affect, but not likely to adversely affect), localized impacts to Canada lynx and gray wolves. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to Canada lynx and gray wolves.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. Construction projects could cause short-term, minor impacts to gray wolves due to ground disturbance and noise. The possibility of year round use for new development at the Tower Junction location could cause long-term, minor impacts to gray wolves. These projects and utilities associated with these projects are expected to have minor impacts with “may affect, but are not likely to adversely affect” gray wolves. When combined with past, present, and foreseeable future actions, Alternative A could have long-term minor impacts to threatened or endangered species.

Because there would be no major adverse impacts to Canada lynx and gray wolves whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone’s establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Threatened and Endangered Species

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Increased development, including realignment of the Grand Loop Road at the Tower Junction location could cause loss of natural areas; however, there would be no net loss in habitat quality or quantity important for Canada lynx. All projects would be outside Lynx Analysis Units.

Increased development, particularly at the Tower Junction location, may affect movements of gray wolves. However, adult wolves are tolerant of human facilities in developed areas and along roads in Yellowstone National Park, and wolves do not appear to avoid the portions of their pack territories that are in close proximity to roads or park developments.

Development changes in Alternative B could have minor effects to gray wolves due to increase in visitors and construction. Increases in traffic pose a small risk of vehicle-strike mortality to wolves. This would be mitigated with contractor orientation, public education and road speed design through the development.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to threatened or endangered species would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts to threatened and endangered species. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no impairment to threatened and endangered species. Overall widening and improvement of the road surface, together with loss of habitat, could lead to cumulative impacts. No other known construction projects are planned in this area. Park-wide projects that could contribute to cumulative effects include roads and facilities reconstruction or improvement projects, subsequent visitor use of improved roads and facilities, and fire management. Because of these impacts, the above projects would be expected to have minor (may affect, but not likely to adversely affect), localized impacts to Canada lynx and gray wolves. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to Canada lynx and gray wolves.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. Construction projects could cause short-term, minor impacts due to ground disturbance and noise. Under Alternative B, there would be minor impacts that “may affect, but are not likely to adversely affect” Canada lynx. There may be indirect, localized, long-term minor effects on gray wolves due to increase visitor use. These impacts “may affect, but are not likely to adversely affect”, gray wolves. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse impacts to threatened or endangered species.

Because there would be no major adverse impacts to Canada lynx and gray wolves whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone’s establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Threatened and Endangered Species

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to development would not affect the ability of threatened and endangered species to exist in their natural habitat. There would be no measurable impacts to threatened or endangered species such as Canada lynx and gray wolves.

Changes in development would not cause any loss of natural areas and there would be no net loss of habitat quality or quantity important for Canada lynx. All projects would be outside Lynx Analysis Units.

Increased development within existing areas may, but is not likely to have effects to the movements of gray wolves. Adult wolves are tolerant of human facilities in developed areas and along roads in Yellowstone National Park, and wolves do not appear to avoid the portions of their pack territories that are in close proximity to roads or park developments.

Development changes in Alternative C could have negligible to minor effects to gray wolves due to increase in visitors and construction. Increases in traffic pose a small risk of vehicle-strike mortality to wolves. This would be mitigated with contractor orientation, public education and road speed design through the development.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to threatened or endangered species would need to be less than or

equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts to threatened and endangered species. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no impairment to threatened and endangered species. Overall widening and improvement of the road surface, together with loss of habitat, could lead to cumulative impacts. No other known construction projects are planned in this area. Park-wide projects that could contribute to cumulative effects include roads and facilities reconstruction or improvement projects, subsequent visitor use of improved roads and facilities, and fire management. Because of these impacts, the above projects would be expected to have minor (may affect, but not likely to adversely affect), localized impacts to Canada lynx and gray wolves. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to Canada lynx and gray wolves.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Construction projects could cause short-term, minor impacts due to ground disturbance and noise. Under Alternative C, there would be negligible to minor impacts and “may affect, but is unlikely to adversely affect” Canada lynx and gray wolves. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, negligible to minor adverse impacts to threatened or endangered species.

Because there would be no major adverse impacts to Canada lynx and gray wolves whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone’s establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Natural Soundscapes

Guiding Regulations and Policies

The National Park Service preserves, to the greatest extent possible, the natural soundscapes of the park (NPS 2006, Sec. 4.9). Intrusive sounds are a concern to park visitors: a system-wide survey revealed that nearly as many visitors come to national parks to enjoy the natural soundscape (91%) as come to view the scenery (93%).

36 CFR § 2.12 specifically prohibits operating motorized equipment or machinery (e.g., electric generating plants, motor vehicles, or motorized toys) or audio devices (e.g., radio, television set, tape deck or musical instrument) in a manner that exceeds a noise level of 60 dBA at 50 feet.

Methodology and Intensity Thresholds

Analyses of the potential intensity of soundscape impacts were derived from available information on levels in the Tower-Roosevelt area and park staff knowledge and observations of both visitor and employee use, and construction activities.

The thresholds of change for the intensity of impacts to natural soundscapes are defined as follows:

Negligible: Impacts to the natural soundscapes would be barely detectable or changes would be short-term, slight and localized.

Minor: Impacts to the natural soundscapes would be short-term or long-term, and localized. The change would be noticeable but would not negatively affect the character of the site or its relationship to or dominance in the surrounding natural setting.

Moderate: Impacts to the natural soundscape would be long-term and obvious. Effects would noticeably change the impression of the immediate site and the character of the overall setting.

Major: Changes to the soundscape would be significant. Changes would be long-term, considerable, and widespread, with negative changes considered obtrusive. Obvious differences would change the character and overall impression of the area and its association with and dominance within the surrounding natural setting.

Duration: Short-term effects would last during construction of a facility, typically up to three months. Long-term effects would be anything beyond the construction of a facility through the life of the facility, including maintenance activities.

Impacts of Alternative A to Natural Soundscapes

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to natural soundscapes could occur and could be more than if a comprehensive plan is not adopted.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor to moderate impacts to natural soundscapes are more likely. This assumption is due to no guidelines, restrictions or design standards for new development and the possibility of year round use for new development at the Tower Junction location. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on soundscapes in the short-term due to heavy construction. There could be some small short-term minor adverse impacts due to construction.

No other known construction projects are planned in this portion of the park that could affect soundscapes. Current public and NPS use of facilities and nearby roadways add non-natural sound sources to the natural soundscape. Aircraft over flights including research, search and rescue, general aviation, and high commercial aircraft also could add a cumulative effect. Because of these impacts, the above projects are expected to have short and long-term, minor, and adverse impacts to soundscapes. Cumulative impacts from these past, present, and future actions could have long-term minor to moderate impacts to natural soundscapes.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. Construction projects could cause short-term, minor to moderate impacts to the natural soundscapes. These projects and utilities associated with these projects are expected to have long-term minor to moderate impacts the natural soundscapes. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term minor to moderate and adverse impacts to threatened or endangered species.

Because there would be no major adverse impacts to soundscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Natural Soundscapes

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Construction projects could cause short-term, minor impacts to the natural soundscapes. This would be localized noise associated with construction projects. The increase in development in the Tower-Roosevelt area could affect natural soundscapes due to increased development including traffic, and operations along the Grand Loop Road, within historic districts and administrative areas. Reducing or eliminating the Tower Fall general store at the Tower Fall Trailhead location could have a beneficial effect by reducing non-natural sounds of traffic and visitors.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to threatened or endangered species would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on soundscapes in the short-term due to heavy construction. There could be some small short-term minor adverse impacts due to construction.

No other known construction projects are planned in this portion of the park that could affect soundscapes. Current public and NPS use of facilities and nearby roadways add non-natural sound sources to the natural soundscape. Aircraft over flights including research, search and rescue, general aviation, and high commercial aircraft also could add a cumulative effect. Because of these impacts, the above projects are expected to have short and long-term, minor, and adverse impacts to soundscapes. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to soundscapes.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. Construction projects could cause short-term, minor impacts due noise. Increase in development could affect natural soundscapes in the Tower Junction location due to increased traffic and operations along the Grand Loop Road, within historic districts and administrative areas. Reducing or eliminating the Tower Fall general store at the Tower Fall Trailhead location could have localized beneficial impact on non-natural sounds by reducing the volume of traffic and visitors. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse and beneficial impacts to the natural soundscapes.

Because there would be no major adverse impacts to soundscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Natural Soundscapes

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. The increases in development in the Tower Junction location would be less than Alternative B; therefore there could be negligible to minor effects on natural soundscapes. Reducing the Tower Fall general store at the Tower Fall Trailhead location could have a beneficial effect by reducing non-natural sounds of traffic and visitors. There would also be localized, short-term minor noises with construction projects.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to the natural soundscapes would need to be less than or equal to impacts described in this EA for this alternative as short and long term minor and adverse and beneficial. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be.

Cumulative Impacts

Reconstruction of the Grand Loop and Northeast Entrance roads within and beyond the Tower-Roosevelt area, including the Lamar River Bridge, could have impacts on soundscapes in the short-term due to heavy construction. There could be some small short-term minor adverse impacts due to construction.

No other known construction projects are planned in this portion of the park that could affect soundscapes. Current public and NPS use of facilities and nearby roadways add non-natural sound sources to the natural soundscape. Aircraft over flights including research, search and rescue, general aviation, and high commercial aircraft also could add a cumulative effect. Because of these impacts, the above projects are expected to have short and long-term, minor, and adverse impacts to soundscapes. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to soundscapes.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Construction projects could cause short-term, minor impacts to soundscapes. Reducing or eliminating the Tower Fall general store at the Tower Fall Trailhead location could have localized beneficial impact on non-natural sounds by reducing the volume of traffic and visitors. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, minor to negligible adverse and beneficial impacts to the natural soundscapes.

Because there would be no major adverse impacts to soundscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

CULTURAL RESOURCES

In this environmental assessment, impacts on cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council of Environmental Quality (CEQ) that implement NEPA. These impact analyses are intended to comply with the requirements of both NEPA and §106 of the NHPA. In accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts on cultural resources were also identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected, National Register eligible or listed cultural resources; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of adverse effect or no adverse effect would be made for affected National Register listed or eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for the National Register, such as diminishing the integrity of its location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the National Register.

The CEQ regulations and the NPS's Conservation Planning, Environmental Impact Analysis and Decision Making (Director's Order #12) also call for a discussion of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the

intensity of an impact from major to moderate or minor. Any reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by §106 is similarly reduced. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. If actions are determined to have an adverse effect under §106 and may be mitigated, the effect remains adverse.

Archeological Resources

Guiding Regulations and Policies

Director's Order (DO) #28A supplements DO #28: "Cultural Resources Management".

The authority to issue this Director's Order is found in 16 USC 1 through 4 (the National Park Service Organic Act), in the delegations of authority contained in Part 245 of the Department of the Interior Manual (245 DM 1), and in the responsibilities set forth in Part 519 of the Department of the Interior Manual (519 DM 1 and 519 DM 2).

There are other statutes and implementing regulations that authorize and guide the NPS's management of archeological resources on NPS lands, and NPS archeological assistance to other public agencies and organizations and individuals.

Methodology and Intensity Thresholds

Only the actual physical material of cultural resources can answer certain important research questions about human history. Archeological resources have the potential to answer, in whole or in part, such questions. An archeological resource is eligible for the National Register of Historic Places, if it meets one or more of the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of our history;
- It is associated with the lives of persons significant in our past;
- It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possess high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- It has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the archeological resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association (National Register Bulletin, Guidelines for Evaluating and Registering Archeological Properties).

Archeological resources were only assessed within the planning boundary, (See Cultural Resource Map, Appendix B Map). All possible projects described for the action alternatives are within this planning boundary. Compliance for future projects proposed outside this planning boundary has not been completed and additional surveys would be required. In order for NEPA Compliance to be complete for implementation of future projects, the impacts to archeology would need to be less than or equal to the impacts described in this EA.

For purposes of analyzing impacts on archeological resources either listed in or eligible to be listed in the National Register, the thresholds of change for intensity of an impact are defined as follows:

Negligible: Impact is at the lowest levels of detection—barely measurable, with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of §106, the determination of effect would be no adverse effect.

Minor: Adverse: Disturbance of a site results in little or any loss of significance or integrity and the National Register eligibility of the site is unaffected. For purposes of §106, the determination of effect would be no adverse effect.

Beneficial: Maintenance preservation of a site. For purposes of §106, the determination of effect would be no adverse effect.

Moderate: Adverse: Disturbance of a site does not diminish the significance or integrity of the site to the extent that its National Register eligibility is jeopardized. For purposes of §106, the determination of effect would be adverse effect.

Beneficial: Stabilization of the site. For purposes of §106, the determination of effect would be no adverse effect.

Major: Adverse: Disturbance of a site diminishes the significance and integrity of the site to the extent that it is no longer eligible to be listed in the National Register. For purposes of §106, the determination of effect would be adverse effect.

Beneficial: Active intervention to preserve the site. For purposes of §106, the determination of effect would be no adverse effect.

Duration: Short-term effects would last during construction of a facility, typically up to three months. Long-term effects would be anything beyond the construction of a facility through the life of the facility, including maintenance activities.

Impacts of Alternative A to Archeological Resources

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to archeological resources could occur and could be more than if a comprehensive plan is not adopted.

Since archeological resources have been recently surveyed within the planning boundary of the Tower-Roosevelt area and then mapped, resource information would be readily available to guide environmental

compliance analyses for these project proposals; potentially resulting in an improvement in efficiency and effectiveness of these separate compliance actions.

Surveys for archeological resources outside the planning boundary would be done on a case-by-case basis and efforts to avoid or minimize impacts to archeological resources would occur on a case by case basis. Future development may impact identified archeological resources sites within the planning boundary and unidentified archeological resources sites outside the planning boundary. The combined impacts to archeological resources under the no action alternative are expected to be short and long-term moderate and adverse.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for moderate impacts from projects are more likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Road construction of the Grand Loop Road and the Northeast Entrance Road could have impacts on archeological sites. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to archeological resources. Because of these impacts, the above projects would be expected to have minor, localized impacts to archeological resources. Cumulative impacts from these past, present, and future actions could have long-term minor to moderate impacts to archeological resources

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. Without the benefit of planning zones which site projects in locations where archaeological impacts are lessened, impacts could increase; project could occur in fragile archaeological areas. Without the benefit of limits on development footprint, projects could expand in ways that impact resources. Without design standards, consolidation of projects and limitations on excavation would not protect resources. The plan provides for these mitigating measures. The impacts to archeological resources from these projects and utilities associated with these projects are expected to be long-term, moderate, and the determination of effect would be adverse effect. When combined with past, present, and foreseeable future actions, Alternative A could have long-term, moderate adverse impacts to archeological resources.

Because there would be no major adverse impacts to archeological resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Archeological Resources

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. There could be disturbance in an archeological site at the Yancey's Hole location due to excavation for foundations of a replacement dining

and serving shelter and installation of additional vault toilets. Mitigation could be required. Mitigation could include careful site selection to minimize or avoid impacts to the archeological site and/or monitoring of excavation or data recovery before construction. This could result in long-term moderate and the §106 determination of adverse effect but disturbance of the site would not jeopardize its National Register eligibility. Resources related to the history of Yancey's settlement would not be disturbed by development.

There could be impacts to archeological sites at the Tower Junction location, the north side of the Grand Loop Road, and the Roosevelt Corral locations due to construction of facilities and utilities. These sites have had prior disturbance, and partial data has been recovered. Future disturbances have been or would be mitigated according to law and policy. Mitigation could include careful site selection to minimize or avoid impacts to the archeological site and/or monitoring of excavation or data recovery before construction.

Construction zones could be identified and fenced prior to any activity. If previously undiscovered archeological resources are discovered during construction, work in the immediate vicinity of the discovery would cease until the resources could be identified and documented, and an appropriate mitigation strategy developed in consultation with the Wyoming State Historic Preservation Office (SHPO). Additional compliance beyond the scope of this EA would be necessary.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone* other than Yancey's Hole, impacts to archeological resources would need to be less than impacts described in this EA for this alternative as long term minor and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road construction of the Grand Loop Road and the Northeast Entrance Road could have impacts to archeological sites. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to archeological resources. Because of these impacts, the above projects would be expected to have long-term minor, impacts to archeological resources. Cumulative impacts from these past, present, and future actions could have long-term moderate impacts to archeological resources.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to archeological resources from these projects and utilities associated with these projects are expected to be long-term, moderate and the determination of effect would be adverse effect. Mitigating measures are provided in Chapter 2 of the comprehensive Plan. They are also included in the design standards which consolidate projects and reduce excavation in areas where archaeology is present. On-site archaeologists, fencing and other mitigation is proposed to lessen impacts in Alternative B. When combined with past, present, and foreseeable future actions, Alternative B could have long-term, minor adverse impacts to archeological resources.

Because there would be no major adverse impacts to archeological resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Archeological Resources

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. The disturbance in an archeological site at the Yancey's Hole location would be minimal because the excavation for foundations of a replacement dining and serving shelter would be in-kind replacement. Mitigation could be required. Mitigation could include monitoring of excavation. This could result in long-term minor and the §106 determination of effect would be no adverse effect. Resources related to the history of Yancey's settlement would not be disturbed by development.

There could be impacts to archeological sites at the Tower Junction location, the north side of the Grand Loop Road, and the Roosevelt Corral locations due to construction of facilities and utilities. These sites have had prior disturbance, and partial data has been recovered. Future disturbances have been or would be mitigated according to law and policy. Mitigation could include careful site selection to minimize or avoid impacts to the archeological site and/or monitoring of excavation or data recovery before construction.

Construction zones could be identified and fenced prior to any activity. If previously undiscovered archeological resources are discovered during construction, work in the immediate vicinity of the discovery would cease until the resources could be identified and documented, and an appropriate mitigation strategy developed in consultation with the Wyoming State Historic Preservation Office (SHPO). Additional compliance beyond the scope of this EA would be necessary.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to archeological resources would need to be less than or equal to impacts described in this EA for this alternative as long term minor and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road construction of the Grand Loop Road and the Northeast Entrance Road could have impacts to archeological sites. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to archeological resources. Because of these impacts, the above projects would be expected to have long-term minor, impacts to archeological resources. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to archeological resources.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Because the development footprint in Alternative C is less than in Alternative B, the impacts are less. The comprehensive plan provides for planning zones which limit the location of projects to lessen impacts to archaeological resources. Development footprint is limited particularly where fragile archaeological resources are located thus lessening the potential for impacts. Fencing and on-site archaeologists may be provided if needed. Design standards consolidate projects and utility corridors and minimize excavation which could impact resources. Data recovery has already been provided for many of the sites located within the planning boundary. These measures reduce the possible effects. The impacts to archeological resources from these projects and utilities associated with these projects are expected to be long-term, minor and the determination of effect would be no adverse effect. When combined with

past, present, and foreseeable future actions, Alternative C could have long-term, minor adverse impacts to archeological resources.

Because there would be no major adverse impacts to archeological resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Historic Resources

Guiding Regulations and Policies

In accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to historic properties including cultural landscapes for this project were identified and evaluated by (1) determining the area of potential effect (APE); (2) identifying cultural resources present in the area of potential effect that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Methodology and Intensity Thresholds

A historic site, structure, or building is eligible for the National Register of Historic Places if it meets one or more of the following criteria A through D:

- A. It is associated with events that have made a significant contribution to the broad patterns of our history;
- B. It is associated with the lives of persons significant in our past;
- C. *It embodies the distinctive characteristics of a type, period, or method of construction; or represents the work of a master; or possesses high artistic value; or represents a significant and distinguishable entity whose components may lack individual distinction;*
- D. It has yielded, or may be likely to yield, information important in prehistory or history.

A historic building or structure must also possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Section 106 (§106) consultation (as described in the NHPA of 1966, as amended) with the Wyoming SHPO will occur for a proposed project. The Advisory Council on Historic Preservation is invited to participate if a proposed project is considered a major undertaking.

Federal law and NPS management policies require full consideration of historical and architectural values whenever a project may affect historic properties. Additionally, the NPS "must to the maximum extent possible, undertake such planning and action as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking" (36 CFR 800.10).

Analyses of the potential intensity of impacts on historic resources were derived from a review of the List of Classified Structures, researching park records to determine the potential eligibility of historic

resources, on-site investigations to determine proximity to historic resources, and through personal communications with park staff.

The thresholds of change for the intensity of impact to historic resources are defined as follows:

Negligible: Historic resources would not be affected or the effects would be below the level of detection. A “negligible effect” corresponds to a “no effect” determination by the park for §106 purposes. Informal consultation with the SHPO might occur, but would not be required.

Minor: Effects to historic resources would be detectable (e.g., minor replacement of deteriorated historic fabric with new, in-kind material, or minor external alterations that do not affect the character-defining features of the structure or building), although the effects would result in little, if any, loss of significance or integrity. The National Register eligibility of the historic resource would not be affected by the project. A “minor effect” corresponds to a “no adverse effect” determination by the park for §106 purposes. Consultation with the SHPO would occur.

Moderate: Effects to historic resources would be readily detectable, would have the potential to diminish the significance or integrity of the site, structure, or building, and may jeopardize its National Register eligibility. A “moderate effect” corresponds to either an “adverse effect” or a “no adverse effect” for §106 purposes, depending on mitigation measures proposed. Mitigation measures resulting from consultation could include conservation measures to stabilize the site, structure, or building; Historic American Building Survey (HABS) level photography and/or as-built construction drawings; large-scale, in-kind replacement of historic fabric or use of simulated materials to replicate historic fabric; reuse of portions of the historic structure or building; or design of the new structure or building to preserve elements of form and function of the historic structure or building.

Major: Effects to historic resources would be obvious, long-term, and would diminish the significance and integrity of the site, structure, or building to the extent that it is no longer eligible for listing in the National Register. A “major effect” would correspond to an “adverse effect” for §106 purposes.

Duration: Short-term effects would last during construction of a facility, typically up to three months. Long-term effects would be anything beyond the construction of a facility through the life of the facility, including maintenance activities.

Impacts of Alternative A to Historic Resources

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to historic resources could occur and could be more than if a comprehensive plan is not adopted.

Alternative A would not have planning components with design standards for future facilities with potential to affect historic districts. New buildings and structures would not have comprehensive planning design standards to guide their scale, style, materials or placement. Changes and improvements to existing buildings within the Roosevelt Lodge Historic District would follow guidance set by the Roosevelt Lodge Historic Structures Report (1993).

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor impacts from projects are more likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Ongoing road construction projects throughout the park that alter the alignment or character of the Grand Loop Road could have cumulative impacts. The historic integrity of contributing features would be preserved. Under the Canyon Junction to Tower Junction Road Improvement Project, a section of the road will be moved at the Calcite Springs Overlook to improve safety at the parking area. Graceful alignment would be maintained and the natural character of the road would be improved with separation of the road from the parking area. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to historic resources. Replacement of the Lamar River Bridge may also have cumulative effects on historic properties. Because of these impacts, the above projects would be expected to have minor impacts to historic resources. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to historic resources.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. Without the components of the comprehensive plan, such as planning zones that limit where projects can occur, historic resources could be impacted by projects located in ways that impact resources. New construction could occur next to historic properties without the guidance of design standards that describe the character that would best protect historic properties. Colors, materials, style and design could be detrimental in incremental ways to these resources. The impacts to historic resources from these projects and utilities associated with these projects are expected to be long-term, minor, and the determination of effect would be no adverse effect. When combined with past, present, and foreseeable future actions, Alternative A could have long-term, minor adverse impacts to historic resources.

Because there would be no major adverse impacts to historic resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Historic Resources

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. The Roosevelt Lodge Historic District

and Tower Ranger Station Junction Historic District could accommodate some expansion of the existing footprint. In the Roosevelt Lodge location, additional cabins could be accommodated along the two entrance roads. In the Tower Ranger Station location, new buildings could be constructed to replace the existing backcountry office where they would not affect the view and dominance of the Tower Ranger Station. Changes to existing buildings and new buildings would maintain historic scale, style, and materials. General layout and historic circulation patterns within historic districts would be maintained. Mitigation would include building designs meeting the Secretary of the Interior's Standards for the Treatment of Historic Properties. Though some growth in development is possible, the small scale, rustic character of the Tower-Roosevelt developments would be preserved.

New buildings on the south side of the Grand Loop Road at the Tower Junction location, with realignment of the road within 100 feet of existing alignment, would have a localized effect on the Grand Loop Road Historic District. Graceful alignment of the road would be maintained and would continue to preserve the integrity of the historic district. Buildings would blend with the natural setting and elements contributing to the Grand Loop Road Historic District.

In the portion of the Tower Administrative location that is located within the Tower Ranger Station Historic District, all changes to existing buildings and new buildings would maintain historic character. Outside the historic district, new NPS housing and an emergency services building would be compatible with existing historic buildings.

The Tower Junction service station and the Tower Fall General Store, which are potentially Mission 66 buildings, could be remodeled or removed. The park is currently undertaking a park-wide assessment of all potential Mission 66 era historic properties. These buildings would be evaluated under this parkwide context. Demolition of these historic buildings would be an adverse effect to historic properties if they are found to be eligible to the National Register. Historic American Building Survey (HABS) documentation has been completed, in the event the buildings are remodeled or removed.

Beneficial impacts would include redesigned parking in front of the lodge and stabilization of historic buildings. Ongoing consultation with the Wyoming SHPO, for all changes with potential impacts on historic properties would ensure the compatibility of new buildings and structures within the historic districts.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to historic resources would need to be less than or equal to impacts described in this EA for this alternative as long term minor and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Ongoing road construction projects throughout the park that alter the alignment or character of the Grand Loop Road would have cumulative impacts. The historic integrity of contributing features would be preserved. Under the Canyon Junction to Tower Junction Road Improvement Project, a section of the road will be moved at the Calcite Springs Overlook to improve safety at the parking area. Graceful alignment would be maintained and the natural character of the road would be improved with separation of the road from the parking area. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to historic resources. Replacement of the Lamar River Bridge may also have cumulative effects on historic properties. Because of these impacts, the above projects would be

expected to have minor, impacts on historic resources. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to historic resources.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The benefits of the planning components would allow projects to be placed such that historic views are maintained. Materials, scale, style and color would be harmonious with the historic properties due to the adherence to design standards in this alternative. The size of the development footprint would be limited by the planning prescriptions so that the character of the area is not changed in ways that would impact the historic properties such as buildings that are too large and overwhelm the location. The impacts to historic resources from these projects and utilities associated with these projects in the Roosevelt Lodge, Tower Ranger Station, and the Grand Loop Road Historic Districts are expected to be long-term, minor and the determination of effect would be no adverse effect. When combined with past, present, and foreseeable future actions, Alternative B could have long-term, minor adverse impacts to historic resources.

Because there would be no major adverse impacts to historic resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Historic Resources

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. The existing historic districts of Roosevelt Lodge location and Tower Ranger Station location would accommodate a low level of change. Historic integrity would be maintained. There would be no expansion of the existing developed areas, and changes to existing buildings and new buildings would maintain historic character by using the scale, style, design and materials that complement historic buildings. The layout and historic circulation patterns within historic districts would be maintained, including cluster arrangements for cabins in the Roosevelt Lodge Historic District. The small scale, rustic character of the Roosevelt Lodge and cabins location and Roosevelt Corral location horse operations would be maintained.

There would be minimal additional development along the Grand Loop Road. The existing road alignment would remain the same and elements contributing to the Grand Loop Road Historic District would maintain its historic integrity. Changes to existing buildings would maintain the natural setting and those elements contributing to the Grand Loop Road Historic District (NPS rustic style).

In those portions of the Tower Administrative location that are within the Tower Junction Ranger Station Historic District, buildings would be minimally required to be the same style or scale as historic buildings. All changes to existing historic buildings would maintain the historic character.

The service station at Tower Junction location could be remodeled or removed and the Tower Fall General Store at the Tower Fall Trailhead location could be remodeled, both of which are potentially eligible as Mission 66-era buildings. The park is currently undertaking a park-wide assessment of all potential Mission 66 era historic properties. These buildings would be evaluated under this parkwide context. Demolition of these historic buildings would be an adverse effect to historic properties, if they are

found to be eligible to the National Register. Historic American Building Survey (HABS) documentation has been completed, in the event the buildings are remodeled or removed.

Beneficial impacts would include redesigned parking in front of the lodge and stabilization of historic buildings. Ongoing consultation with the Wyoming SHPO, for all changes with potential impacts on historic properties, would ensure the compatibility of new buildings and structures within the historic districts.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to historic resources would need to be less than or equal to impacts described in this EA for this alternative as long term minor and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Ongoing road construction projects throughout the park that alter the alignment or character of the Grand Loop Road would have cumulative impacts. The historic integrity of contributing features would be preserved. Under the Canyon Junction to Tower Junction Road Improvement Project, a section of the road will be moved at the Calcite Springs Overlook to improve safety at the parking area. Graceful alignment would be maintained and the natural character of the road would be improved with separation of the road from the parking area. The Canyon Junction to Tower Junction Road Improvement EA (2001) found no adverse effect to historic resources. Replacement of the Lamar River Bridge may also have cumulative effects on historic properties. Because of these impacts, the above projects would be expected to have minor, impacts on historic resources. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to historic resources.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Alternative C allows for impacts that are less than Alternative B as the planning components provide less development footprint. The expansion in the area is less and impacts would be less. Design standards provide for scale, color, materials and style to be compatible with historic properties, minimizing impacts. Planning zones locate development in areas that protect critical historic views. Utilities are consolidated and placed so that views are screened. Parking expansion will be screened according to the design standards for each location so that historic properties are protected. The impacts to historic resources from these projects and utilities associated with these projects in the Roosevelt Lodge, Tower Ranger Station, and the Grand Loop Road Historic Districts are expected to be long-term, negligible to minor and the determination of effect would be no adverse effect. When combined with past, present, and foreseeable future actions, Alternative C could have long-term, negligible to minor adverse impacts to historic resources.

Because there would be no major adverse impacts to historic resources whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Cultural Landscapes

Guiding Regulations and Policies

In accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to historic properties including cultural landscapes for this project were identified and evaluated by (1) determining the area of potential effect (APE); (2) identifying cultural resources present in the area of potential effect that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Methodology and Intensity Thresholds

Information on cultural landscapes in the Tower-Roosevelt area was obtained through personal communications with park staff and through a literature search. The 2007 Cultural Landscape Inventory (CLI) provided the most up-to-date information.

The thresholds of change for the intensity of impacts to cultural landscapes are defined as follows:

Negligible: Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be no adverse effect.

Minor: Adverse impact: Alteration of a pattern or feature of the landscape would not diminish the overall integrity of the landscape. The determination of effect for §106 would be no adverse effect.

Beneficial impact: Preservation of landscape patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Moderate: Adverse impact: Alteration of a pattern or feature of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be adverse effect. A Memorandum of Agreement (MOA) is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts will reduce the intensity of impact under NEPA from major to moderate.

Beneficial impact: Rehabilitation of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Major: Adverse impact: Alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for §106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the NPS and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Beneficial impact: Restoration of a landscape or its patterns and features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. The determination of effect for §106 would be no adverse effect.

Duration: Short-term effects would last during construction of a facility, typically up to three months. Long-term effects would be anything beyond the construction of a facility through the life of the facility, including maintenance activities.

Impacts of Alternative A to Cultural Landscapes Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National Park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Without a comprehensive plan, there are not any guidelines, restrictions or mitigation that would achieve the goals set in a comprehensive plan. Future projects locations could occur without the guidance of buildable planning zones. Future projects sizes and functions could occur without restrictions of planning prescriptions. Future projects design and appearances could occur without design standards that would mitigate impacts to resources and visitor experiences.

Without a comprehensive plan, impacts to cultural landscapes could occur and could be more than if a comprehensive plan is not adopted.

There would be no planning components that ensure the preservation, or guide the enhancement, of cultural landscape features. Elements that contribute to the integrity of historic districts including circulation, vegetation and building layout patterns, and views would not necessarily be recognized or preserved when evaluating project proposals on a case-by-case basis. For example, it is possible that the entrance roads for both the Tower Ranger Station and the Roosevelt Lodge Historic Districts would be moved or widened, future cabin placement would not follow historic layout patterns, and vegetation which helps create the natural setting is not preserved or replaced. Buildings placed on the edge of historic districts that are out of scale with historic buildings are also a concern as they can diminish the overall character and impression of the district.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor to moderate impacts from projects are more likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

There have been changes to the cultural landscape associated with the Roosevelt Lodge location, including the introduction of additional cabins and a change in how the entrance road joins the Grand Loop Road. There is now a paved parking area in front of the Roosevelt Lodge. Despite this change, the overall integrity of the Roosevelt Lodge Historic District is intact. Past changes to the Grand Loop Road Historic District in this area are negligible. Changes to the Tower Ranger Station Historic District are mostly the addition of structures associated with area operations and administration, including a weather station and spring box near the ranger station, and multiple buildings and structures in those portions of the Tower Administrative location that are within the Tower Junction Ranger Station Historic District.

Construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. Housing construction projects and rehabilitation of historic buildings would continue

throughout Yellowstone National Park. Because of these impacts, the above projects would be expected to have minor impacts to cultural landscapes. Cumulative impacts from these past, present, and future actions could have long-term minor to moderate impacts to cultural landscapes.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. The impacts to historic resources from these projects and utilities associated with these projects are expected to be long-term, minor to moderate, and a §106 determination of effect could be adverse effect. When combined with past, present, and foreseeable future actions, Alternative A could have long-term, minor to moderate adverse impacts to cultural landscapes.

Because there would be no major adverse impacts to cultural landscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Cultural Landscapes

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Planning components including design guidelines would address adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Cultural Landscapes and the available Cultural Landscape Inventories within historic districts and would set a maximum size and general placement for additional buildings both within historic districts and throughout Tower-Roosevelt area, which would help preserve the overall integrity of cultural landscapes.

Cultural landscape features and patterns contributing to the Roosevelt Lodge Historic District would be preserved. The natural view from the Roosevelt Lodge porch would be enhanced by screening and redesign of the parking areas to reduce the visual impact of parked cars. The view would be maintained. The meadow that is traversed on the approach to the lodge could be reduced in size by building and parking at the Tower Junction location with additional cabins along the entrance road to Roosevelt Lodge. However, an open space would serve as a separation between these two additional developments. The dry creek bed would be preserved. The historic layout and cluster arrangements for buildings would be preserved. Where possible historic vegetation such as specimen trees, tree groupings, screening and forest edge would be retained. The Roosevelt Lodge would remain the dominant building; little change in development would occur within the district and no new buildings would appear larger or create a greater presence than the lodge. Development at The Tower Junction location could have an effect on the overall character of the area, particularly the entrance of the Roosevelt Lodge. Although this development is outside the Roosevelt Lodge Historic District, buildings would be visible from the historic district and would directly affect the visitor experience and the desired condition of a small, secluded lodge in a natural setting. This same development could also be viewed from the Tower Ranger Station location and would have an effect on the character of that historic district.

Within the Roosevelt Lodge Historic District, planning components including design guidelines would address the Secretary of the Interior's Standards for the Treatment of Historic Properties within historic districts, which would help preserve the overall integrity of cultural landscapes.

Cultural landscape features and patterns contributing to the Tower Ranger Station Historic District would be preserved. Although this area would accommodate new buildings, a visitor contact station would be located and designed so the Tower Ranger Station would remain the dominant building. The ranger station would continue to command a view of the road and Pleasant Valley and would be seen when approaching along the Grand Loop and Northeast Entrance roads. Little change in development would occur within the district other than improved parking which would preserve or improve the character of the district by being located away from the narrow entrance road and screened from view. The Tower Administrative location would remain visually and physically separate from the ranger station; hidden behind a screen of trees. The corrals would remain intact. The construction of housing and emergency services building in those portions of the Tower Administrative location that are outside the historic district would not be in scale with historic buildings and therefore would indirectly affect the character of the adjacent historic district. Within the Tower Ranger Station Historic District, planning components including design guidelines would ensure adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties within historic districts, which would help preserve the overall integrity of cultural landscapes.

Cultural landscape features and patterns contributing to the Grand Loop Road Historic District would largely be preserved, although the road alignment at Tower Junction could change. It would, however, continue to lie on the land with a graceful alignment. Development at the Tower Junction location would affect the character of a park road in a natural setting. Design improvements to the parking area at Tower Fall Trailhead location would enhance the character of a natural setting in this location. The removal or reduction of the Tower Fall general store and improvements to the parking area would enhance the natural setting in this location and would also be a beneficial impact to the Grand Loop Road Historic District at the Tower Fall Trailhead location. Within the Grand Loop Road Historic District, planning components including design guidelines would address the Secretary of the Interior's Standards for the Treatment of Historic Properties within historic districts, which would help preserve the overall integrity of cultural landscapes.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to cultural landscapes would need to be less than or equal to impacts described in this EA for this alternative as long term minor and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

There have been changes to the cultural landscape associated with the Roosevelt Lodge location, including the introduction of additional cabins and a change in how the entrance road joins the Grand Loop Road. There is now a paved parking area in front of the Roosevelt Lodge. Despite these changes, the overall integrity of the Roosevelt Lodge Historic District is intact. Past changes to the Grand Loop Road Historic District in this area are negligible. Changes to the Tower Ranger Station Historic District are mostly the addition of structures associated with area operations and administrative, including a weather station and spring box near the ranger station, and multiple buildings and structures in that portion of the Tower Administrative location that is within the district.

Construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. Housing construction projects and rehabilitation of historic buildings would continue throughout Yellowstone National Park. Because of guidance set forth in the TRCP, these impacts of the above projects would be expected to have minor impacts to cultural landscapes. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to cultural landscapes.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to cultural landscapes from these projects and utilities associated with these projects in the Tower-Roosevelt area are expected to be long-term, minor and adverse and beneficial and the §106 determination of effect would be no adverse effect. When combined with past, present, and foreseeable future actions, Alternative B could have long-term, minor adverse impacts to historic resources.

Because there would be no major adverse impacts to cultural landscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Cultural Landscapes

Impact Analysis

In Alternate C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Design guidelines would address the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guideline for the Treatment of Cultural Landscapes and the available Cultural Landscape Inventories within historic districts and would set a maximum size for buildings both within historic districts and throughout Tower-Roosevelt area, which would help preserve the overall integrity of cultural landscapes.

Cultural landscape features and patterns contributing to the Roosevelt Lodge Historic District would be preserved: the view from the Roosevelt Lodge porch would remain natural or would be enhanced by improvements to parking areas to reduce the visual impact of parked cars. The meadow that is traversed on the approach to the lodge would remain. The dry creek bed would be preserved. The same layout and cluster arrangements for buildings would be preserved. Contributing vegetation patterns such as individual trees, tree groupings, screening and forest edge would be retained and would be enhanced around new development. The Roosevelt Lodge would remain the dominant building.

Cultural landscape features and patterns contributing to the Tower Junction Ranger Station Historic District would be preserved: the view of Pleasant Valley from the Tower Ranger Station would remain; the Tower Administrative location would remain visually and physically separate from the ranger station; and the corrals would remain intact. The ranger station would remain the dominant building. Planning components including design guidelines would ensure adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes within historic districts, which would help preserve the overall integrity of cultural landscapes.

Cultural landscape elements contributing to the Grand Loop Road Historic District would be preserved. The road alignment at Tower Junction would remain the same with minor adjustments for improved design, and would continue to lie on the land with grace and alignment. New development at the Tower

Junction location would be limited to improvement of existing facilities which would enhance the impression of a park road in a natural setting. Design improvements to the parking area at Tower Fall Trailhead location would enhance the character of a natural setting. Planning components including design guidelines would ensure adherence to the Secretary of the Interior's Standards for the Treatment of Historic Properties within historic districts, which would help preserve the overall integrity of cultural landscapes.

For implementation of possible projects in the TRCP buildable planning zones, especially utilities in the *Natural Buildable Zone*, impacts to cultural landscapes would need to be less than or equal to impacts described in this EA for this alternative as long term negligible and the determination of effect would be no adverse effect. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

There have been changes to the cultural landscape associated with the Roosevelt Lodge location, including the introduction of additional cabins and a change in how the entrance road joins the Grand Loop Road. There is now a paved parking area in front of the Roosevelt Lodge. Despite these changes, the overall integrity of the Roosevelt Lodge Historic District is intact. Past changes to the Grand Loop Road Historic District in this area are negligible. Changes to the Tower Ranger Station Historic District are mostly the addition of structures associated with area operations and administrative, including a weather station and spring box near the ranger station, and multiple buildings and structures in the area of the historic road camp.

Construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. Housing construction projects and rehabilitation of historic buildings would continue throughout Yellowstone National Park. Because of these impacts, the above projects would be expected to have minor, impacts to cultural landscapes. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to cultural landscapes.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. The impacts to cultural landscapes from these projects and utilities associated with these projects in the Tower-Roosevelt area are expected to be long-term, negligible adverse and minor beneficial and the §106 determination of effect would be no adverse effect. When combined with past, present, and foreseeable future actions, Alternative C could have long-term, minor adverse impacts to historic resources.

Because there would be no major adverse impacts to cultural landscapes whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Health and Human Safety

Guiding Regulations and Policies

The National Park Service is concerned about the safety for visitors and employees and will work to enhance visitor and employee safety (NPS 2006).

The *NPS Management Policies* state that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. The policies also state, "While recognizing that there are limitations on its capability to totally eliminate all hazards, the National Park Service and its concessioners, contractors, and cooperators will seek to provide a safe and healthful environment for visitors and employees" (sec. 8.2.5.1). Further, the NPS will strive to protect human life and provide for injury-free visits (sec. 8.2.5).

Methodology and Intensity Thresholds

The impact intensities for visitor and park staff safety are as follows.

Negligible: The impact to visitor and park staff safety would not be measurable or perceptible.

Minor: The impact to visitor and park staff safety would be measurable and perceptible and would involve a large number of individuals in a localized area of the park. Automobile accidents rates could increase in a localized area.

Moderate: The impact to visitor and park staff safety would be measurable and perceptible and would involve a large number of individuals in many areas of the park. Automobile accidents rates could increase at several locations.

Major: The impact to visitor and park staff safety would be substantial and parkwide in occurrence. Accident rates in areas usually limited to low accident potential would be expected to substantially increase in the short and long-term and impacts to the safety of individuals would be readily apparent throughout the park.

Duration: Short-term impacts would last during facility construction, typically less than 1-2 months. Long-term impacts would occur throughout the life of the facility, taking into consideration operation and maintenance of the facility.

Impacts of Alternative A to Human Health and Safety

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis. Cumulative impacts would be difficult to assess.

There are several existing concerns and proposed projects that affect human health and safety in the Tower-Roosevelt area. The Tower Junction location has congestion and conflicting uses as vehicles and horses cross the roads. Parking in different locations is not organized or defined, parking at the Tower Fall Trailhead location has no separation from the Grand Loop Road. Visitors wait for wagon rides on open benches without shade. There are hazardous gas vents near Tower Fall Trail which originates

within the planning boundary. Finally, part of the Roosevelt Lodge cabins and the Tower Administrative location have soil types that could be potentially susceptible to debris flows if triggered by a significant precipitation event.

In Alternative A, the combined impacts to human health and safety are expected to be long term minor to moderate and adverse.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for long-term, minor to moderate adverse impacts from projects are likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect human health and safety; however, long-term effects would be minor. Possible projects would be designed to reduce human health and safety in visitor and employee use areas. There are no known projects to remedy the safety risks with multiple (vehicular/horse) crossings or issues of congestion at the Tower Junction area, however, these could be addressed in the Tower to Canyon road project. Effects of these projects to the Tower-Roosevelt area would be minor because of mitigation to resources through sensitive design. Because of these impacts, the above projects would be expected to have minor, adverse impacts to human health and safety. Cumulative impacts from these past, present, and future actions could have long-term minor and adverse to human health and safety because of the uncertainty associated with the lack of a coordinated plan.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. The impacts to human health and safety from these projects and utilities associated with these projects are expected to be long-term, minor to moderate, and adverse. When combined with past, present, and foreseeable future actions, Alternative A could have long-term, minor to moderate adverse impacts to human health and safety because it is uncertain whether the safety issues would be resolved or if the impacts would be mitigated similarly to the proposed comprehensive plan.

Because there would be no major adverse impacts to human health and safety whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Human Health and Safety Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to the Tower-Roosevelt area could affect human health and safety through parking area design, traffic facilitation, organization of uses within locations, and through projects that address specific safety issues (such as shade and shelter from the elements for visitors waiting for activities.) Congestion could be reduced through adequate parking

design. Improved parking areas in various locations in the Tower-Roosevelt area could facilitate traffic and congestion by improving organization and delineation for parking. Improving parking at the Tower Ranger Station location could facilitate traffic and reduce congestion. Improving parking areas in front of the Roosevelt Lodge, Roosevelt Corrals, Tower Ranger Station, Tower Junction, and Tower Fall Trailhead locations could have a beneficial impact to visitor safety. Parking in these areas is not designed for the current vehicle size and number. Through the comprehensive planning process, future projects would accommodate appropriate parking configurations and accident rates would be reduced. Unpaved parking would be limited to the existing quantity and would not expand. Vehicle and horse crossings would be minimized to reduce unsafe conditions. However, increased development at the Tower Junction location and the entrance to the Roosevelt Lodge location in Alternative B could add to traffic in this area. New parking, while organized, could add to the visitor use in the area. The comprehensive plan addresses other safety issues such as potential debris flows and protection from the elements. Additional cabins could not be placed in areas prone to precipitation event caused debris flows. Building a new shade shelter would provide visitors protection from climatic exposure. Removal or reduction of the Tower Fall General Store would have a beneficial impact by removing or reducing the facility from the potentially unstable lake sediment soil.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to human health and safety would need to be less than to the impacts described in this EA for this alternative to remain long term minor and adverse. Compliance for future projects proposed outside the planning boundary is not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect human health and safety; however, long-term effects would be minor. Possible projects would be designed to reduce human health and safety concerns for visitor and employee use areas. Effects of these projects identified in Alternative B to the Tower-Roosevelt area would be minor. Impacts would be mitigated through the measure described in Chapter 2. Because of these impacts, the above projects would be expected to have minor, adverse and beneficial impacts to human health and safety. Cumulative impacts from these past, present, and future actions could have long-term minor adverse and beneficial impacts to human health and safety.

Conclusion

In Alternative B, future projects would proceed with the guidance of a comprehensive plan. Alternative B is expected to have effects on human health and safety that are direct, local, short and long-term, moderate adverse and moderate beneficial impacts. Many of the potential projects in Alternative B improve health and safety issues such as traffic facilitation and safe parking options. Shade from elements and limiting expansion in areas where soils may potentially be undesirable are also aspects of Alternative B. While visitor use may increase in the Tower Junction location under Alternative B, impacts to health and safety are minimized through sensitive design standards applied under the plan. When combined with past, present, and foreseeable future actions, Alternative B would have short and long-term moderate adverse and moderate beneficial impacts to human health and safety.

Because there would be no major adverse impacts to human health and safety whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would

not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Human Health and Safety

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to the Tower-Roosevelt area could affect human health and safety. While less increased development at the Tower Junction location is identified in Alternative C than in Alternative B; even minor expansion could add to traffic and congestion. Improved parking areas in various locations in the Tower-Roosevelt area could facilitate traffic and congestion by improving organization and delineation for parking. Improving parking at the Tower Ranger Station location could facilitate traffic and congestion. Improving parking areas in front of the Roosevelt Lodge, Tower Junction, Roosevelt Corrals, Tower Ranger Station, and Tower Fall Trailhead locations could have a beneficial impact to visitor safety. Parking in these areas would accommodate current vehicle sizes and separate traffic from the Grand Loop Road which would enhance safety in these areas. Additional development could not be placed in areas potentially prone to precipitation event caused debris flows, eliminating potential safety issues. Building a new shade shelter would provide protection from climatic exposure to visitors waiting for activities. Reduction of the Tower Fall General Store could have a beneficial impact by reducing the facility from the potentially unstable lake sediment soil.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to human health and safety would need to be less than or equal to the impacts described in this EA for this alternative as long term minor and adverse. Alternative C accomplishes this through the planning zones and use of design standards to minimize impacts to human health and safety through installations that meet park design standards. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect human health and safety; however, long-term effects would be minor. Possible projects would be designed to reduce human health and safety concerns for visitor and employee use area in Alternative C. Parking congestion and safety could be reduced through this alternative. While some additional development is anticipated at the Tower Junction location, implementation of the design standards such as physically separating parking from the Grand Loop Road would enhance visitor safety. Organizing and consolidating the parking at the Roosevelt Corral location would also provide a safer environment for visitors. Effects of these projects to the Tower-Roosevelt area would be minor adverse and beneficial. Because of these impacts, the above projects would be expected to have minor, and adverse and beneficial to human health and safety. Cumulative impacts from these past, present, and future actions could have long-term minor adverse and beneficial impacts to human health and safety.

Conclusion

In Alternative C, future projects would proceed with the guidance of a comprehensive plan. Alternative C is expected to have effects on human health and safety that are direct, local, short and long-term, minor

adverse and moderate beneficial impacts such as enhanced safety from consolidated, organized parking and crossings for pedestrians and horses. Shade and shelter from elements for waiting visitors will enhance health and safety. Limiting development in areas where potential geologic hazards may occur will provide future safety. Organizing parking in high use areas such as Roosevelt Lodge or Tower Fall Trailhead would enhance visitor safety. When combined with past, present, and foreseeable future actions, Alternative C would have short and long-term, minor adverse and moderate beneficial impacts to human health and safety.

Because there would be no major adverse impacts to human health and safety whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Visual Resources

Guiding Regulations and Policies

Reference Manual 53 guides action on proposals for park development. NPS Management Policies (2006) consider scenic views and visual quality as highly valued characteristics.

Section 4.10 of the 2006 Management Policies states that "The Service will preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human caused light...Recognizing the roles that light and dark periods and darkness play in natural resource processes and the evolution of species, the Service will protect natural darkness and other components of the natural lightscape in parks".

Methodology and Intensity Thresholds

Analyses of the potential intensity of visual quality impacts were derived from available information regarding desired views in the Tower-Roosevelt area and park staff's records and past observations of the effects to those desired views (visual quality) from development, visitor use, and area operations, including construction activities. Analyses of the potential intensity of lightscape impacts were derived from available information regarding night lighting and its impact on the dark night sky and on nighttime desired visual quality. Park staff's records and past observations of the effects of construction activities on lightscapes supplemented the analysis.

The desired visual quality for the Tower-Roosevelt area is: "Maintaining the overall visual impression of small, rustic developments in a natural setting".

The thresholds of change for the intensity of impacts on visual quality, including lightscapes, are defined as follows:

Negligible: Changes to the visual quality of the landscape, including nighttime quality, would be barely detectable or changes would be short-term, small and localized.

Minor: Changes to the visual quality of the landscape, including nighttime quality would be short-term or long-term small and localized to an area in the park. The change is noticeable but does not negatively affect the character of the site or its relationship to or dominance in the surrounding natural setting.

Moderate: Changes to the visual quality of the landscape, including nighttime quality, would be long term and obvious in many areas of the park. There could be an effect of an area to other areas. Effects would noticeably change the impression of the immediate site and the character of the overall setting.

Major: Changes to the visual quality of the landscape, including nighttime quality, would be significant and occur parkwide. Changes would be long term, considerable, and widespread, with negative changes considered obtrusive at the parkwide level. Obvious differences would change the character and overall impression of the area, its association with and dominance within the surrounding natural setting.

Duration: Short-term effects would be less than one year. Long-term effects would continue beyond one year.

Impacts of Alternative A to Visual Resources

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National Park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis. Without a comprehensive plan, there would not be direction or coordination of the projects in this alternative. Impacts would be difficult to assess because of the uncertainty associated with the projects.

Without guidance that helps maintain and enhance the appearance of development in the Tower-Roosevelt area, there is the potential to affect visual quality including lightscares, through inappropriate placement, height, size, materials and architectural style. The combined impacts to visual quality including lightscares under the no action alternative are expected to be short and long-term moderate and adverse.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor to moderate impacts from projects are likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect scenic views and visual resources of the road corridor; however, long-term effects would be minor. Possible projects would not be mitigated using the comprehensive plan's design standards to reduce visual effects and night light from road corridors and historic districts and visitor use areas. Effects of these projects to the Tower-Roosevelt area could be minor to moderate. Because of these impacts, the above projects would be expected to have minor, adverse impacts to visual quality and the natural lightscape. Cumulative impacts from these past, present, and future actions could have long-term minor to moderate adverse impacts to visual quality including lightscares. Without the restrictions for color, height, building massing, screening, night lighting and other elements in the design standards, projects could have an uncertain visual impact.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis. Impacts would not be restricted by the planning zone locations where impacts to resources are minimized, development footprints could be larger, and design standards would not influence the visual consistency or character within park locations. The impacts to visual quality including lightscapes from these projects and utilities associated with these projects are expected to be long-term, moderate, and adverse. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term, minor to moderate adverse impacts to visual quality including lightscapes as mitigation for impacts would not be provided through the plan. For example, development would not be screened, building masses would not be limited, and exterior colors would not relate to the historic character of the location without the design standards found in the comprehensive plan.

Because there would be no major adverse impacts to visual quality and the night sky whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Visual Resources

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to the Grand Loop Road at Tower Junction would be noticeable but would not affect the character of the road passing through a natural setting; design standards within the plan facilitate the retention of character. Increased development at the Tower Junction location of a maximum of 9,000 square feet net gain of development footprint for buildings and 35,400 square feet net gain for paved parking would change the visual character of the immediate area and the natural setting of Pleasant Valley. Design standards provide screening between the parking areas and the valley so that reflective surfaces in parking areas do not impact valley views. Shifting the road to accommodate more development would reduce the visual impacts to the cuts in the hillside behind the development. Increased development at the entrance to the Roosevelt Lodge location would change the character of a small, rustic development that is tucked into the trees. Vegetative screening is encouraged in the design standards to reduce the visual impact in this location. Architectural styles and building mass addressed in the design standards would reduce the visual impact. Additional parking areas would contribute to visual effects, though planning zones indicate less visible locations for this function. Planning components and mitigation measures (including materials, colors, building size, scale, and screening) would minimize effects. Fill slopes at the Tower Fall trailhead location, and cut slopes behind the service station at the Tower Junction location would permanently change the shape of natural landforms. Mitigation to lessen these impacts is included in the design standards for these locations.

Increased development around the Tower Ranger Station location would be visible when approaching the area from the west, but would be small and inconsequential. Additional parking to serve the improved visitor contact station would be evident when approaching from the west. Additional cabins along the two entrance roads to the Roosevelt Lodge location would reduce the impression of separation this development has from the Grand Loop Road. The negative affect would be lessened with tree screening and cabin grouping; building sizes would be compatible with existing structures.

Important historic views associated with the Roosevelt Lodge and the Tower Ranger Station Historic Districts would be preserved through implementation of the design standards for setting. Improvement of the parking area in front of the Roosevelt Lodge would have beneficial impact to views from the lodge.

Removal of the Tower Fall General Store would have a beneficial visual resource impact to the natural setting of the Tower Fall Trailhead; reduction of the parking area would enhance the circulation in the remaining area. Improvement of the parking area to include screening of vehicles from the Grand Loop Road would also be a beneficial visual impact.

The construction of NPS housing and an emergency services building in the Tower Administrative location would be seen from the Grand Loop Road and Pleasant Valley and would result in this developed area becoming more visible. Development footprint and primary function are compatible with existing buildings in this area. Building heights and roofing materials are addressed in the design standards to reduce the visibility in this location.

There would be a short-term, visual impact associated with construction, including earthwork, heavy equipment, and staging in the Tower Junction location which is in view of visitors traveling the Grand Loop Road. Staging would occur within the site.

There could be nighttime visual impacts due to increased development, particularly at the Tower Junction location. Mitigation measures would include the use of fully shielded light fixtures and compliance with Yellowstone Night Lighting Guidelines, referenced in the design standards. Existing lighting at the service station would be improved, which would be a beneficial impact. There would also be short-term impacts on the night-time visual resources from construction.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to visual quality including lightscapes would need to be less than to the impacts described in this EA for this alternative as short and long term minor and adverse. Since all utilities in this planning zone are underground, visual impacts would be minimized. Vegetation disturbances due to trenching are mitigated in Chapter 2. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect scenic views and visual resources of the road corridor; however, long-term effects could be minor. Possible projects would be mitigated to reduce visual effects and night light from road corridors and historic districts and visitor use areas. Effects of these projects to the Tower-Roosevelt area could be minor and adverse. Because of these impacts, the above projects would be expected to have minor, adverse impacts to visual quality and the natural lightscape. Cumulative impacts from these past, present, and future actions could have long-term minor adverse impacts to visual quality including lightscapes.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to visual quality including lightscape from these projects and utilities associated with these projects are expected to be short and long-term, moderate, and adverse. Increased development footprint in this location has been mitigated through the use of planning zones which indicate locations where resources are least impacted. Design standards describe building height, mass, color and architectural characteristics which lessen visual impacts, including lightscapes. Parking areas are screened and consolidated to reduce visual impacts across the valley. While development may increase in the Tower

Junction location in Alternative B, increasing visual impacts in this location, development may decrease at the Tower Fall Trailhead location, decreasing visual impacts in this location. All changes meet the guidance of the comprehensive plan and the mitigation measures found in Chapter 2. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, moderate adverse impacts to visual quality including lightscapes.

Because there would be no major adverse impacts to visual quality and the night sky whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Visual Resources

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. In Alternative C, the development footprint at the Tower Junction is smaller than that described in Alternative B. It is 2,000 square feet of net gain for buildings and 15,000 square feet of net gain for paved parking. In this location, the overall visual character of a small rustic development in a natural setting adjacent to the historic Roosevelt Lodge would be maintained through the design standards for building height, mass, and architectural character. Development footprint is accommodated in planning zones such that resources are least impacted. Design standards retain the historic character of the Roosevelt Lodge using building sizes that are similar to existing structures and smaller than the Historic Lodge. This alternative could accommodate the replacement of the service station and restrooms in the Tower Junction location with additional parking. Primary functions and development footprint are compatible visually with services in this area. The design standards indicate that the parking could be screened and placed into the hillside with minimal cuts required. All construction activities, such as staging would be limited to the site. Improvements to the service station, restrooms and parking areas at the Tower Junction location could be beneficial to visual resources in the area due to screening from the open views and compatible architectural character.

Future improvements to the existing Tower Fall General Store could have beneficial visual impacts with an improved architectural style. Important historic views associated with the Roosevelt Lodge and the Tower Ranger Station Historic Districts could be preserved through the design standards found within the plan.

The construction of NPS housing and an emergency services building in the Tower Administrative location could have minimal visual impact on views from the Grand Loop Road and Pleasant Valley; the limited development footprint is mitigated by the design standards which describe building masses, heights, roofing materials and architectural character similar to existing historic structures in this location.

There could be localized, short-term, visual changes associated with construction, including earthwork, heavy equipment, and staging.

There could be nighttime visual impacts due to increased development, particularly at Tower Junction. Mitigation measures would include the use of fully shielded light fixtures and compliance with Yellowstone Night Lighting Guidelines referenced in the design standards. Existing lighting at the service station could be improved, which could produce a beneficial impact. There could also be short-term impacts on the night-time visual resources from construction.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to visual quality and the natural lightscapes would need to be less than or equal to the impacts described in this EA for this alternative as short and long term negligible to minor and adverse. Utilities allowed in this zone are underground, trenching would be mitigated using the techniques described in the mitigation measures in Chapter 2. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road widening associated with the Tower to Canyon road construction project could affect scenic views and visual resources of the road corridor; however, long-term effects would be minor. Possible projects would be mitigated to reduce visual effects and night light from road corridors and historic districts and visitor use areas. Effects of these projects to the Tower-Roosevelt area could be minor and adverse. Buildable planning zones utilize locations where resources are least visually impacted and design standards such as building heights, mass, roofing materials, and architectural character further reduce visual impacts. Because of the mitigation provided in the plan, the above projects would be expected to have minor, adverse impacts to visual quality and the natural lightscape. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to visual quality and the natural lightscapes.

Conclusion

In Alternative C future projects would proceed with the guidance of the comprehensive plan. The impacts to visual quality and the natural lightscapes from these projects and utilities associated with these projects are expected to be short and long-term, minor, and adverse and beneficial. Potential development footprint is less in Alternative C compared to Alternative B and impacts to visual resources are minimized through the use of the design standards which preserve historic views and visual quality. Building characteristics are described which augment the rustic character of the Tower Roosevelt area. Impacts to lightscapes are minimized through the use of the design standards which reference the Yellowstone Night Lighting Guidelines. While there is a net gain in development footprint, screening and compatible materials lessen impacts to the visual quality in the area. Potential removal or consolidation of development may enhance the visual quality. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor adverse and beneficial impacts to visual quality and the natural lightscapes.

Because there would be no major adverse impacts to visual quality and the night sky whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

VISITOR USE AND EXPERIENCE

Guiding Regulations and Policies

Section 1.4.3 of the *NPS Management Policies 2006* state that enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is

committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. Section 7 of the 2006 Management Policies states “National parks are among the most remarkable places in America for recreation, learning, and inspiration,” Section 8.2 of 2006 Management Policies states, “Management controls and conditions must be established for all park uses to ensure that park resources and values are preserved and protected for the future”. DO 42 states that “the NPS will seek to provide the highest level of accessibility that is reasonable, and not simply provide the minimum level that is required by law”.

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts on visitor use and experience were derived from available information on visitor use of Yellowstone Park and the Tower-Roosevelt area, including statistics kept by the Visitor Services Office in Yellowstone.

The thresholds of change for the intensity of impacts on visitor use and experience are defined as follows:

Negligible: Visitors would not be affected or changes in visitor use or experience would be below the level of detection.

Minor: Changes in visitor use or experience would be detectable, although the changes would be localized. The visitor may experience a change that affects use in a localized or activity specific area.

Moderate: Changes in visitor use or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be affected by changed use patterns or activities in several areas.

Major: Changes in visitor use or experience would be readily apparent and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely be affected by changed use patterns across many areas.

Duration: Short-term effects would last during construction of a facility, typically up to three months. Long-term effects would be anything beyond the construction of a facility through the life of the facility, including maintenance activities.

Impacts of Alternative A to Visitor Use and Experience

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis.

Visitor use and experience is affected by the overall character of a place that is influenced by values such as visual appearance, orientation, congestion as well as specific activities provided in that location. Without an overall assessment of all of these resources and values Alternative A, could have minor adverse impacts on visitor use and experience due to a lack of coordination of projects or activities within the area or over a period of time in which change occurs. There would be uncertainty whether the changes affect the specific project or many projects within the area.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for minor impacts from projects are more likely. Evaluating these projects with separate environmental compliance

actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered. Without a comprehensive plan, there are no desired conditions or fundamental resources and values identified as goals to be met.

Cumulative Impacts

The number of visitors in the Tower-Roosevelt area has increased since 1995, partly due to the reintroduction of wolves and increased sightings of both black and grizzly bears. Although many wildlife watchers spend time in Lamar Valley, the Tower-Roosevelt area is the closest park development to Lamar and has been affected by increased visitation. Visitors accessing the Lamar Valley via Tower Roosevelt utilize services in the area such as restrooms, fuel and retail items. Since wildlife watching occurs from early in the morning until dark, visitors are traveling around and through the area at these times.

Road construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. This construction could add to the effects of this plan, and could also change the long-term travel experience on the Grand Loop Road in this area of the park, due to widening of the road corridor. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to visitors could be offset by long-term benefits. Because of these impacts, the above projects would be expected to have minor impacts to visitor use and experience. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to visitor use and experience.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. The impacts to visitor use and experience from these projects and utilities associated with these projects are expected to be short and long-term, minor, and adverse. Without the coordination and direction established in the comprehensive plan, Alternative A could have unanticipated consequences and associated impacts. Since the area is changing due to the reintroduction of wolves, future projects could have impacts that could affect visitor experience and use. Without the direction of the plan, future projects may or may not provide visitor use and experience that support consistent themes for the area. When combined with past, present, and foreseeable future actions, Alternative A could have short and long-term, minor adverse impacts to visitor use and experience.

Because there would be no major adverse impacts to visitor use and experience whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Visitor Use and Experience

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to visitor services in the Tower-Roosevelt area would provide visitors opportunities that maintain the fundamental resources and values and desired conditions of the Tower-Roosevelt area. Because the plan clearly identifies desired patterns of use, future change would be guided and resources identified as significant to visitor use and

experience would be preserved. Traditional functions would continue including outdoor chuck wagon cookouts, rustic lodging in cabins, horse and wagon rides from the Roosevelt Corrals location, scenic recreation, and visitor education. Changes in development would not affect visitor experience of wilderness and viewing wildlife in a natural setting.

New development along the Grand Loop Road at the Tower Junction location could affect the visitor experience in this location as facilities and parking expand to provide additional services. Increased development could have both adverse and beneficial long-term impacts. The Tower Junction location could have multiple visitor services rather than just a service station. The convenience of retail services at the Tower Junction location would be beneficial to visitors traveling within and through the location. The Tower Junction location could become busier with more traffic and could change the character and visitor experience of the Tower-Roosevelt area. Since the Tower Junction location is central to the Roosevelt Lodge and Tower Ranger Station locations, expansion in this location could impact visitor use and experience such as wildlife viewing or rustic character in other locations.

An improved visitor contact station in the Tower Junction or the Tower Ranger Station locations could benefit visitors requesting information. Visitors could have an experience that is less crowded in a larger facility and more information may be available in a larger space. Viewing of video materials could be less crowded for example.

New development along the entrance roads to the Roosevelt Lodge location could change the experience for visitors to the historic lodge and cabins as additional development could occur along the entrance route. Additional cabins would be visible instead of native vegetation and trees. Additional cabins provided in the Roosevelt Lodge location could increase traffic within the lodge complex, adding to traffic and parking congestion. However, the addition of new cabins gives the lodge operation greater flexibility to improve the experience for visitors staying there. In Alternative B, parking in front of the Roosevelt Lodge could be improved to reduce congestion and improve visitor safety. Unpaved parking would not exceed existing quantities. All parking would follow the design standards in the plan adhering to the historic layout of cabins and set backs from the entrance roads.

Use at The Yancey's Hole location would stay the same, however, facilities could be improved to better accommodate the visitor experience, resulting in an improved experience. Materials identified in the design standards would enhance the sustainability of the structures and allow for improved sanitation.

Reducing or removing the Tower Fall general store at the Tower Fall Trailhead location could adversely affect visitors that traditionally use the retail services and need to stop after descending Dunraven Pass. The location could change to increase emphasis to Tower Fall Trailhead scenery with a picnic area and restrooms. Improved parking at The Tower Fall Trailhead location could reduce congestion.

Visitor experience could be impacted negatively in the short term by construction. Traffic congestion, delays, and construction traffic, noise, and dust, could temporarily impact visitors. The construction would be limited to the site itself, no staging area would be required.

Visitor use and experience is affected by the overall character of a place that is influenced by values such as visual appearance, orientation, congestion as well as specific activities. An overall assessment of all of these resources and values, Alternative B would have moderate adverse and moderate beneficial impacts to visitor use and experience because of visitor services added that provide conveniently located retail or information while removing some services that have been popular in the past resulting in congestion.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to visitor use and experience would need to be less than the impacts described in this EA for this alternative as short and long term minor and adverse. Utilities in this planning zone are underground and trenching would follow the design standards for revegetation with native materials. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

The number of visitors in the Tower-Roosevelt area has increased since 1995, partly due to the reintroduction of wolves and increased sightings of both black and grizzly bears. Although many wildlife watchers spend time in Lamar Valley with longer duration, the Tower area is the closest park development to Lamar and has been affected by increased visitation. Visitation is likely to continue to increase in this area.

Road construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. This construction could add to effects to this plan, and could also change the long-term travel experience on the Grand Loop Road in this area of the park, due to widening of the road corridor. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to visitors could be offset by long-term benefits. Because of these impacts, the above projects would be expected to have minor, impacts to visitor use and experience. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to visitor use and experience.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to visitor use and experience from these projects and utilities associated with these projects are expected to be short and long-term, moderate, adverse and beneficial. Removing some of the visitor services which have become congested has both an adverse and beneficial impact at the Tower Fall Trailhead location as retail services are modified and the scenic experience is emphasized. Expanding visitor services in convenient locations also has both an adverse and beneficial impact at the Tower Junction location as more services are available but traffic congestion may occur. Visibility may impact some wildlife viewing or the remote feeling or rustic character as cabins are added to the Roosevelt Lodge location causing an adverse impact while other aspects of the visitor experience such as the enhanced parking in front of the Roosevelt Lodge provide benefit. Buildable planning zones locate development where resources are least impacted and development footprint restricts the amount of net gain. Design standards mitigate the character of the development to ensure that the visitor experience is optimized. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, moderate, adverse and beneficial impacts visitor use and experience.

Because there would be no major adverse impacts to visitor use and experience whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Visitor Use and Experience

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Changes to visitor services in the Tower-Roosevelt area would provide visitors opportunities that maintain the fundamental resources and values and desired conditions of the Tower-Roosevelt area. Like in Alternative B, Alternative C provides for future change that is guided by the plan, however, Alternative C provides for less change. In Alternative C traditional functions would continue, including outdoor chuck wagon cookouts, rustic lodging in cabins, horse and wagon rides from the Roosevelt Corrals location, scenic recreation, and visitor education. Changes in development would not affect visitors experiencing wilderness and viewing wildlife in a natural setting.

Existing services along the Grand Loop Road at the Tower Junction location; restrooms, and parking could be improved. The buildable planning zones identify areas where expansion could occur. The addition of a 2,000 square foot possible retail function and associated parking at this location is less than that provided in Alternative B and could provide limited expansion in services. However, the expansion of services might also attract more visitors. Cuts to the hillside behind the development would be less in Alternative C compared to Alternative B as less development footprint is accommodated. Design standards influence the character of the development providing for compatible, screened facilities that provide visitor services. The convenient location for these services could enhance the visitor experience. An improved visitor contact station in the Tower Junction or the Tower Ranger Station locations could benefit visitors requesting information.

Parking in front of the Roosevelt Lodge could be improved to reduce congestion and improve visitor safety. The visual experience would be enhanced from the Roosevelt Lodge porch where visitors wait for dinner and enjoy the historic views. The development footprint in Alternative C for the Roosevelt Lodge location is minimal, providing only for needed services. There is a separation between the services provided at the Tower Junction location and the entrance to Roosevelt Lodge. The visitor experience in the Lodge area remains similar to existing.

Use at the Yancey's Hole location would stay the same, however, facilities could be improved to better accommodate the visitor experience, resulting in an improved experience. Sustainable materials would be identified in the design standards for this location.

Reducing the Tower Fall general store at the Tower Fall Trailhead location could adversely affect visitors that traditionally use the retail services and need to stop after descending Dunraven Pass. The location could change to increase emphasis on the natural features associated with the Tower Fall's Trailhead; including a picnic area and restrooms. Congestion in the parking area could be reduced or improved with an enhanced parking plan.

Visitor experience could be impacted by construction, though this would be short-term in duration. Traffic congestion, delays, construction traffic, noise, and dust are all possible, temporarily. No staging area is necessary as construction would occur on site.

Visitor use and experience is affected by the overall character of a place that is influenced by values such as visual appearance, orientation, congestion as well as specific activities. An overall assessment of all of these resources and values, Alternative C would have minor adverse and minor beneficial impacts on visitor use and experience.

Cumulative Impacts

The number of visitors in the Tower-Roosevelt area has increased since 1995, partly due to the reintroduction of wolves and increased sightings of both black and grizzly bears. Although many wildlife

watchers spend time in Lamar Valley, the Tower area is the closest park development to Lamar and has been affected by increased visitation. Increased visitation is likely to continue in this area.

Road construction projects in the Tower-Roosevelt area and in the northeastern part of Yellowstone would continue to occur. This construction could add to effects to this plan, and would also change the long-term travel experience on the Grand Loop Road in this area of the park, due to widening of the road corridor. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to visitors could be offset by long-term benefits. Because of these impacts, the above projects would be expected to have minor, impacts to visitor use and experience. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to visitor use and experience.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. Buildable planning zones would identify where future change could occur that least impacts resources. Development footprint is less in Alternative C than in Alternative B resulting in less impact. The impacts to visitor use and experience from these projects and utilities associated with these projects are expected to be short and long term, minor, adverse and beneficial. Expansion in convenient locations provides visitor services while possibly increasing congestion. Removal of services can result in a changed emphasis for the associated visitor experience, such as removing retail functions from the Tower Trailhead location and emphasizing the natural scenic experience. The comprehensive plan ensures that traditional visitor experiences significant in the Tower Roosevelt area continue to occur. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, minor, adverse impacts to visitor use and experience.

Because there would be no major adverse impacts to visitor use and experience whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

PARK OPERATIONS

Guiding Regulations and Policies

Management Policies do not contain a specific chapter on park operations; however, virtually every action or proposal that is evaluated in this NEPA process has either a direct or indirect effect on park operations. There are also a number of director's orders that pertain to park operations as well.

Methodology and Intensity Thresholds

NPS Management Policies 2006 states: The National Park Service will provide visitor and administrative facilities that are necessary, appropriate, and consistent with the conservation of park resources and values. Facilities will be harmonious with park resources, compatible with natural processes, esthetically pleasing, function, and energy and water efficient, cost effective, universally designed, and as welcoming as possible to all segments of the population. NPS facilities and operation will demonstrate environmental

leadership by incorporating sustainable practices to the maximum extent practicable in planning, design, siting, construction, and maintenance.

Negligible: Impacts would not occur or would not be detectable.

Minor: Impacts would be slight, short-term and localized, but would not have a measurable effect to park operations.

Moderate: Impacts would be measurable, potentially long-term, and would measurably improve or degrade park operations.

Major: Impacts would be long-term, and significantly improve or degrade park operations.

Duration: Short-term effects would be less than one year. Long-term effects would continue beyond one year.

Impacts of Alternative A to Park Operations

Impact Analysis

In Alternative A, no comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Alternative A assumes that existing conditions would likely remain the same; however projects could be proposed in the foreseeable future. Yellowstone National park staff would evaluate project proposals for visitor services, facilities and utilities in the Tower-Roosevelt area on a case-by-case basis using separate environmental compliance analysis. Without the comprehensive plan there would be no direction or coordination between future changes possibly resulting in inefficiencies or unintended consequences.

Park operations affect all aspects of the Tower Roosevelt area; supporting visitor services and protecting park resources. Without the benefit of a comprehensive plan, changes in development may occur that do not consider the cumulative impact on park operations, such as changes in utility systems, water supplies, waste water treatment plants, emergency response or structural fire response.

The TRCP/EA assumes that without adoption of a comprehensive plan on how, where, and what kind of development and redevelopment can occur within the Tower-Roosevelt areas, the possibility for moderate impacts from projects are more likely. Evaluating these projects with separate environmental compliance actions could lead to unanticipated cumulative impacts and fundamental resources and values may be incrementally altered.

Cumulative Impacts

Road construction projects in the Tower-Roosevelt and the northeastern part of Yellowstone would continue to occur, including the Lamar River Bridge project, scheduled for 2010. Construction may affect area operations. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded the project could have a generally beneficial impact on operations with improved traffic flow and road surface, but could have a minor increased maintenance need related to additional vault toilets. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to park operations could be offset by long-term benefits. Drought may affect potable water availability and ultimately affect area operations. Coordination of potential change is uncertain without the comprehensive plan. Without design standards development may impact resources in ways that are unintended as building heights, materials, massing or architectural character are not guided. Impacts to park maintenance may increase as materials and technology are not sustainable or durable. Fire-resistant

materials may not be incorporated in future changes resulting in more fire hazards and operational expense. Utility impacts may not be minimized and disturbances greater as a result. Maintenance operations may increase as utilities are not consolidated or parking areas expand in ways that plowing is more difficult. Because of these impacts, the above projects are expected to have minor, impacts to park operations. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to park operations.

Conclusion

In Alternative A, future projects are likely to proceed without the guidance of a comprehensive plan. Future projects would go through separate environmental analysis process. In the foreseeable future Alternative A is expected to have long-term minor adverse and minor beneficial impacts to park operations such as changes in parking configuration that may reduce congestion but increase maintenance workloads. Without the comprehensive planning components, development footprint could be less efficient, resulting in maintenance expenses. Utilities could be expanded in ways that are less sustainable resulting in higher costs for installation and repair. Energy efficiency, snow loading considerations and other design standards would not be applied resulting in higher costs for operations. Buildings may not be consolidated resulting in more distance for patrol units. Fire protection may increase if materials are not fire resistant. When combined with past, present, and foreseeable future actions, Alternative A would have long-term minor adverse and minor beneficial impacts to park operations.

Because there would be no major adverse impacts to park operations whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative B to Park Operations

Impact Analysis

In Alternative B, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. Increased development in the Tower-Roosevelt area, particularly at the Tower Junction location, could create additional demand on existing utility systems (water, sewer, electricity, solid waste collection), and possibly the need for improved or expanded utility systems. Buildable planning zones have identified where resources are least impacted by expansion. Development footprint is increased in the Tower Junction location by a maximum of 9,000 square feet for net gain in buildings and 35,400 square feet net gain in paved parking in this location. These changes could result in an adverse impact to park operations such as an increased need for building and parking area maintenance. Additional staff could be required to provide visitor services such as interpretive information or law enforcement. Maintaining these systems would impact area maintenance staff. This alternative anticipates utility systems to be upgraded and expanded or that alternative designs could be considered. Use of sustainable technologies where feasible would reduce demand on resources. Design standards would consolidate development footprint and reduce maintenance operations.

Additional buildings and parking areas would create a need for more maintenance activities such as custodial services and plowing. Improvement in facilities for support operations such as additional storage, office space and housing, could result in a beneficial impact providing greater efficiency.

Removing or reducing the Tower Fall General Store at the Tower Fall Trailhead location could have a beneficial impact on operations. The load to sewer systems could be reduced.

Construction activities could have additional impacts on area operations in the short-term with movement of heavy equipment, and wear and tear on roads. Updates to facilities and infrastructure are likely to have both a moderate adverse and moderate beneficial impact to park operations as updated facilities are more complex to operate but may be more efficient.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to park operations would need to be less than or equal to the impacts described in this EA for this alternative as short and long term minor to moderate adverse and minor beneficial. Utilities are underground in this planning zone and impacts of trenching would be minimized by utilizing native vegetation and restoring natural contours. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional environmental compliance would be required.

Cumulative Impacts

Road construction projects in the Tower-Roosevelt and the northeastern part of Yellowstone would continue to occur, including the Lamar River Bridge project, scheduled for 2010. Construction may affect area operations. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded the project could have a generally beneficial impact on operations with improved traffic flow and road surface, but could have a minor increased maintenance need related to additional vault toilets. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to park operations could be offset by long-term benefits. Drought may affect potable water availability and ultimately affect area operations. Improved utility systems may be more efficient resulting in less consumptive use. Because of these impacts, the above projects are expected to have minor, impacts to park operations. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to park operations.

Conclusion

In Alternative B, future projects would proceed with the guidance of the comprehensive plan. The impacts to park operations from these projects and utilities associated with these projects are expected to be short and long-term, minor to moderate adverse and minor beneficial. As development footprint expands, utilities may need to be expanded to accommodate additional electrical, water, and sewer loads. Buildable planning zones identify where expansion will least impact resources. Updated systems may be more efficient and sustainable, mitigating some of the potential impacts. Benefits to operations from expanded storage spaces, offices or service buildings may improve service and operations. Consolidated or reduced parking areas such as at the Tower Fall Trailhead location may require less maintenance while expanded parking in other locations may require additional maintenance such as at the Tower Junction location. Improving visitor facilities at Yancey's Hole may improve operational efficiency in this location as sanitation is improved and surfaces are easier to clean. Improved staff housing could enhance operational efficiency as employees have a shorter response time for fire and law enforcement activities. When combined with past, present, and foreseeable future actions, Alternative B could have short and long-term, minor to moderate adverse and minor beneficial impacts to park.

Because there would be no major adverse impacts to park operations whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would

not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Impacts of Alternative C to Park Operations

Impact Analysis

In Alternative C, a comprehensive plan would guide the establishment of desired conditions, acceptable limits of change, and planning components for future development. In Alternative C less development footprint is provided than in Alternative B. Buildable planning zones identify where development can occur with the least impact to resources. Increased development would be limited and utility systems may remain adequate at the Tower Junction and Tower Fall Trailhead locations. However, additional demand on existing utility systems (water, sewer, electricity, solid waste collection), and the need for improved or new utility systems is possible. This alternative could accommodate utility systems to be upgraded and expanded within the natural planning zone. Underground utilities would be guided by the design standards for each location, such as restoring trenched areas with native vegetation and natural contours.

Additional buildings and parking areas would create a need for more maintenance activities such as custodial services and plowing. Improvement in facilities for support operations such as additional storage, office space and housing, would result in a beneficial impact providing greater efficiency. These expansions occur within a smaller development footprint in Alternative C. The expansion in the Tower Junction location is a maximum of 2,000 square feet of net gain in buildings and 15,000 net gain in paved parking for this location. These expansions could result in increased plowing or building maintenance. Design standards would consolidate both the buildings and parking mitigating the impact. Sustainable materials and roofing design would reduce the maintenance requirements. Reducing the Tower Fall General Store at the Tower Fall Trailhead location could have a beneficial impact on operations. The load to sewer systems could be reduced. Yancey's Hole facilities would be minimally expanded which would have a minimal impact on park operations. Expanded housing and support facilities could improve response times for maintenance, fire or law enforcement operations having a beneficial impact.

Construction activities would have additional impacts on area operations in the short-term with additional personnel in the area, movement of heavy equipment, and wear and tear on roads. Updates to facilities and infrastructure are likely to have both a minor adverse and minor beneficial impact to park operations.

For implementation of possible projects in the TRCP planning zones, especially utilities in the *Natural Zone*, impacts to park operations would need to be less than or equal to the impacts described in this EA for this alternative as short and long term minor and adverse. Underground utilities would follow design standards for installation to mitigate resource and operational impacts. Compliance for future projects proposed outside the planning boundary are not included in this EA and additional surveys would be required.

Cumulative Impacts

Road construction projects in the Tower-Roosevelt and the northeastern part of Yellowstone would continue to occur, including the Lamar River Bridge project, scheduled for 2010. Construction may affect area operations. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded the project could have a generally beneficial impact on operations with improved traffic flow and road surface, but could have a minor increased maintenance need related to additional vault toilets. The Canyon Junction to Tower Junction Road Improvement EA (2001) concluded that short-term inconveniences to park operations could be offset by long-term benefits. Drought may affect potable water availability and ultimately affect area operations. Because of these impacts, the above projects are expected to have

minor, impacts to park operations. Cumulative impacts from these past, present, and future actions could have long-term minor impacts to park operations. The impacts resulting from these past, present, and future actions would result in long-term minor impacts to park operations.

Conclusion

In Alternative C, future projects would proceed with the guidance of the comprehensive plan. The impacts to park operations from these projects and utilities associated with these projects are expected to be short and long term, minor adverse and minor beneficial. When combined with past, present, and foreseeable future actions, Alternative C could have short and long-term, minor, adverse impacts to park operations. Alternative C provides for a limited expansion of development footprint and less impacts to park operations including building and parking maintenance and utility expansion. The largest change in development footprint is in the Tower Junction location. These expansions could be accomplished with minor expansion to utility systems and could consolidate functions in the location. Improvement of the Roosevelt Lodge parking area could improve park operations as congestion could be decreased. Reduction of some facilities such as those at the Tower Fall Trailhead location could reduce park operations in a beneficial manner. Providing support facilities such as housing and an emergency service building near operational locations could reduce response times for many operational components such as fire, medical and law enforcement activities. Design standards provide mitigation for operational impacts such as sustainable building materials and revegetation of utility trenches.

Because there would be no major adverse impacts to visitor use and experience whose conservation is (1) necessary to fulfill specific purposes identified in Yellowstone's establishing legislation; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in other park or NPS planning documents, there would be no impairment to these resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with § 1.4.7.1 of NPS Management Policies 2006.

Chapter 5: CONSULTATION & COORDINATION

SCOPING

Scoping is an early and open process used to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment. External (public) scoping was conducted to inform various agencies and the public about the proposal to prepare a comprehensive plan for the Tower-Roosevelt area. Yellowstone National Park conducted both internal scoping with NPS staff and external scoping with the public, as well as interested and affected organizations and agencies. Public scoping for the Tower-Roosevelt Comprehensive Plan began on May 26, 2006, with a news release and mailing to previously identified interested parties asking for help in identifying issues and concerns. Scoping was also done through the NPS Planning, Environment, and Public Comment (PEPC) website. Scoping ended on June 30, 2006. Six comments were received through PEPC. One comment was received through the U.S. mail from the Comanche Tribe requesting project progress updates.

Internal scoping was conducted by an interdisciplinary team in Yellowstone National Park. Interdisciplinary team members met regularly throughout the course of this planning process to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. The team also gathered background information and conducted field visits and site surveys.

LIST OF AGENCIES AND ORGANIZATIONS

Agencies and organizations contacted for information or that assisted with identifying important issues, developing alternatives, or analyzing impacts; or that will review and comment upon this document include:

Federal Highways Administration

Wyoming State Historic Preservation Office

U. S. Fish and Wildlife Service

Yellowstone's 26 Associated Native American Tribes

ENVIRONMENTAL ASSESSMENT REVIEW

The Environmental Assessment will be released for public review in June 8, 2009. To inform the public of the availability of the Environmental Assessment/Assessment of Effect, the National Park Service published and distributed a letter and press release to various agencies, tribes, and members of the public on the park's mailing list, and developed a press release for publication in local newspapers. Copies of the Environmental Assessment/Assessment of Effect will be provided to interested individuals, upon request. Copies of the document will also be available for review on the Internet at <http://parkplanning.nps.gov/yell>.

The public is encouraged to submit their written comments to the National Park Service at the address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the Environmental Assessment, as needed.

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Appendix A

PROJECT APPLICATION FORM

Tower-Roosevelt Area Project Application Form



Instructions

The Tower-Roosevelt Comprehensive Plan (TRCP) defines boundaries, limits, and guidelines of where and how development can occur in the Tower-Roosevelt area of Yellowstone National Park. The plan preserves and protects park resources, values, and visitor experiences in the Tower-Roosevelt area by adopting desired resource conditions and visitor experiences.

This application must be used if you are proposing any type of ground disturbing project in the Tower-Roosevelt area. The information that you provide in the application must address the three components included in the TRCP. The components are (1) zoning for the Tower-Roosevelt Area (where changes may occur), (2) planning prescriptions, which define the primary function (what kind) and development footprint (how much), and (3) design standards which ensure the character of facilities is historically and visually compatible with specific locations within the Tower-Roosevelt area.

This application form requires the following information:

- a) **Completed application form.**
- b) **Preliminary drawings and specifications of your project.** It is advisable that you submit your project early. Conceptual ideas are welcomed.
- c) **Map showing the location of your project.** Please see the following link for maps of the area:
http://www.yell.nps.gov/tower_roosevelt_project_application_maps

Return this application to:

Project Coordinator, Office of Comprehensive Planning and Design (CPD)

P.O. Box 168

Yellowstone National Park, Wyoming 82190

If you have any questions regarding any of the requirements of this form, please contact Project Coordinator, Eleanor Clark, at (307) 344.2315, eleanor_clark@nps.gov at the Office of Comprehensive Planning and Design (CPD).

--signature--

Suzanne Lewis

Superintendent, Yellowstone National Park

Tower-Roosevelt Area Project Application Form

Date:		
Applicant Name:		
Organization/Division Name:		
Phone Number:	Fax:	Email:
Street/Address:		
City/State/Zip Code:		
Proposed Project Title:		
Proposed Project Start Date:		
Description of Proposed Project:		

1. **Possible Project List:** Please refer to the list of possible projects in Table 3 in the TRCP or http://www.yell.gov/tower_roosevelt_possible_projects; is your project on the list of possible projects included within the plan?

2. **Location(s) of proposed project.** Please check all that apply. See the TRCP plan for a map of these locations or check the following link http://www.yell.nps.gov/tower_roosevelt_locations.

- Roosevelt Lodge
- Roosevelt Corral
- Tower Junction
- Tower Ranger Station
- Tower Administrative Area
- Tower-Fall Trailhead
- Tower-Fall Campground
- Yancey’s Hole
- Other. Please describe _____

3. **Buildable planning zone.** Please check all that apply. Please see Figure 4 of the Tower-Roosevelt Comprehensive Plan for these zones and their locations, or check the following link http://yell.nps.gov/tower_roosevelt_zoning_map

- Natural Circulation Historic Development Administrative
- Other

Please describe how the project meets the requirements of the buildable planning zone(s) for each proposed location. Please see Figure 4 of the Tower-Roosevelt Comprehensive Plan or http://www.yell.nps.gov/tower_zone_descriptions for descriptions and requirements of the planning zones:

4. Does your project affect (i.e. is proposed within) resources that may require further compliance?

Compare the location of your project to the resources maps found in Appendix B of the Tower-Roosevelt Comprehensive Plan, or on http://www.yell.nps.gov/tower_roosevelt_resource_maps . If your project is proposed within a resource area, please see question 4a and 4b. If no, please proceed to question 5. NO ____ YES

a. Please explain where your project is located within a cultural resource which requires further compliance.

i. Contact the CPD Project Coordinator and the Compliance Coordinator to help you answer the following questions:

- o Check cultural resources affected:
 - a. Historic District
 - b. Archeological resource site
 - c. Cultural Landscape boundary

b. Please explain where your project is located within a natural resource which may require further compliance.

i. Contact the CPD Project Coordinator and the Park Compliance Coordinator to help you answer the following questions:

- o Check natural resources affected:
 - a. Wetland
 - b. Rare plant site
 - c. Threatened and endangered species

5. Does your project involve utilities within the Buildable Natural Zone? If so, please answer the following questions:

- i. What kind of utility(s) are proposed? _____
- ii. Please describe how this project meets the requirements of the zone:

- iii. How much area will be disturbed? _____

6. **Primary Function:** Check all functions that apply to your project. Please see Figures 6-13 for the location within the TRCP or http://www.yell.nps.gov/tower_roosevelt_primary_functions for descriptions.

- NPS visitor services
- Concession visitor services
- NPS administrative and/or operational support
- Concession administrative and/or operational support
- Other. Please describe: _____
- **How is this function consistent with the TRCP for these locations?**

7. **Development Footprint:** The CPD Project Permit Coordinator can assist you with this question. Please check Figures 6-13 of the Tower Comprehensive Plan or check http://www.yell.nps.gov/tower_roosevelt_development_footprint to answer the following questions.

Buildings at this location:

Development footprint (square feet) shown in the TRCP as available for buildings at this location: _____

If proposal includes removal of an existing structure, indicate square feet of building(s) that will be removed: (add) _____

Square feet of proposed building(s) (first floor): (subtract) _____

If your project will not affect building footprint (i.e. remodel) show (0) here _____

Total net gain in development footprint for buildings: _____

Paved Parking/Roads at this location:

Development footprint (square feet) shown in the TRCP as available for paved parking/roads at this location: _____

If proposal includes removal of existing paved parking/road, indicate square feet of pavement that will be removed: (add) _____

Square feet of proposed paved parking/roads: (subtract) _____

If your project will not affect footprint for paved parking/roads (i.e. redesign) show (0) here _____

Total net gain in development footprint for paved parking/roads: _____

Unpaved Parking/Unpaved Roads (no net gain available) at this location:

Square feet unpaved parking/roads that will be restored to natural conditions: (add) _____

Square feet proposed unpaved parking/roads: (subtract) _____

Total net gain in development footprint for paved parking/roads: _____

8. Design Standards: Each buildable planning zone at each location has design standards that guide the appearance for development. Please check the TRCP or http://yell.nps.gov/tower_roosevelt_design_standards for these standards. Please describe how your project meets the design standards for that zone at the proposed location(s) for the following design elements:

a. Materials:

b. Color:

c. Scale, size:

d. Roof design:

e. Layout

f. Setting:

9. Please attach preliminary drawings and specifications for your project.

10. Please attach a map showing the location of your project. You may use Figure 2 of the Tower Comprehensive Plan or print a map from http://www.yell.nps.gov/tower_roosevelt_project_application_maps

11. Additional documentation: Once your project is approved, the compliance coordinator /CPD staff will submit a Memo to the File as an attachment to this form documenting that your project is within the scope of the plan and environmental assessment.

Tower-Roosevelt Project Approval and Requirements Form

Project Title and Date:

Additional Forms or Sheets Attached: Yes No

CPD Project Permit Coordinator **signature** **date**

Does the project fall within a natural or cultural resource which requires further compliance?

Yes No

Describe: _____

Do you recommend this project as falling within the scope, guidance and environmental compliance of the Tower-Roosevelt Plan? Yes No

Comments or requirements:

Compliance Coordinator **signature** **date**

Does the project fall within a natural or cultural resource which requires further compliance?

Yes No

Describe: _____

Do you recommend this project as falling within the scope, guidance and environmental compliance of the Tower-Roosevelt Plan? Yes No

Comments or requirements:

Division Chief **signature** **date**

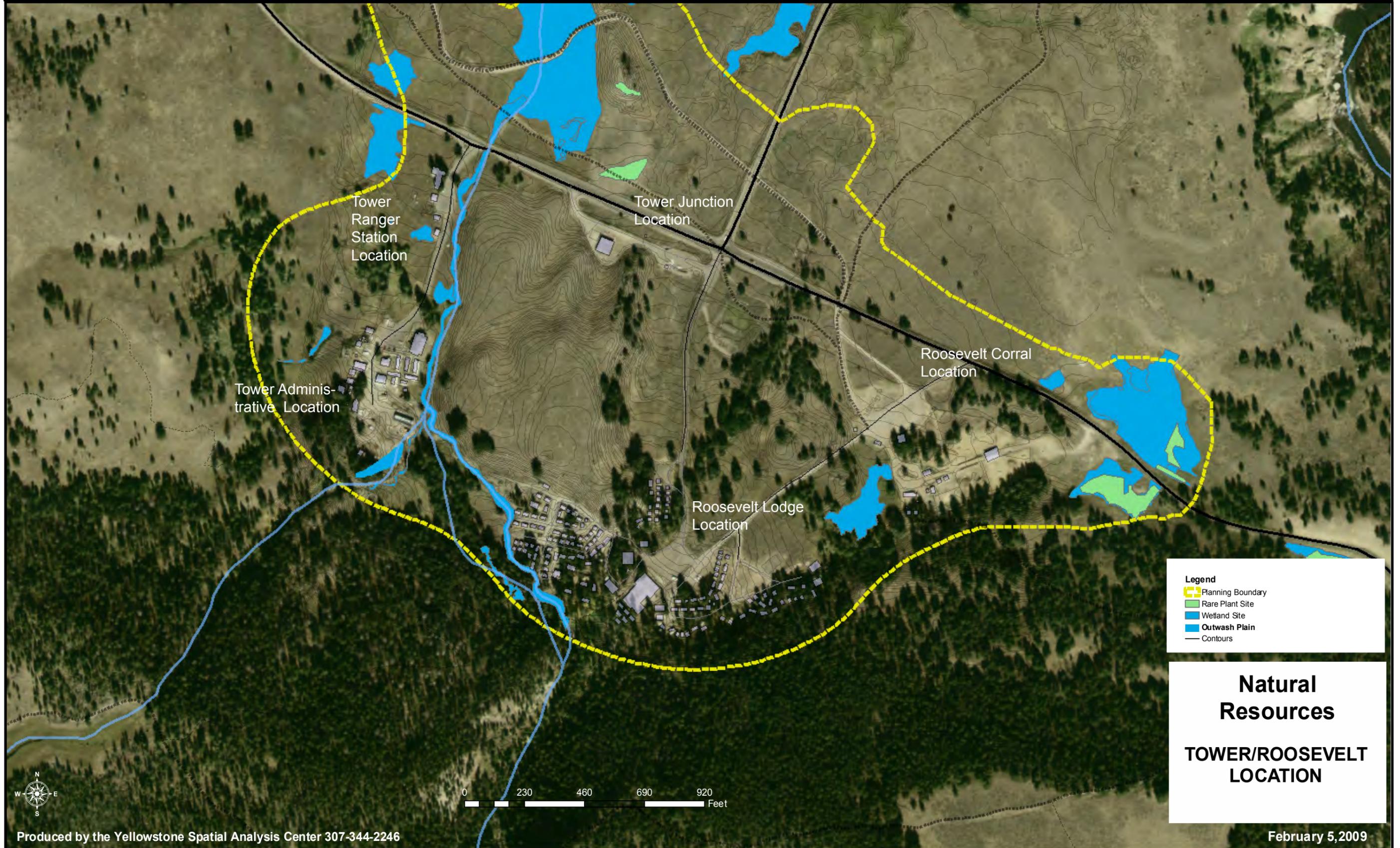
Comments or requirements:

Superintendent's Approval **signature** **date**

Comments or requirements:

Appendix B

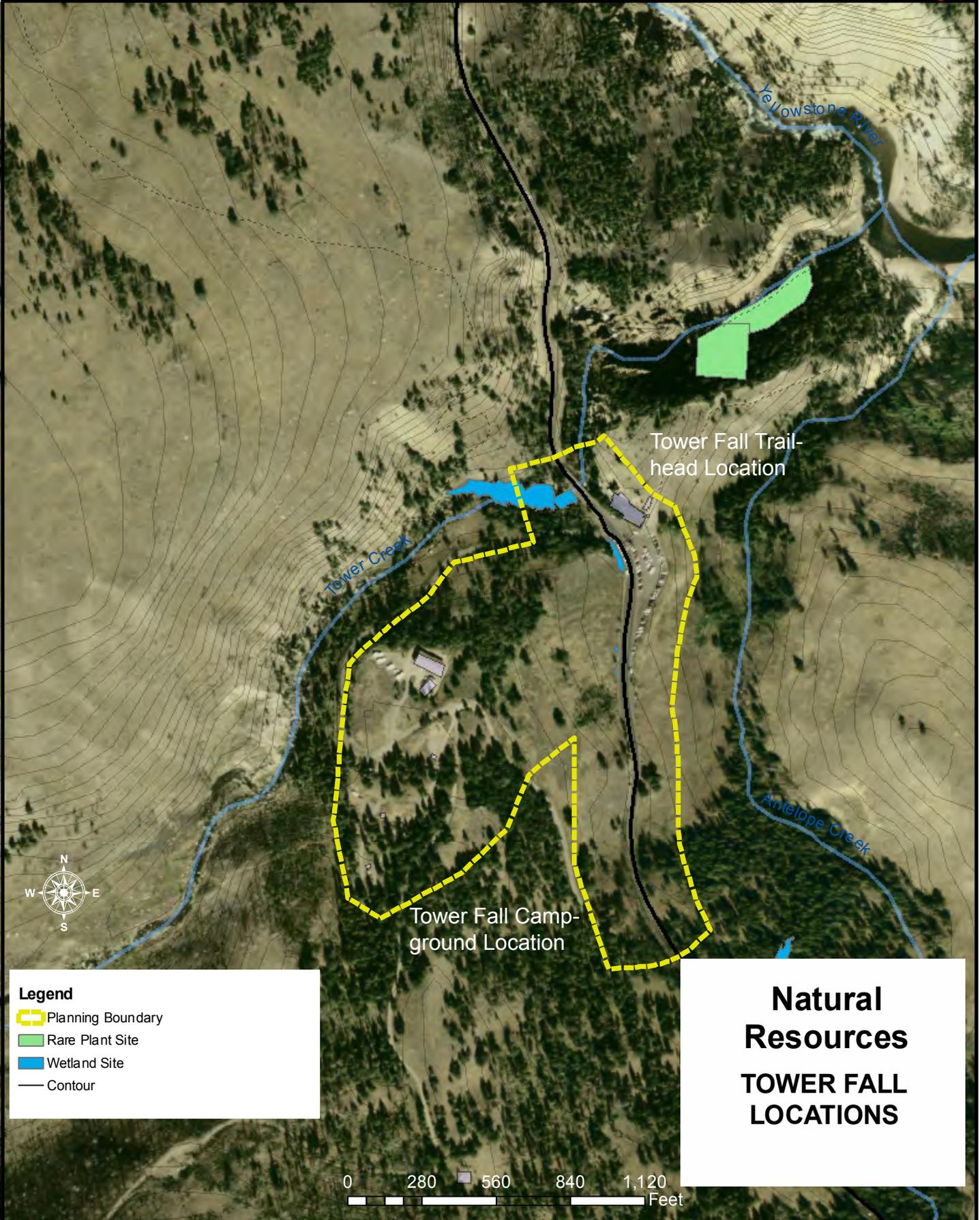
MAPS SHOWING RESOURCE SURVEYS

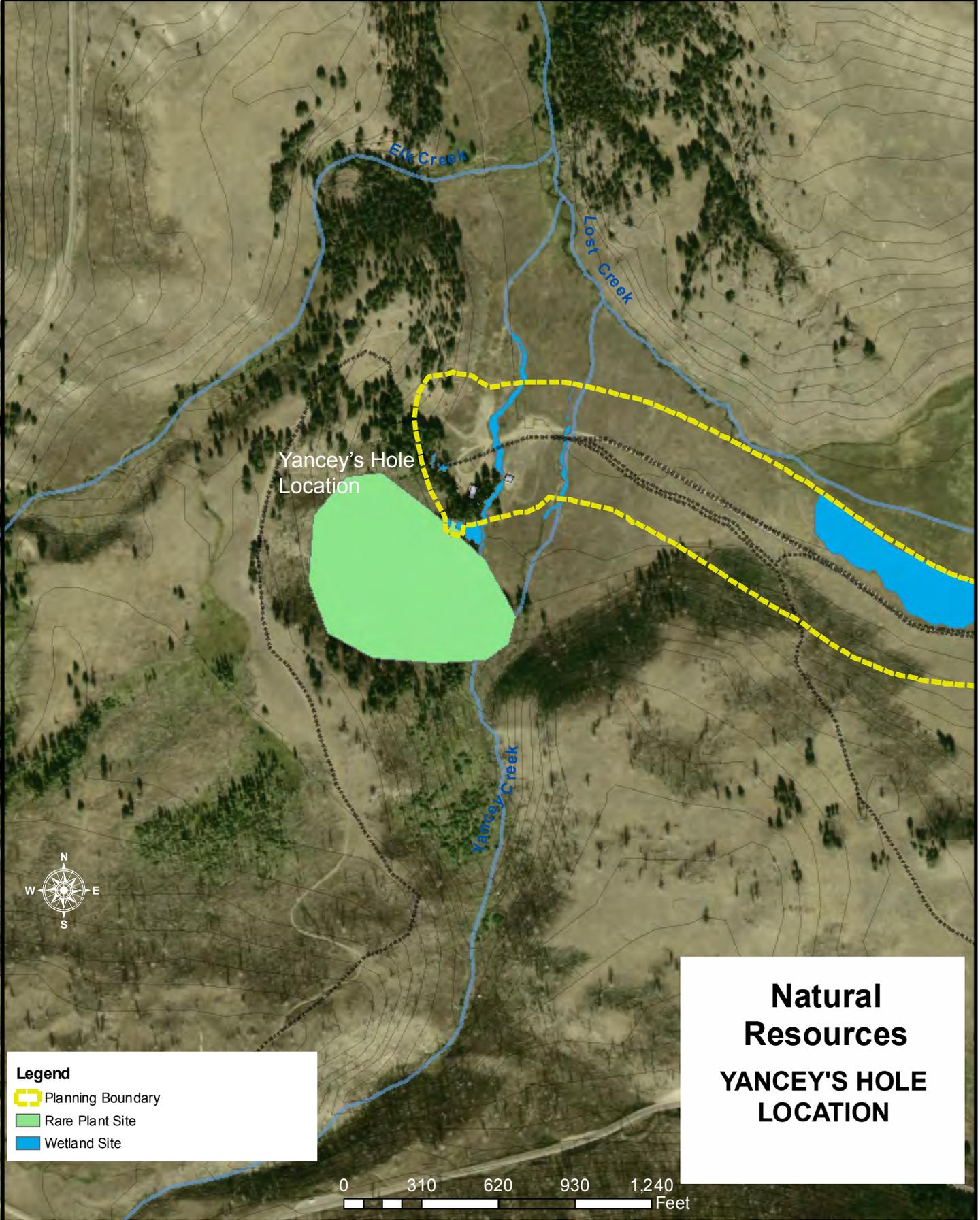


Legend

- Planning Boundary
- Rare Plant Site
- Wetland Site
- Outwash Plain
- Contours

Natural Resources
TOWER/ROOSEVELT LOCATION

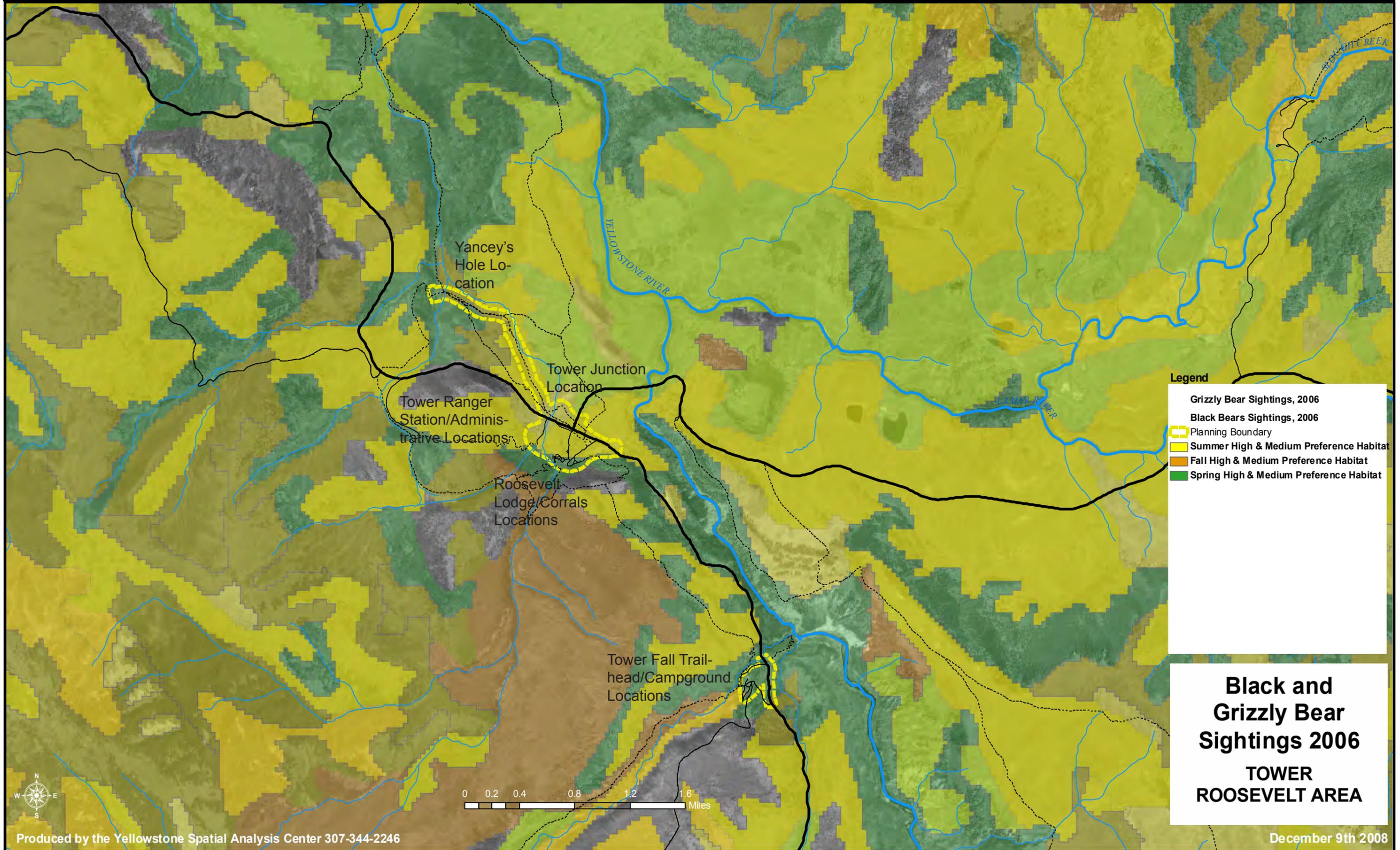


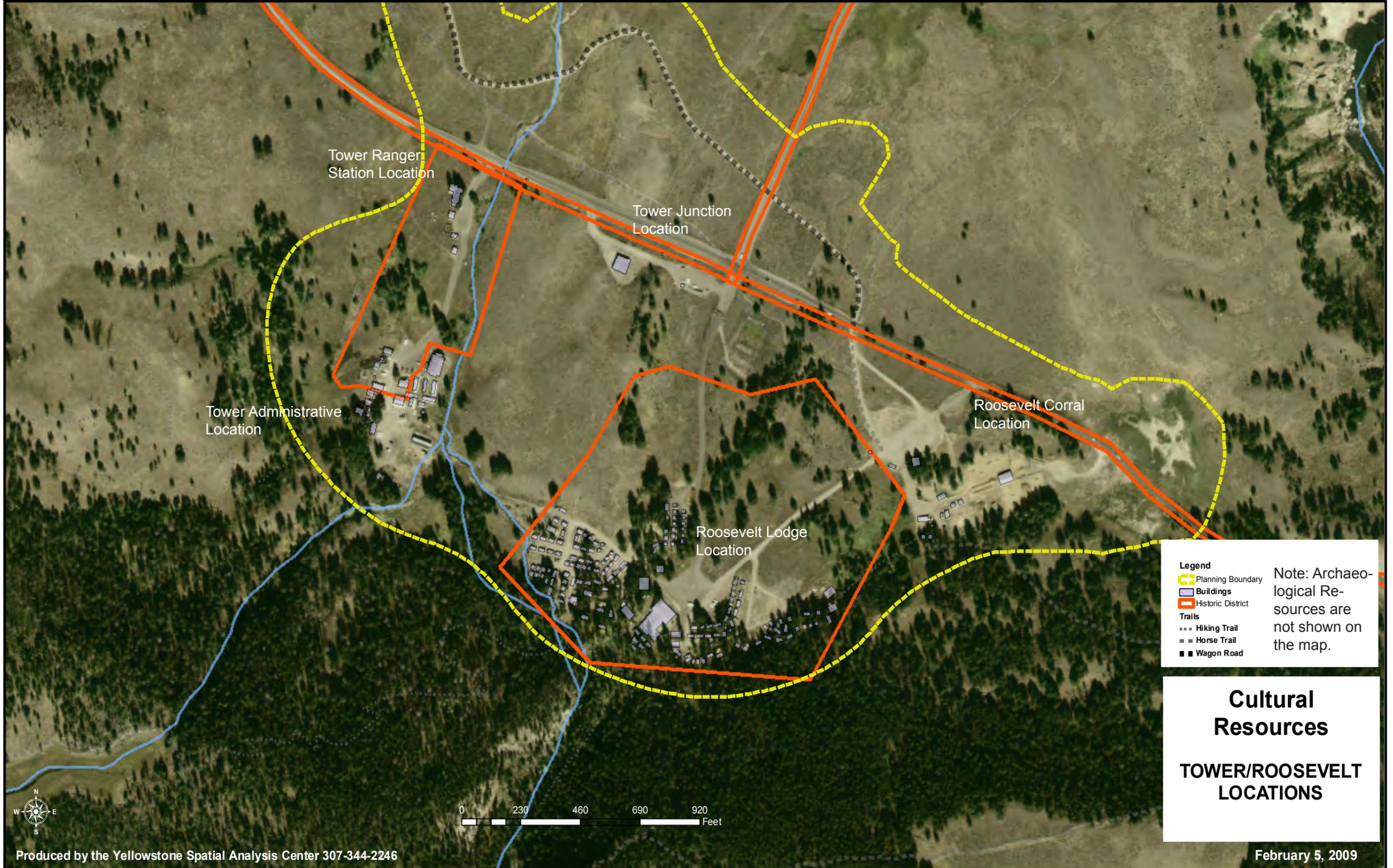


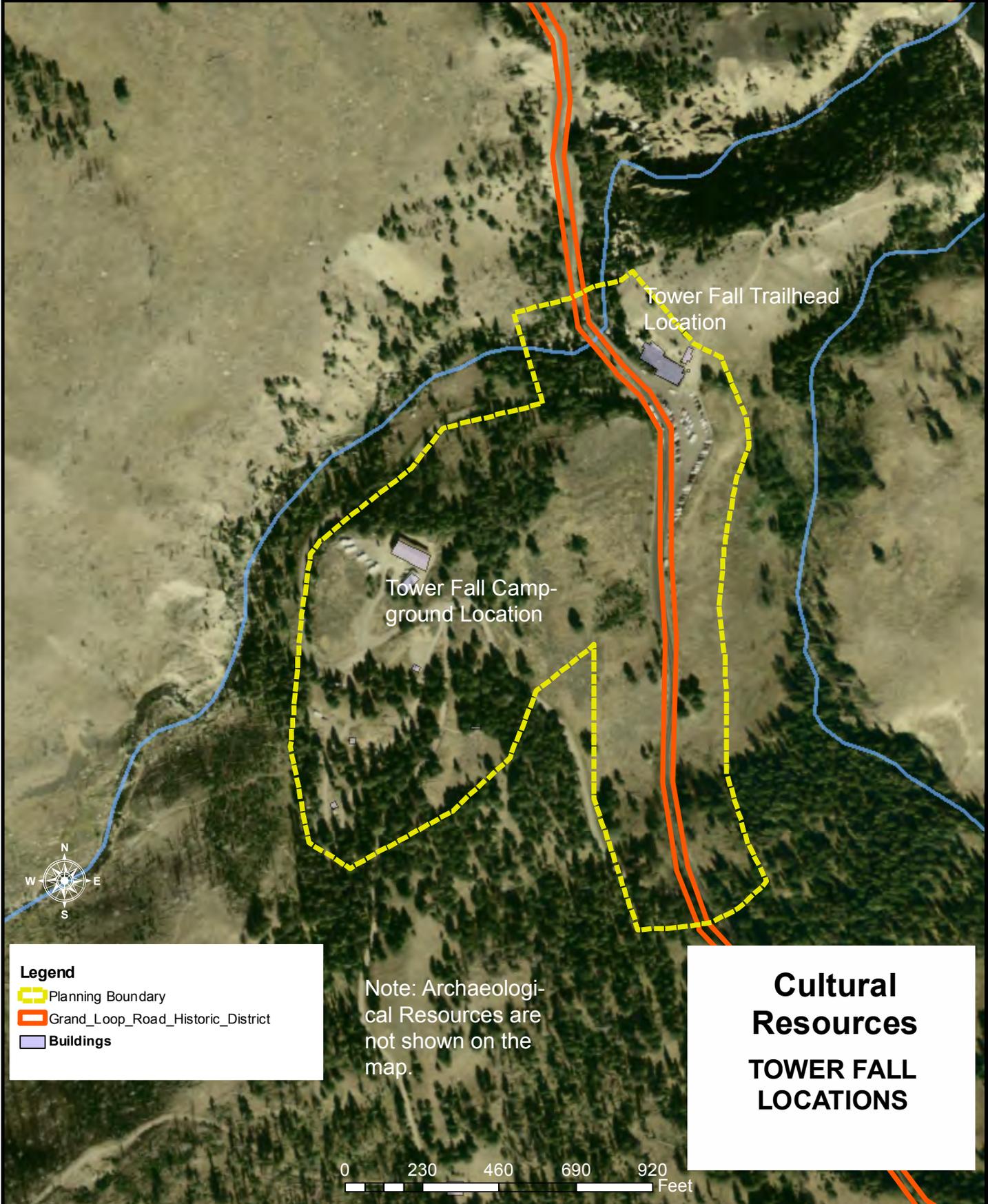
Natural Resources YANCEY'S HOLE LOCATION

- Legend**
- Planning Boundary
 - Rare Plant Site
 - Wetland Site

0 310 620 930 1,240
Feet





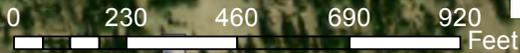


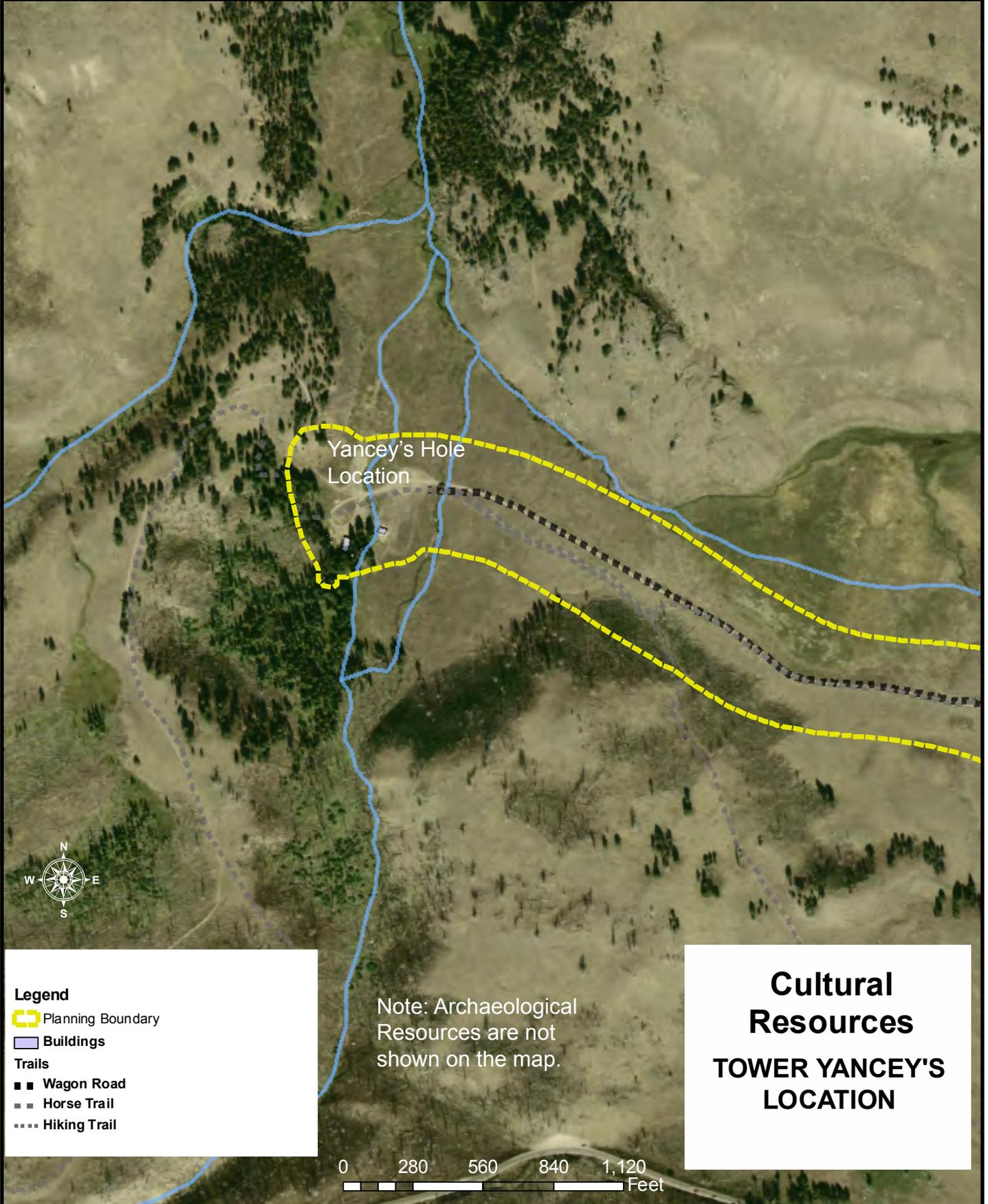
Legend

- Planning Boundary
- Grand Loop Road Historic District
- Buildings

Note: Archaeological Resources are not shown on the map.

Cultural Resources TOWER FALL LOCATIONS





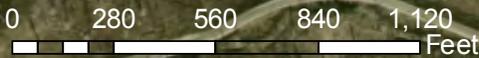
Yancey's Hole
Location

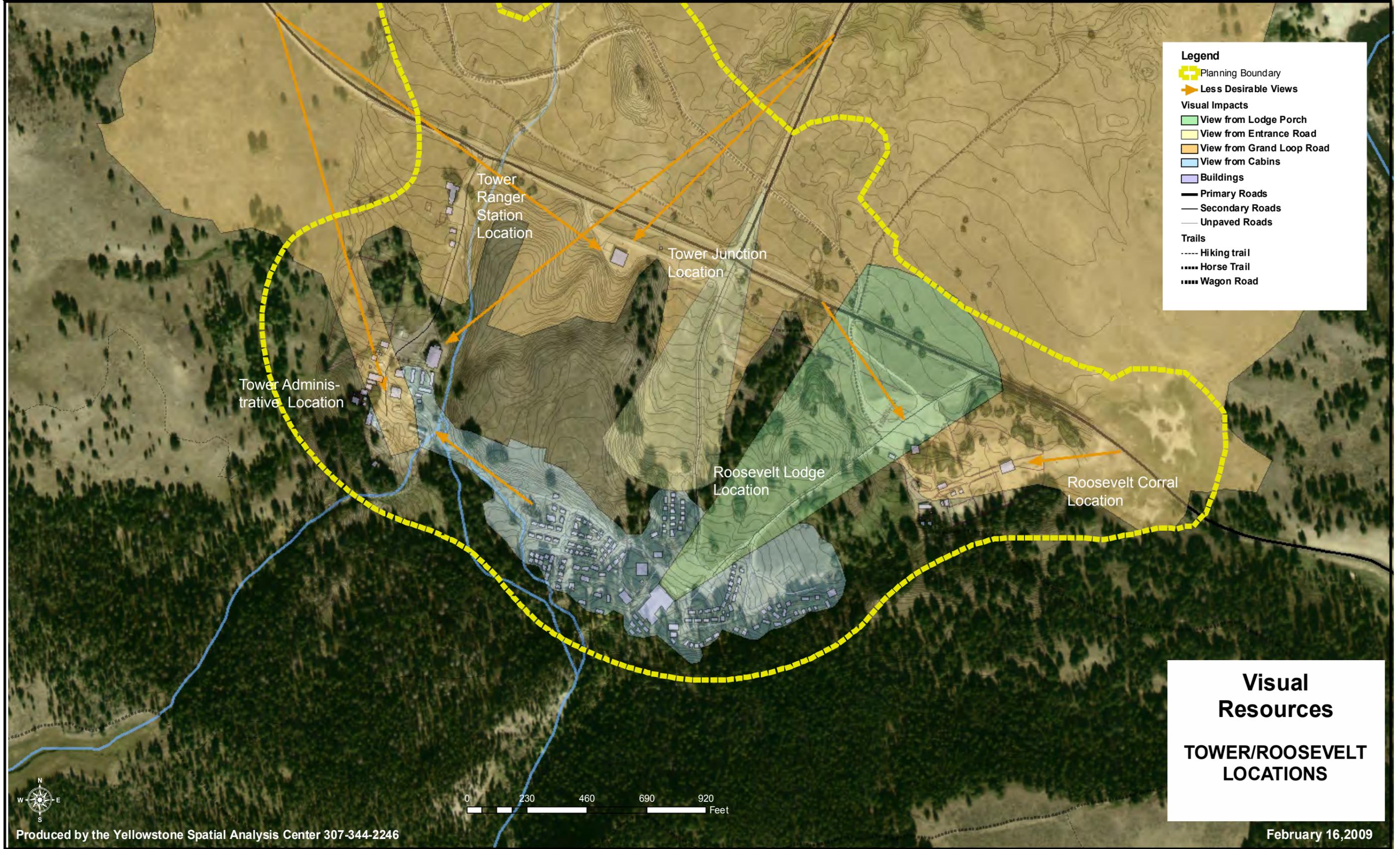
Legend

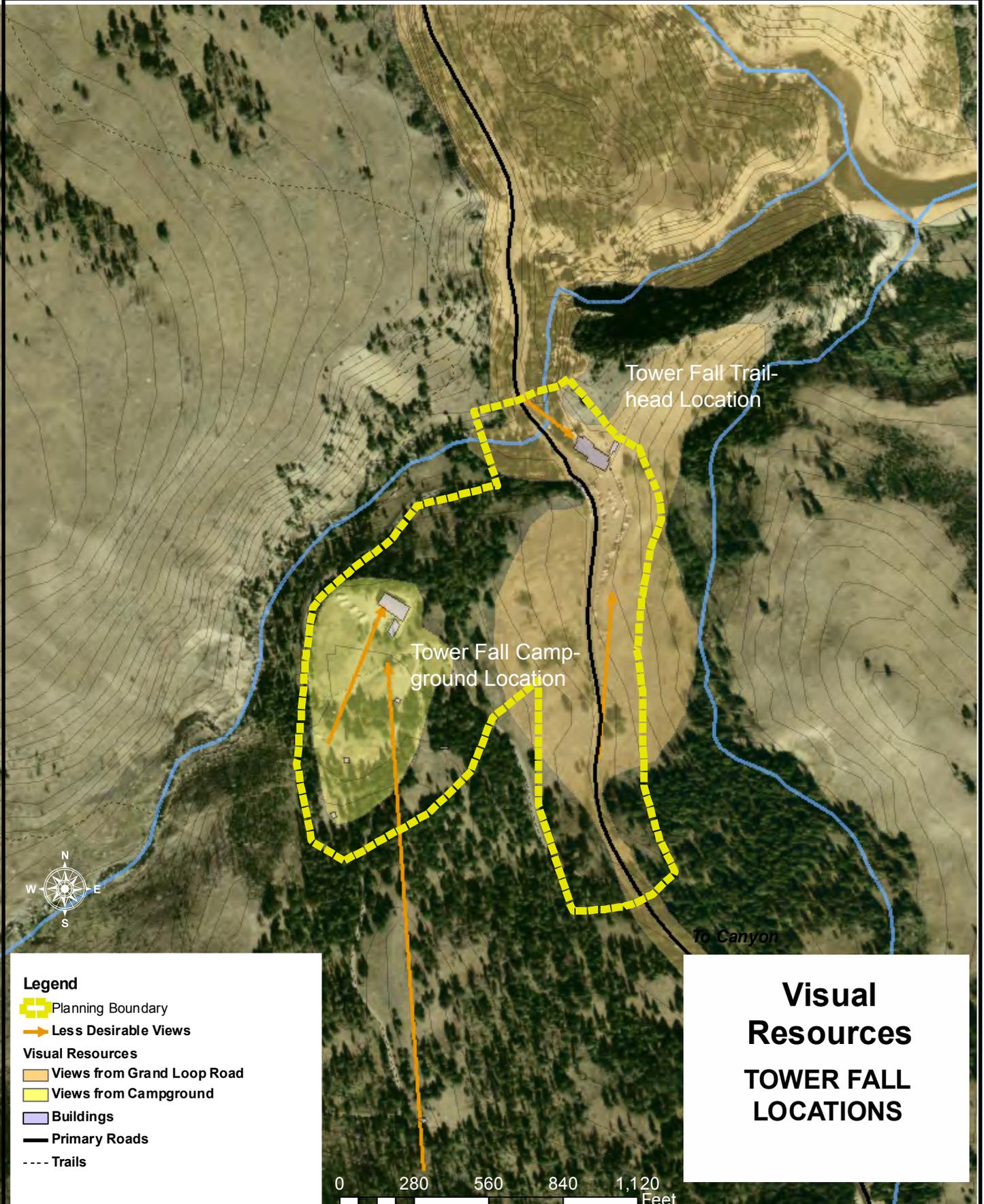
- Planning Boundary
- Buildings
- Trails**
 - Wagon Road
 - Horse Trail
 - Hiking Trail

Note: Archaeological Resources are not shown on the map.

**Cultural Resources
TOWER YANCEY'S
LOCATION**







Tower Fall Trail-head Location

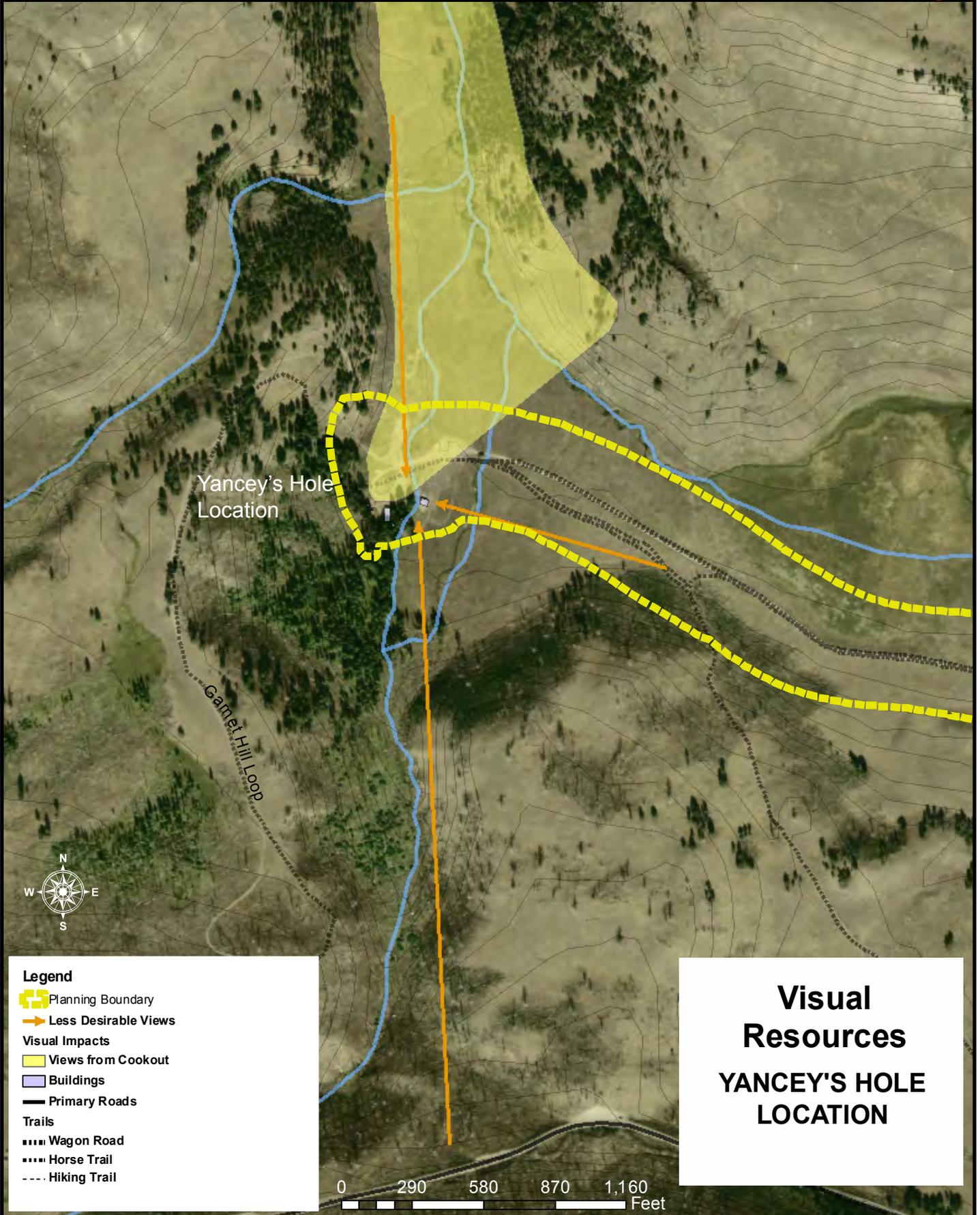
Tower Fall Camp-ground Location

To Canyon

- Legend**
- Planning Boundary
 - Less Desirable Views
 - Visual Resources**
 - Views from Grand Loop Road
 - Views from Campground
 - Buildings
 - Primary Roads
 - Trails

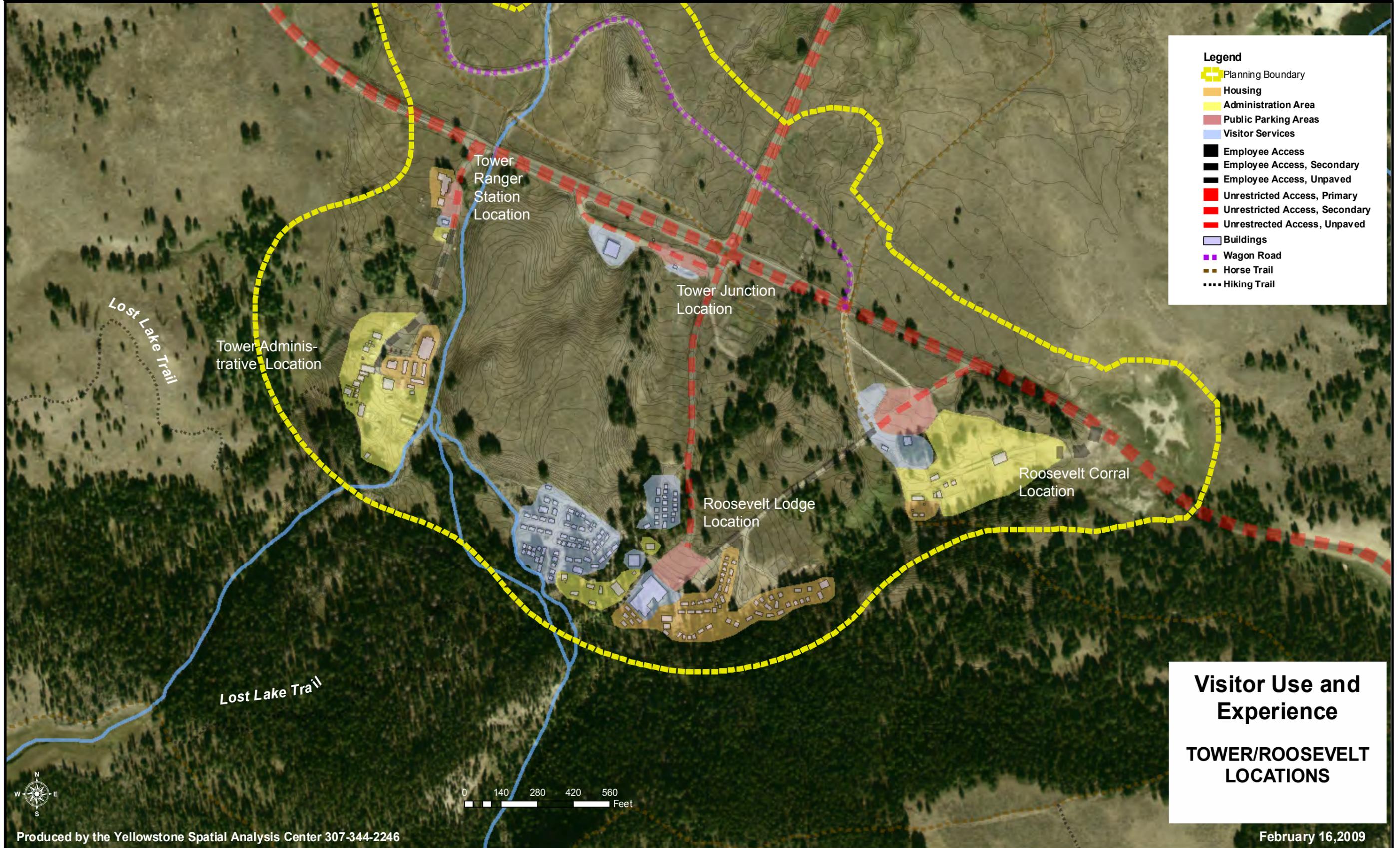
Visual Resources
TOWER FALL LOCATIONS

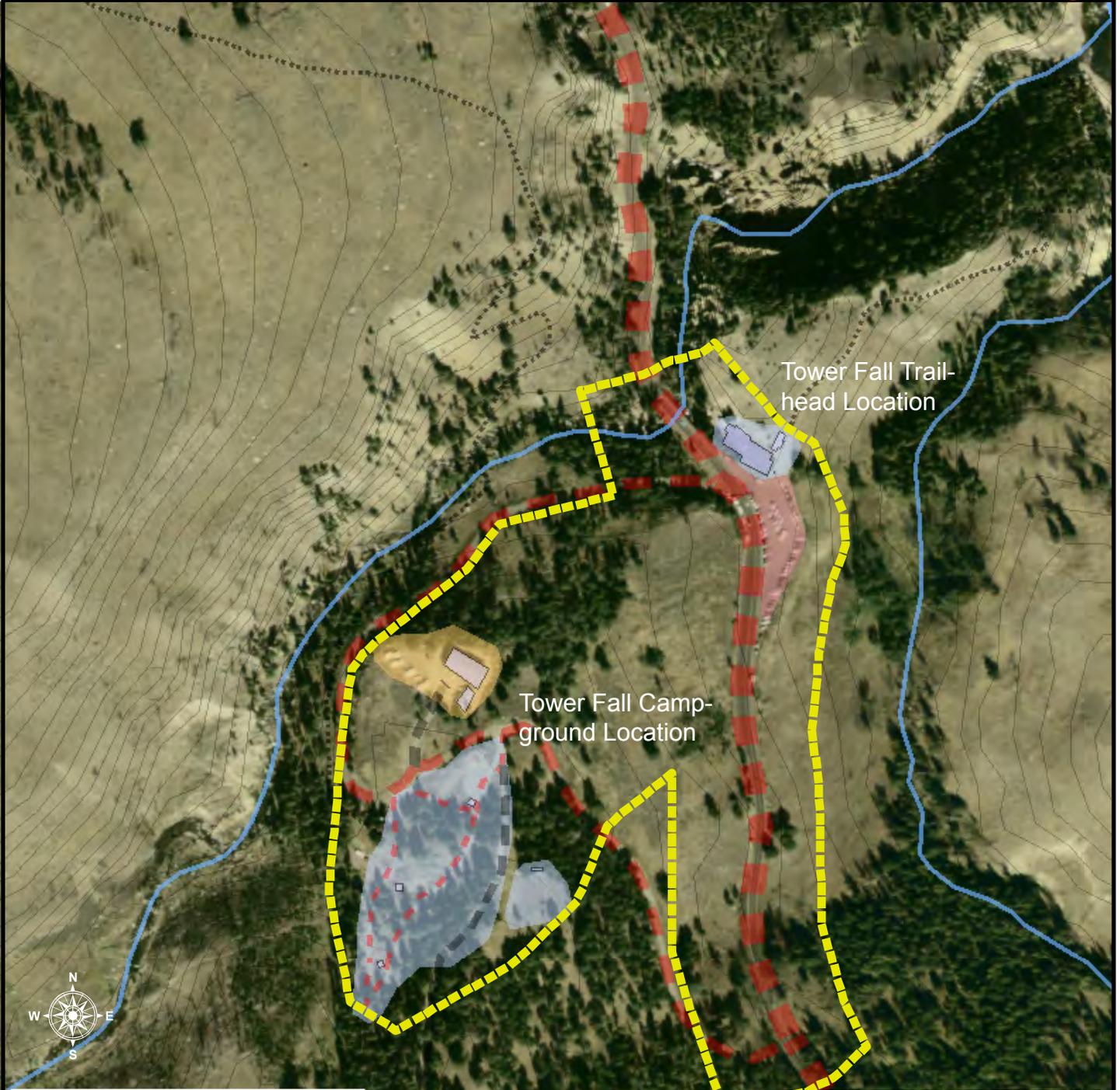
0 280 560 840 1,120 Feet



Visual Resources YANCEY'S HOLE LOCATION

- Legend**
- Planning Boundary
 - Less Desirable Views
 - Visual Impacts
 - Views from Cookout
 - Buildings
 - Primary Roads
 - Trails
 - Wagon Road
 - Horse Trail
 - Hiking Trail

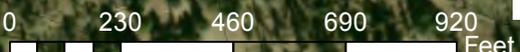


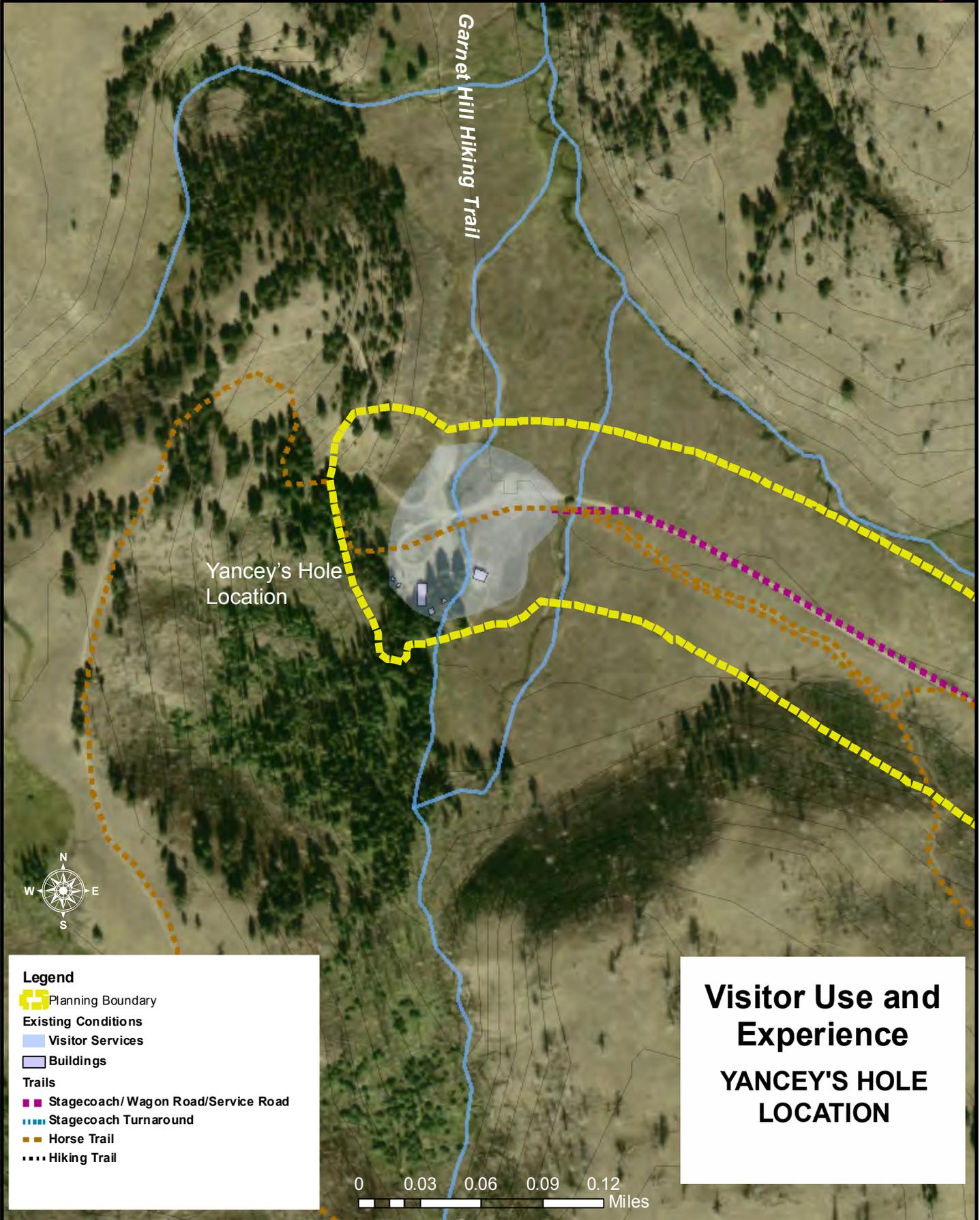


Legend

- Planning Boundary
- Housing
- Parking
- Visitor Services
- Primary Roads, Unrestricted Access
- Secondary Roads, Employee Access
- Secondary Roads, Unrestricted Access
- Unpaved Roads, Employee Access
- Unpaved Roads, Unrestricted Access
- Buildings
- Hiking Trail

**Visitor Use and Experience
TOWER FALL
LOCATIONS**





Legend

Planning Boundary

Existing Conditions

Visitor Services

Buildings

Trails

Stagecoach/ Wagon Road/Service Road

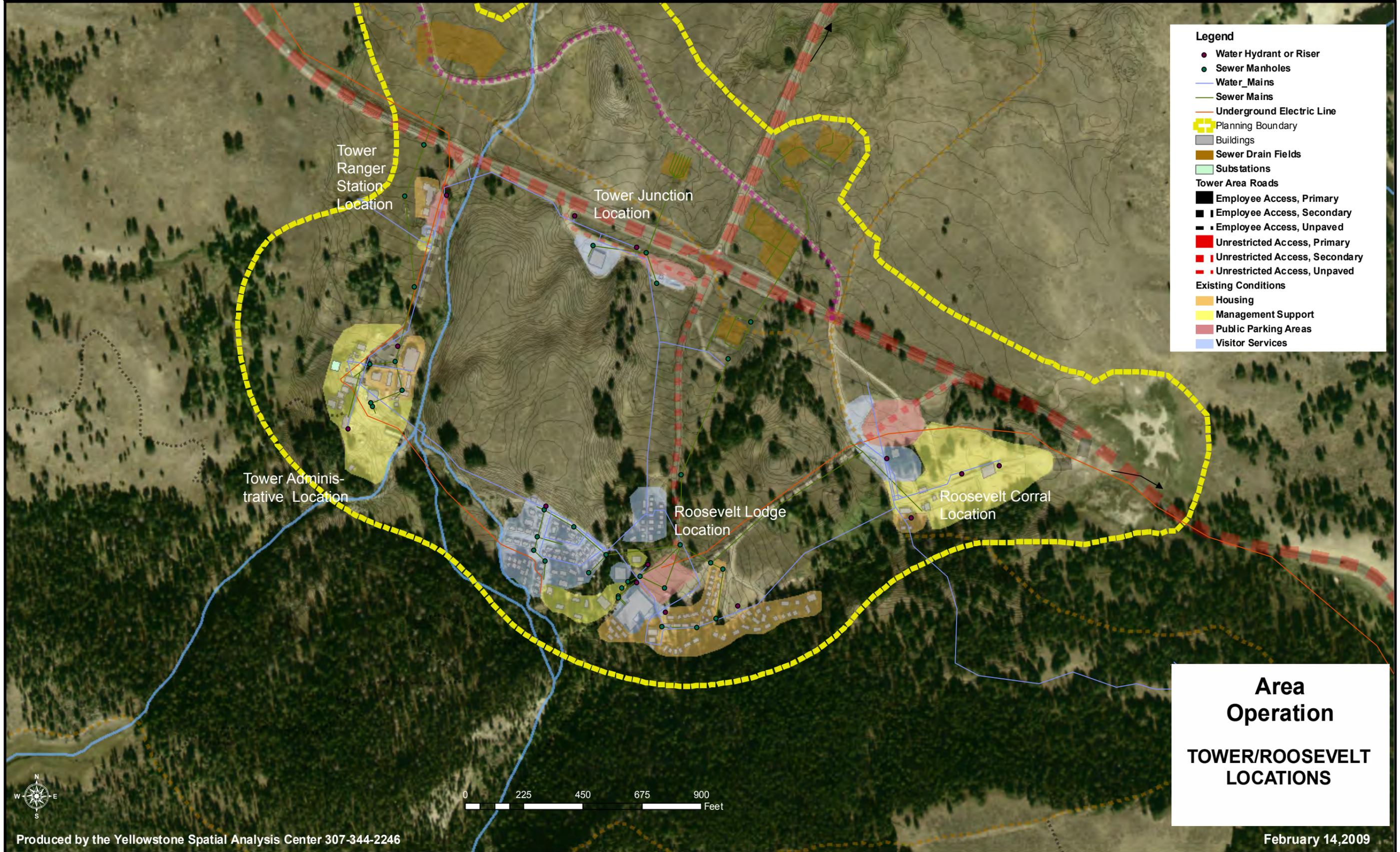
Stagecoach Turnaround

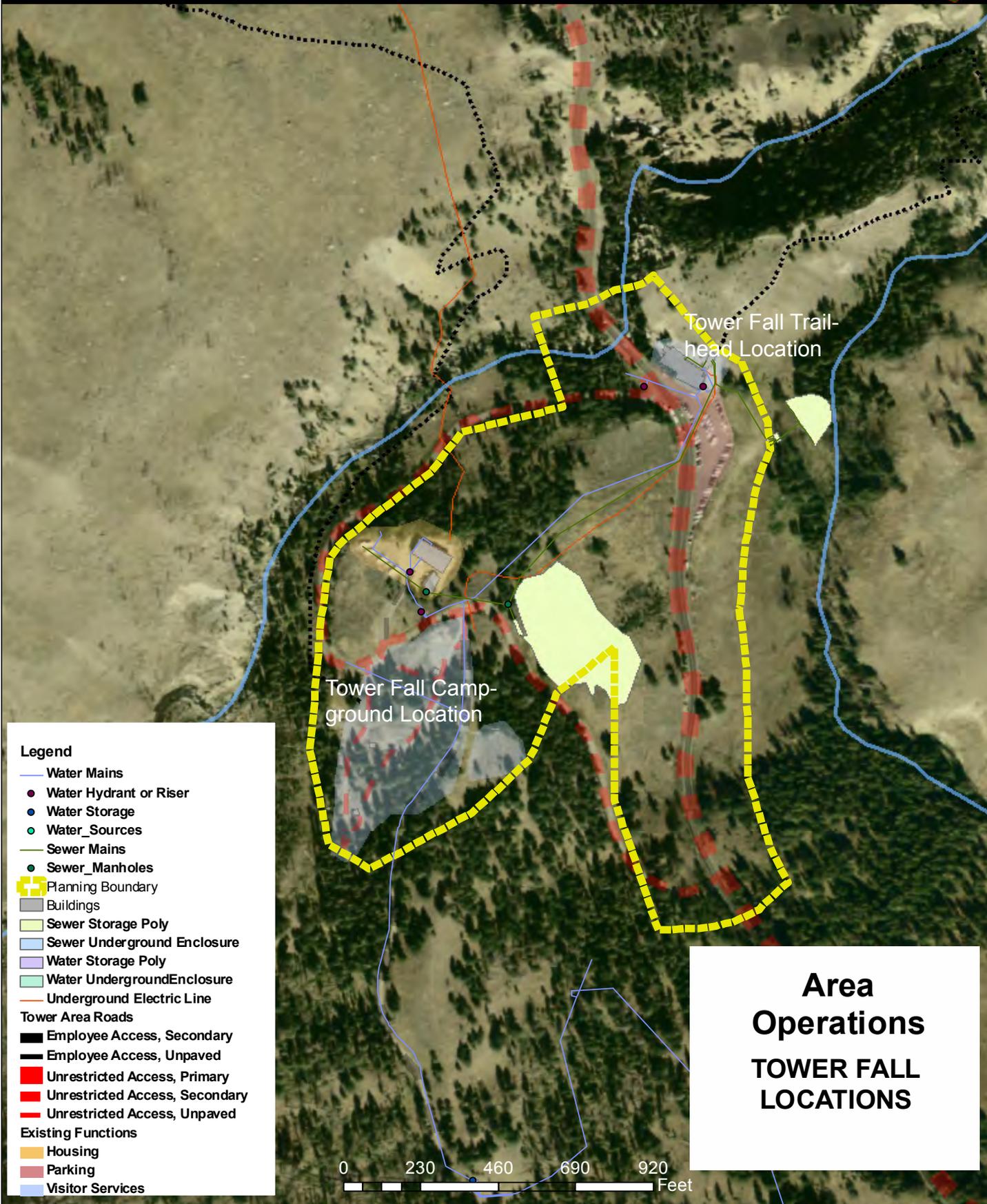
Horse Trail

Hiking Trail

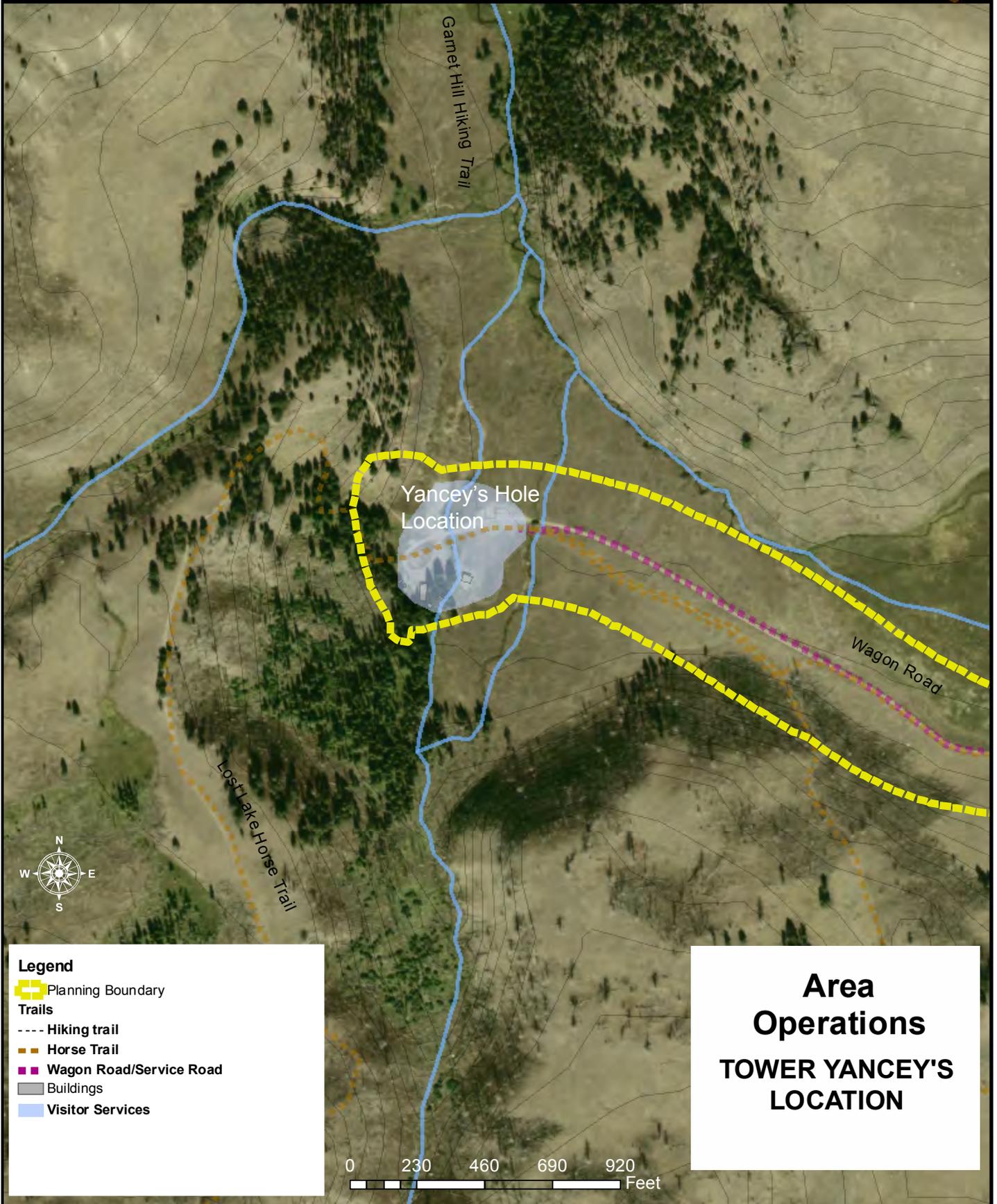
0 0.03 0.06 0.09 0.12
Miles

**Visitor Use and Experience
YANCEY'S HOLE
LOCATION**





**Area
Operations
TOWER FALL
LOCATIONS**



Legend

- Planning Boundary
- Trails**
- Hiking trail
- Horse Trail
- Wagon Road/Service Road
- Buildings
- Visitor Services

**Area
Operations
TOWER YANCEY'S
LOCATION**

Appendix C

PHOTOS OF THE TOWER-ROOSEVELT AREA

Appendix C

PHOTOGRAPHS OF TOWER-ROOSEVELT AREA



View from Tower Ranger Station (foreground in trees) toward the east (gas station in middle ground)



View of corrals (foreground) toward the southwest (Tower Junction and gas station at right)



View of corral (left foreground) toward the south (Roosevelt Lodge toward back)



View of Roosevelt Lodge and eastern cluster of cabins



Historic image of Roosevelt Lodge before parking lot was constructed in front of it.



View of Yancey's Hole at terminus of wagon road



View of Yancey's Hole development



Tower Fall Trailhead Store and parking lot