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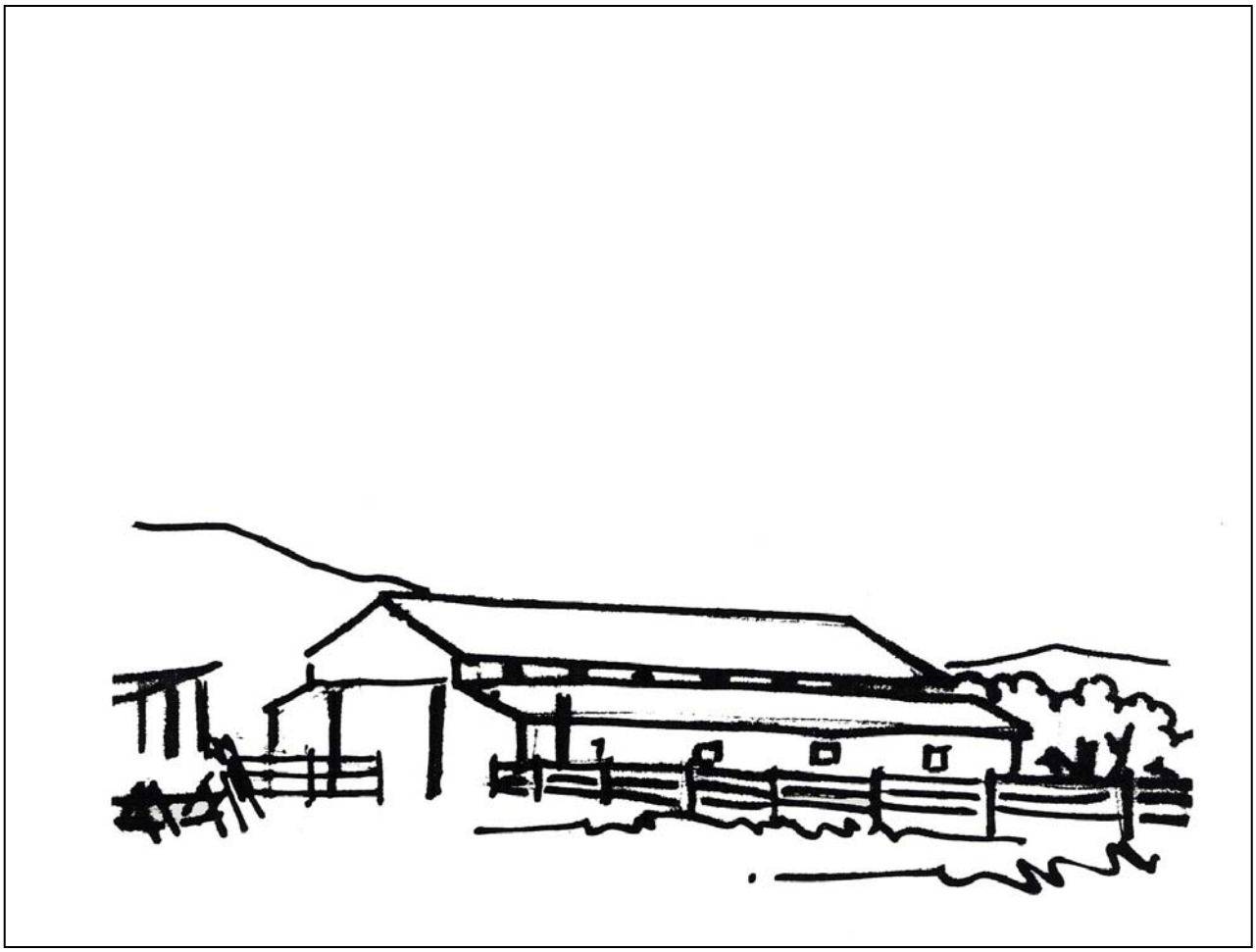
Yellowstone National Park
Montana

Stephens Creek Administrative Area Environmental Assessment/Assessment of Effect

June 2006



Environmental Assessment
Assessment of Effect

Stephens Creek Administrative Area

YELLOWSTONE

National Park • Montana

SUMMARY

Issues at the Stephens Creek Administrative Area (SCAA) include sprawl, visual impacts, exotic vegetation, ungulate habitat, and inadequate infrastructure to support the park's corral operations. With the addition of functions (office, leather shop, equipment and grain storage) previously housed in a building in Mammoth Hot Springs to SCAA and the growth of the bison program, corral operations at SCAA has become a year-round activity and part of the sprawl and visual impacts. Two alternatives were considered: no action and the preferred alternative to develop a management plan to address the above issues. Under the No Action alternative, the SCAA would not be under a management plan. The administrative activities in this area would continue and may gradually expand, additional functions may be added, management of exotic vegetation would occur irregularly, visual impacts would not be addressed, and corral operations would not have adequate and appropriate infrastructure. While the SCAA includes the bison capture facility and corrals, the bison operation is not addressed in this environmental assessment except to provide information. The bison operation will continue to be managed under previous environmental compliance documents. Under the Preferred Alternative, the existing functions of the SCAA would continue. The administrative use of this area would be capped at the present 43 acre footprint, exotic vegetation would be more actively managed, visual impacts would be addressed, and a barn could be constructed within the current footprint for the park stock operations. A barn would improve the health and safety of staff and livestock and the efficiency of the corral operations. Alternative locations within and outside Yellowstone National Park for the administrative activities at the SCAA were considered but dismissed for practical reasons.

Note to Reviewers and Respondents

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or post comments online at http://parkplanning.nps.gov/. This environmental assessment will be on public review for 30 days. It is the practice of the NPS to make all comments, including names and addresses of respondents who provide that information, available for public review following the conclusion of the environmental assessment process. Individuals may request that the NPS withhold their name and/or address from public disclosure. If you wish to do this, you must state this prominently at the beginning of your comment. Commentators using the website can make such a request by checking the box "keep my contact information private." NPS will honor such requests to the extent allowable by law, but you should be aware that NPS may still be required to disclose your name and address pursuant to the Freedom of Information Act. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety."

Comments are due by July 14, 2006 and should be addressed to:

Planning, Compliance, and Landscape Architecture Office
Stephens Creek Management Plan
P.O. Box 168
Yellowstone National Park, WY 82190

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INTRODUCTION

By Act of Congress on March 1, 1872, Yellowstone National Park was "dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people" and "for the preservation from injury or spoliation, of all timber, mineral deposits, natural curiosities, or wonders…and their retention in their natural condition." The park is managed to conserve, perpetuate, and portray as a composite whole: the indigenous aquatic and terrestrial fauna and flora, the geology, and scenic landscape.

Preserved within Yellowstone National Park (YNP) are Old Faithful and the majority of the world's geysers and hot springs. An outstanding mountain wildland with clean water and air, Yellowstone is the home of grizzly bears, wolves, and free-ranging herds of bison and elk. Centuries-old archeological sites, historic buildings that reflect the unique heritage of America's first national park, sites and locations of importance to modern Indians, and cultural landscapes are also protected. Yellowstone National Park serves as a model and inspiration for national parks throughout the world. The National Park Service (NPS) preserves, unimpaired, these and other natural and cultural resources and values for the enjoyment, education, and inspiration of this and future generations.

In 1932, Executive Order No. 2013 (October 20, 1932-47 Stat. 2357) authorized the president of the United States to add to YNP, by Executive Proclamation, certain lands in the State of Montana referred to therein:

> "…an act to make additions to the Absaroka and Gallatin National Forests and the Yellowstone National Park, and to improve and extend the winter feed facilities of the elk, antelope, and other game animals of Yellowstone National Park and the adjacent land, and for other purposes, …..Whereas it appears that the public interest would be promoted by including such lands within said park for the preservation and protection of the wild game therein and for administrative purposes."

These "certain lands" added to YNP are west and north of Gardiner, Montana, largely east of Reese Creek, and south of the Yellowstone River. The Euroamerican history of this area is complex and begins with multiple small homesteads, some in existence prior to the creation of the park. A private corporation, the Game Preservation Company, bought up homesteads during the 1920s and '30s and operated the Game Ranch. Previous agricultural fields were irrigated using water from springs on Sepulcher Mountain, and from Reese and Stephens Creeks to raise hay to feed elk and antelope in the winter. In 1932, these lands were transferred to YNP. The Rife House was moved to its present location north of Stephens Creek and southeast of the Stephens Creek area from Reese Creek and was used as the headquarters for the Game Ranch, Inc. from 1933 to 1942.

The Stephens Creek area was subsequently used by YNP for various administrative purposes including the park nursery, corral operations, equipment storage area, log building construction, law enforcement firing range, and bison capture facility. These adjacent functions are referred to as the Stephens Creek Administrative Area (SCAA). The Rife House, southeast of the SCAA is now used for park employee housing and is still known by its original name.

Two proposals are evaluated in this environmental assessment (EA). The No Action alternative would have all existing functions continue independently. Other administrative functions may be added through time. The SCAA may be expected to gradually and incrementally expand and the issues concerning this development would not be addressed without specific guidance. The Preferred Alternative would manage the administrative development at Stephens Creek. Existing functions would continue. Sprawl, visual impacts, and exotic vegetation would be actively managed. The various activities carried out at SCAA would have specific identified work areas and this EA would serve as the management plan for them. Additional trees and shrubs would be planted and watered with existing vegetation so that they would aid in screening the area from U.S. Highway 89 and the Old Yellowstone Trail, both east of the SCAA. A barn would be constructed for corral operations when funds become available. Abandoned and unneeded equipment, vehicles, and trailers would be sold. Safety measures would be implemented for the law enforcement firing ranges.

The area included in this EA covers the SCAA NPS functions. The Rife House, its outbuildings and yard is discussed but not addressed in this plan. The bison capture facility lies within the SCAA; however, it is not addressed in this plan because the facility falls under an existing environmental plan (NPS 2000).

HISTORY

The history of Stephens Creek is part of the larger development north of Gardiner, Montana. A 7,600 acre parcel along the Yellowstone River and bounded by Reese and Electric Creeks on the northwest and west of Gardiner, Montana, was not part of the original 1872 YNP but was added to the park in 1932. The small homesteads between Gardiner and east of Reese Creek had many owners and a few of these transfers are highlighted below.

In 1871, the Henderson brothers settled a ranch southeast of the point where the SCAA access road leaves the county road today. In 1877, this was the general location of a gun battle between the Hendersons, their ranch hands and neighbors, and a group of Nez Perce warriors intent on stealing horses. The ranch house was burned down, but the Indians with the horses were driven off into the park by cavalry led by Lt. Gustavus Doane. The ranch stayed in the Henderson family until it was purchased in 1879-82 by park assistant superintendent Clarence Stephens from which Stephens Creek derives its name.

Another homesteader who lent his name to a creek was George James Reese. His homestead filed in 1875 was described as extending south from Reese Creek for half a mile (Whittlesey n.d.). He built several structures, had a garden and livestock, and raised a few acres of oats and hay. In 1883, Reese sold a right-of-way to the Northern Pacific Railroad which was developing a line between Livingston and the park. The tracks stopped at the town of Cinnabar, northwest of the SCAA road junction with the county road. Cinnabar blossomed with the coming of the railroad but died rapidly when the tracks were extended to Gardiner in 1902. Nothing of Cinnabar remains standing.

The Reese land went through multiple owners until part was obtained by Ernest A. Rife in 1923. Rife then conveyed the property to Joseph Stermitz in 1924. Joseph transferred the land to Anton Stermitz in 1932 and this was taken by the federal government through eminent domain in 1939-40 (Whittlesey n.d.).

Hugo Hoppe who purchased the Henderson Ranch from Stephens claimed a homestead just south of the Cinnabar townsite in 1883. He had numerous interests in coal, mining, farming, and had multiple holdings. Hugo Hoppe died in 1895 but his five sons stayed in the area. Walter Hoppe (Hugo's son) bought the Cinnabar townsite in 1908 and maintained a ranch at the northern foot of the mountains. Historic photographs show the Hoppe homestead buildings between the Rife House and the SCAA.

During the early 20th century, the state of Montana had a long fall hunting season and great numbers of deer, elk, and antelope were shot as they came out of the park onto their traditional winter range. Park superintendent Horace Albright worried that unregulated hunting combined with harsh winters would eliminate the herds. A government report recommended acquisition by the federal government of the many small tracts of private land between Gardiner and Yankee Jim Canyon. The Game Preservation Company, a private group of game conservationists, began to purchase land. Walter Hoppe sold a thousand acres to the company in 1925 but stayed on at his farmhouse and barn until 1931. That land became known as the Game Ranch and was plowed, seeded, and irrigated to raise hay to feed to elk in the winter. Game Ranch management removed the Hoppe buildings, added the Rife House (1933), and built a barn (HS-0100).

A pipeline brought water for domestic use, irrigation, and the nursery from Wilson Springs on Sepulcher Mountain. This spring development collects water in a spring box and water flows to a small buried concrete tank. When water is not being used, it overflows into a stream that runs into the adjacent wetlands and into a small historic reservoir downstream from Wilson springs and north of the Rife House.

In 1935, a plant nursery was added to the Game Ranch. The Civilian Conservation Corps (CCC) worked on the nursery and many of the plantings for park developed areas, such as Mammoth Hot Springs and the Mammoth Campground, came from the nursery. The nursery was abandoned in 1942, but the nursery perimeter fencing was left in place. Park management allowed park employees to use the area for "victory gardens" during the war years and informal gardens were continued into the 1980s. The Game Ranch was formally transferred to the park in 1932 becoming the Boundary Lands Addition (BLA).

The park ceased irrigating the hay meadows sometime during the 1940s and 1950s, presumably due to changes in game management philosophy. Artificial feeding of elk and bison was no longer considered to be appropriate.

Sometime after 1962, the park horse herd was transferred to the Game Ranch from the Lamar Buffalo Ranch and the extant nursery perimeter fence became the corral fencing. New fencing was added inside the nursery perimeter fence for different-sized paddock areas. The Game Ranch barn (HS-0100) was moved to its present location in 1976-78 and the cabin (HS-0101) was moved from the Lamar Buffalo Ranch to its present location in 1993-94 to support the horse operation. Now, Historic Structure (HS)-0100 is commonly referred to as the Stephens Creek animal health facility and leather shop and HS-0101 functions as the office for corral operations.

In 1987, the park re-established a small nursery operation beside the horse operation within the historic nursery perimeter fence. Currently, plant materials are collected from specific park areas by park staff and propagated in the Stephens Creek nursery.

Early on, water from the Wilson Springs and Stephens Creek was used for the nursery and to irrigate the open area between Stephens Creek and the Rife House over to the current corral operations and towards the Yellowstone River. Water came through ditches from Stephens Creek until about 1984-86 when the head gate was removed. The casual use of the old nursery for private gardens continued through the 1980s. Recently, there were occasional water shortages due to leaks and breaks in the old pipe from the historic spring development high on the Sepulcher's southern hillside. In 1980, a well was drilled in the Stephens Creek area but became contaminated with iron bacteria and was abandoned. In about 1994, the old pipeline was replaced and the new pipe supplies water to the Rife House and to the SCAA.

PURPOSE AND NEED

The SCAA is located in the northern portion of YNP near Gardiner, Montana in the area of the 1932 park annex called the BLA (Figs. 1 and 2). The purpose of this plan is to address the current administrative functions in the SCAA, operational deficiencies in the corral operation, law enforcement shooting range, excess and seasonal equipment and trailer storage, native plant nursery, log building construction site, associated sprawl, and natural and cultural resources. The preferred alternative would develop a management plan to address the many uses this area now serves. The Rife House, the old Game Ranch Headquarters, is approximately a half mile southeast of the SCAA and currently serves as a NPS residence. While this structure is part of the historic setting of the SCAA, no management actions are being planned for the Rife House.

The NPS administrative functions have occurred at Stephens Creek since the land was transferred to the park in 1932. The SCAA, not including the area around the Rife House, currently encompasses 43 acres. Current NPS administrative activities in the SCAA include the corral operations, nursery, excess and seasonal equipment and trailer storage, law enforcement firing range, and log structure construction site. The bison capture facility is adjacent to the SCAA. Outside of the SCAA, there is a historic house (the Rife House) with garage that serves as employee housing. Some functions located at SCAA are year-round activities. Other functions, such as vehicle and equipment storage, native plant nursery, and log structure construction, are seasonal or intermittent as winter conditions in the interior make these functions difficult or too expensive to carry out, or because seasonal storage is not available elsewhere. Existing infrastructure relates to the nursery, corral operation, shooting range, and bison operation.

Limited water has been available for staff, livestock, captured bison, maintenance of the nursery, drip irrigation of select cover trees and shrubs, and the Rife House. Currently there is no water meter or water disinfectant system for these uses.

EXISTING CONDITIONS

SCAA issues include sprawl, visual impacts, wildlife including pronghorn habitat, and exotic vegetation. Each is summarized below:

Sprawl: The Stephens Creek development has no real boundaries and has incrementally grown in size in recent years because of added NPS administrative functions occurring in this area. The accumulation of unused vehicles, trailers, equipment, and other storage has been increasing without any particular organization. In addition to storage of seasonally-used equipment and vehicles, this area is used to store a wide range of equipment and house trailers no longer in use or needed elsewhere. The bison capture facility (constructed in 1989) is another example of the increase in the size of this area. Other recent examples include the placement of numerous travel trailers at Stephens Creek and the addition of a log construction/storage yard.

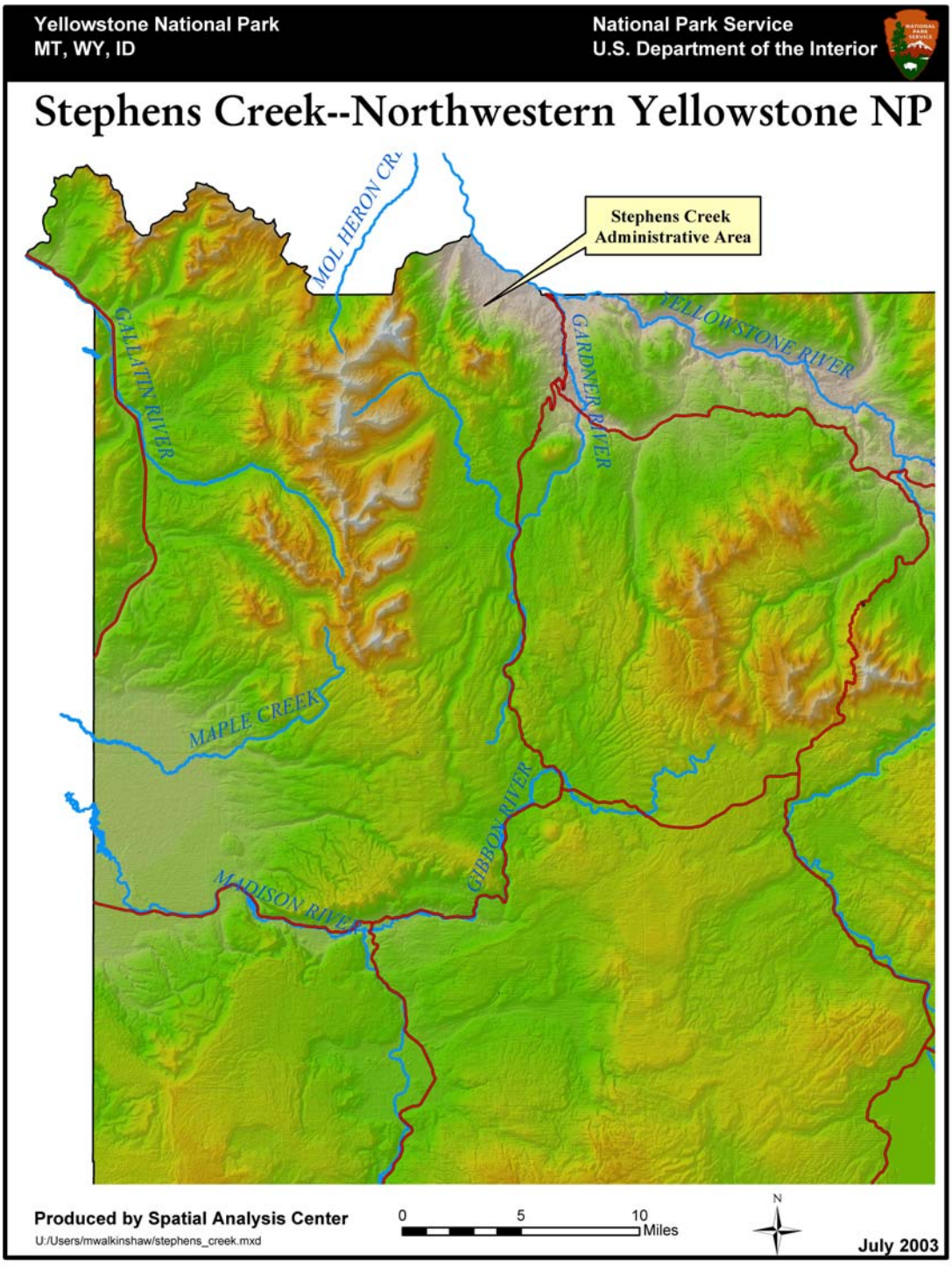

Figure 1. Location Map—Stephens Creek, Yellowstone National Park

Figure 2. Air Photo Stephens Creek Administrative Area, 2003.

Visual Impacts: The SCAA has visual impacts upon the landscape, especially when viewed from U.S. Highway 89 and the Old Yellowstone Trail. Many of the vehicles, trailers, and other equipment at SCAA are bright colors such as orange, yellow, and white, and attract the eye from Highway 89 to an area that otherwise might appear to be a natural scene. This is true during at least six months of the year when seasonally-used trailers, vehicles, and equipment are stored at SCAA.

Wildlife Habitat: The BLA (from Gardiner to Reese Creek) is considered important winter habitat for park's wildlife including a sensitive pronghorn population. Pronghorn are considered a native species of special concern in YNP's Strategic Plan. This plan identified a strategic goal that Yellowstone's native species of concern have an improved or stable status. The quantity and quality of this winter range is considered critical for the long term success of this pronghorn population. It is important to carefully manage this area to confine development and maintain this winter range.

Exotic Vegetation: Non-native vegetation is widespread within the BLA, including Stephens Creek. While non-native plants can not be eliminated entirely, it is important to manage this

area to reduce the invasion of exotic plants and limit the risk of introduction of exotic weeds to other areas in YNP.

The following is a description of each NPS administrative function at SCAA.

Corral Operations: Approximately ninety percent of Yellowstone National Park is recommended wilderness and is managed as wilderness. Stock is essential for managing this area. Access to the wilderness is primarily by trail with horses and mules needed for trail maintenance, search and rescue, resource management, law enforcement patrols, research, and concessions management.

The SCAA is now the park headquarters for corral operations (horses and mules) and it needs adequate facilities to corral the animals, for training, and to store tack, wagons, trailers of various sizes, grain and hay storage, shoeing, and administrative activities. Space for tack and equipment storage and repair is inadequate. Grain and hay (large and small bales) need better storage to keep rodents out and reduce nutrient deterioration from ultraviolet and moisture exposure. Activities such as horse shoeing, training new staff and stock, and caring for sick and injured animals, take place outside in all types of weather. The absence of adequate stock facilities hampers the operational efficiency and impacts the health and safety of the corral operations staff and animals. Horse training for park staff is scheduled annually in June at the beginning of the summer season when the weather is typically either very hot or wet. These conditions reduce the effectiveness of the needed training. The sink in the animal health area (the only one in the SCAA) does not meet current health standards for separation of human and animal food and medicine.

SCAA is the staging area for horses and mules and all their equipment used throughout the park. Infrastructure for corral operations includes electricity, water, two small buildings (HS-0100 and HS-0101) (Fig. 3), a decrepit cabin (No. 3) (Fig. 4), three metal storage units, a semi-trailer, a small shed and isolation corral for sick/injured animals, a hay shed, fencing around hay storage and corrals, and a vault toilet. The latter serves the entire SCAA.

The office for this operation is located in a small cabin (HS-0101). The Stephens Creek barn (HS-0100) originally was the Game Ranch barn near the Rife House. Historic Structure-0100 was next used as a fire cache, and then, after it was moved to its present location, was used as a shoeing barn. Now, the building is used for tack/saddle repair, equipment storage, storage of grain for immediate use, and an animal health area. The animal health area contains bandages, vaccines and other medicine, dental equipment, a refrigerator, hot water heater, and a sink. Waste water from the sink currently drains into the ground beneath the building.

The existing animal health area/leather shop and office (Historic Structures-0100 and-0101) are used year-round facilities and are not insulated (Fig. 3). Heat is provided by wood stoves and by an electric wall heater in the animal health room.

Livestock: Approximately 110 horses and mules are brought to the SCAA from winter pasture and again at the end of the summer season for vaccinations, worming, training, assessment, treatment of various medical conditions, shoeing and trimming, and general care. Although some livestock stay at SCAA year-round, most are distributed throughout the park during the field season and are moved to pasture outside the park for the winter.

There is no interior space for training livestock or park staff nor is there a place to provide health care for the animals or to work on their hooves that is out of the weather. During cold, wet or hot weather, this makes providing needed care more difficult and less efficient with increased safety and health issues for the park staff and stock. Summer shoeing takes place in extreme temperatures. The corrals are dusty in summer, resulting in respiratory illnesses for the stock. Additional trees around corrals would provide shelter and shade for livestock and reduce the dusty conditions.

Corrals and Fencing: Corrals and surrounding fences are aging. The exterior fenced perimeter of the stock corrals and nursery has not changed since its construction in 1933. This fence last had significant repairs in 1958. Annually, animals are injured on the worn wire fence that is in need of replacement. There is also a small isolation corral with a shed for shelter of sick or injured animals. Rangers occasionally confiscate livestock from poachers and the SCAA is the holding facility that provides secure custody for such animals. However, because the health and vaccination condition of these animals is unknown and, due to their legal status, they are kept in a separate corral from NPS stock. It is efficient to have the confiscated animals near the rest of the horse operations as corral operations staff feed and monitor the condition of these animals until they are released to the owners or forfeited to the park.

Figure 3. Stephens Creek Office (HS-0101, left) and Animal Health/Leather Shop (HS-0100, right). Hay shed is behind and to the right of HS-0100.

Horse Equipment: Until 2002, tack and equipment were stored in the historic cavalry stables (Building 38) in Mammoth Hot Springs. Since that building has been rehabilitated for other uses, tack is now in a horse trailer and three rented metal storage containers at the SCAA. Equipment that is used throughout the park in the summer is returned to Stephens Creek at the end of the season for maintenance and repair. The storage containers are cramped, contribute to the visual pollution and sprawl, and are not completely rodent proof. Equipment in the metal storage containers will age more rapidly due to the drying of the leather because of fluctuating hot and cold temperatures and decreased levels of preventive maintenance.

A semi-trailer containing miscellaneous equipment is covered with a tarp to protect the contents from the leaking roof. The corral operation also has three horse/mule-drawn work wagons.

Feed: Stephens Creek is the stock food supply center for the entire park. Having grain, hay, and medical supplies at this central location provides the most efficient opportunity for corral operations staff to meet the nutritional and health needs of the stock for which they care. Approximately 275 tons of big bales, 100 tons of small bales, and 15 tons of grain are used during a year. Small bales, hay pellets, and concentrated grain pellets are stored at Stephens Creek until they can be moved to the interior of the park or backcountry locations. Small bales are stored under an open shed behind HS-0100 (Fig. 3) to prevent excessive deterioration and loss of nutrients from ultraviolet aging and wetting/drying cycles. The roof and roof supports for the small bale storage shed are rotten and need to be replaced. Fencing provides hay with security from theft and protection from wildlife predation. The tractor for feeding hay is stored under the hay shed.

In addition, grain is bought in bulk and stored in one of the dilapidated cabins within the SCAA (No. 3) (Fig. 4). This cabin was moved here from the Lamar Buffalo Ranch (and was previously moved there from Fishing Bridge) in the early 1980s (with Cabin Nos. 200 and 216), and they have not had any maintenance in decades. The structure is not weather tight or rodent proof and is in need of major rehabilitation (roof, floor joists, window frames). In addition, the cabin is too small for the amount of grain used annually in the park. Corral staff makes repeated, inefficient, and costly trips to Livingston, Montana, 55 miles away, for grain.

Training: New park employees receive horse training at SCAA. Green stock and stock new to the park also receive training at Stephens Creek until the corral operations staff are assured the employees have appropriate skills and stock can be safely used.

In addition, multiple sessions of beginning and intermediate horsemanship are taught each spring and summer at Stephens Creek. Better and safer training can be provided on the large, open, and flat ground around SCAA than elsewhere in park where open areas are smaller. Increased staff training has significantly decreased the rate of horse and staff injuries.

Law Enforcement Firing Range: The firing range has been in operation since the 1960s. Law enforcement requires a facility where training with a variety of weapons (revolvers, shotguns, rifles) can occur, where staff and the public will not be impacted, and where training exercises can be carried out safely.

The current infrastructure includes short and long firing ranges and two cabins (Nos. 200 and 216, Fig. 4). Temporary targets are placed against the hillside. The cabins were moved in from

the Lamar Buffalo Ranch and are used for supplies including targets, staples for changing targets, and buckets for expended rounds. No live ammunition or weapons are stored there. The cabins (including No. 3) are about 12 x 14 feet with exterior log out and dimensional lumber systems. They are in serious disrepair and need paint, repair/replacement to roofs (shingles and sub roof replacement), windows, and floor joists. Several years ago, one cabin was hit by an unattended vehicle and the corner post was broken, resulting in loss of structural integrity which permits easy access by rodents and the weather. All three cabins have been determined not eligible for listing on the National Register of Historic Places.

The Firearms Training Unit at YNP operates two (long and short) ranges at the SCAA. The long range is inadequate for several reasons outlined below:

Safety – The long range does not include a 270 degree berm to prevent a round from leaving the designated course and impacting outside the range area.

Lead Abatement – The ranges do not have the necessary berm structures to capture expended bullets for easy retrieval.

Training Effectiveness – The lack of protective berms limits patrol rangers to linear, single direction firearms training, which is inconsistent with modern, state-of-the-art firearms training concepts.

Rangers are required by NPS Reference Manual-9 (RM-9) to qualify at least twice annually with both handguns and long guns (rifles and shotguns) in daylight and lowlight conditions. Because of the relatively high caliber of the rifles used (.308 and .223), berms are necessary to capture lead and create a safer firing range. Currently, the rounds may impact outside the range in adjacent areas of the park. This is a critical safety concern as well as an environmental issue.

Figure 4. Stephens Creek Storage Cabins (Nos. 204 and 216 on left; No. 3 on right).

Log Building Operation: Park maintenance staff constructs log buildings of various sizes at SCAA for placement elsewhere in the park. This activity occurs on an as-needed irregular basis, possibly several months every few years. Because SCAA is warmer and receives less snow than other developed areas of the park, workers can make efficient use of shoulder seasons for these projects. However, log storage contributes to the visual impacts and vehicle/foot traffic may encourage the establishment of exotic vegetation.

Equipment and Vehicle Storage: Large numbers of seasonally-used vehicles, equipment, house trailers, recreational vehicles, and horse trailers are stored at the SCAA. This activity has been operational for more than 30 years. Due to high snow depths elsewhere in the park, many vehicles and equipment used seasonally in the park's interior are parked at SCAA for the winter. Also, the park concessioner has occasionally parked vehicles there in the past. Some equipment and trailers are no longer functional and have been abandoned. The equipment, trailer, and vehicle storage area is not well organized and space is not efficiently used and this contributes to sprawl, as well as visual and vegetation impacts.

Native Plant Nursery: The original nursery at SCAA operated between 1933 and 1942 when it was disbanded due to low staffing during World War II. Plants from the native plant nursery were used to landscape administrative and developed areas around the park. In 1987, the native plant nursery was re-established by park staff. Trees, shrubs, and ground cover are propagated here and transplanted throughout the park in developed areas and for roadside revegetation

projects. Portions of the nursery were used during World War II victory gardens and then into the 1980s for employee gardens.

A cabin from the Lamar Buffalo Ranch serves as a tool shed. A second small building cobbled together with lath, old boardwalk material, screening, with a fiber glass roof, serves as a potting shed. It has electricity for lights and fans but is barely adequate in size for the need. There is a need to have a larger area for starting seedlings. The park's two tree spades and shredder are also stored at the nursery and have no protection from the weather.

Bison Capture Facility and Operation: The bison capture facility is designed to hold bison that attempt to leave the park as per the 2000 Interagency Bison Management Plan (NPS 2000). The bison capture facility consists of wing fences and corrals of various sizes. The wing fences funnel animals into a series of corrals (adjacent but not attached to both the nursery and horse corrals) that are operated when bison attempt to leave the park, generally during the winter. An Environmental Impact Statement was prepared for the construction and operation of this facility and NEPA compliance was completed (NPS 2000). The bison capture facility will be managed according to the Bison Management Plan and will likely remain at its current location regardless of decisions in this EA for other functions at the SCAA.

A small recreational vehicle (RV) near the bison capture facility is currently used to coordinate operations and to contain the blood testing lab during winter bison operations. Because the trailer is on wheels, it shifts when staff moves around in it. The operation of the blood testing equipment requires a stable platform in order for staff to read the print outs. So while blood is being analyzed, the trailer cannot be used for other functions such as meetings or for staff to get out of the cold weather. A building on a stable foundation is needed. Electricity is available at this location. A portable outhouse is located near the operation during bison capture activities.

During the seasonal migration of bison out of the park, the corral operations staff haze and capture bison, water and feed them, and help work bison in the corrals. Horses for bison hazing and capture are at the corral operations at SCAA.

In summary, the project is needed to account for the following objectives: (1) contain sprawl; (2) minimize visual impacts; (3) construct a barn for corral operations; (4) conserve wildlife habitat; (5) manage exotic vegetation; and (6) provide a management plan for the administrative functions of the SCAA.

TRIBAL AND PUBLIC SCOPING

Scoping to identify issues, concerns, and alternatives about the SCAA occurred from July 15 through August 18, 2003 and included a mailing to interested and associated tribes and interested parties asking for help in identifying issues and concerns. A press release was issued and printed by Yellowstone area newspapers. Additionally, park staff met twice in July 2003 and June 2004 with a local community group to discuss the SCAA and to solicit further comments. Sixteen comment letters were received: 12 from the public including the Interagency Tribal Bison Cooperative, 1 from U.S. Fish and Wildlife Service, 2 from the State of Wyoming, and 1 from the Montana State Historic Preservation Office.

Comments included the importance of pronghorn and wildlife habitat and migration corridor

(n=9); the bison capture facility should be moved or should remain (n=5), the horse operation should remain (n=2) or be removed (n=1); visual impacts (n=6), exotic vegetation(n=2), the 1930s land acquisition (n=1), cultural and historic past (n=3), night lighting (n=1), and the firing range should be removed (n=1). Most respondents supported the concept that the SCAA should be better managed. Four individuals suggested that SCAA should be relocated outside the park.

RELATIONSHIP OF THE PROPOSED ACTION TO PREVIOUS AND CURRENT PLANNING EFFORTS

Two plans, the Final Environmental Impact Statement for the Interagency Bison Management Plan (NPS 2000) and Interim Bison Management Plan ([NPS, DOI, and State of Montana 1996) address areas immediately adjacent to the SCAA. The bison operation remains under management actions approved in the EIS.

There is interest in re-establishing native vegetation in the BLA where non-native vegetation has taken over the previously cultivated fields in order to promote winter range for park ungulates. These fields border the Yellowstone River and extend to varying degrees to the west of the Old Yellowstone Trail (county highway). In 1994, revegetation test plots were created in the BLA northeast of the intersection of the county road and the road into SCAA. This area was planted with two native grasses, fertilized, and watered. No germination of natives was observed but the crested wheat grass quickly recolonized at equal or greater density than before. Another effort to determine strategies to restore portions of the BLA back to native vegetation began with an April 2005 meeting of range experts who made recommendations for re-establishing native plants on the flats along the Yellowstone River. A group of NPS staff and revegetation experts are developing strategies and seeking funding to begin restoring portions of the BLA to native vegetative conditions.

YNP staff is currently working with outside interest groups to establish the abandoned railroad bed from Gardiner, MT to Livingston, MT as a hiking/biking trail. The approximately four miles of railroad bed within YNP between Gardiner and Reese Creek in the park is used as a hiking/biking trail.

IMPACT TOPICS

Issues and concerns affecting the proposed project were identified by NPS specialists in YNP during internal scoping and through comments received from interested members of the public and other federal and state agencies during public scoping. Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were identified on the basis of federal laws, regulations, orders, and NPS Management Policies (2001), and from internal and public scoping. Topics include geology and soils, vegetation including exotic plants, rare plants, wildlife, threatened and endangered species, water resources and water quality, wetlands, visual quality including lightscapes, soundscapes, historic resources, cultural landscapes; and ethnographic resources (see Table 1).

A brief rationale for the selection of each impact topic is given below as well as the rationale for dismissing specific topics from further consideration.

Table 1: Impact Topics for the Stephens Creek Administrative Area Management Plan

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Natural Resources		
Air Quality	Dismiss	Federal Clean Air Act (CAA), CAA Amendments of 1990 (CAAA), NPS *Management Policies 2001*,and Utah Administrative Code, Title 307
Ecologically Critical Areas or Other Unique Natural Resources	Dismiss	Wild and Scenic Rivers Act, 36 CFR 62 criteria for national natural landmarks, NPS *Management Policies 2001*
Geology and Soils	Retain	NPS *Management Policies 2001*
Vegetation-Exotic Vegetation	Retain	NPS *Management Policies* 2001
Vegetation-Rare Plants	Retain	*NPS Management Policies* 2001
Wildlife	Retain	NPS *Management Policies 2001*
Endangered or Threatened Species	Retain	Endangered Species Act; NPS *Management Policies 2001*
Prime and Unique Agricultural Lands	Dismiss	Council on Environmental Quality 1980 memorandum on prime and unique farmlands
Water Resources-Water Quality,	Retain	Clean Water Act, Executive Order 12088, NPS *Management Policies 2001,*

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Hydrology		
Floodplains	Dismiss	Executive Order 11988, *Floodplain Management*
Wetlands	Retain	Executive Order 11990, Rivers and Harbors Act, Clean Water Act, NPS *Management Policies 2001*
Visual Quality, including Lightscapes	Retain	NPS Management Policies 2001
Soundscapes	Retain	NPS *Management Policies 2001,* DO-47, *Sound Preservation and Noise Management* and *Management Policies* (2001), 4.9, Soundscape Management.)
Wilderness	Dismiss	Director's Order 41; NPS *Management Policies 2001*
Cultural Resources		
Historic Structures	Retain	Section 106 of the National Historic Preservation Act; 36 CFR 800; National Environmental Policy Act; Executive Order 13007; Director's Order 28; NPS *Management Policies 2001*
Cultural Landscapes	Retain	Section 106 of the National Historic Preservation Act; 36 CFR 800; National Environmental Policy Act; Executive Order 13007; Director's Order 28; NPS *Management Policies 2001; DOI Standards for Treatment of Historic Properties and Cultural Landscapes*.
Ethnographic Resources	Retain	Section 106 of the National Historic Preservation Act; 36 CFR 800; National Environmental Policy Act; Executive Order 13007; Director's Order 28; NPS *Management Policies 2001;* Executive Order 13007 on Sacred Sites
Archeological Resources	Retain	Section 106 of the National Historic Preservation Act; 36 CFR 800; National Environmental Policy Act; Executive Order 13007; Director's Order 28; NPS *Management Policies 2001*
Socioeconomic Considerations		
Socioeconomics	Dismiss	40 CFR 1500 Regulations for Implementing NEPA

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Environmental Justice	Dismiss	Executive Order 12898
Indian Trust Resources	Dismiss	Department of the Interior Secretarial Order No. 3206, Secretarial Order No. 3175
Public Health and Safety	Retain	NPS *Management Policies 2001*
Visitor Use and Experience	Dismiss	Organic Act; NPS *Management Policies 2001*

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

AIR QUALITY

Section 118 of the 1963 Clean Air Act (42 U.S.C. 7401 et. Seq.) requires a National Park Service unit to meet all federal, state, and local air pollution standards. Yellowstone National Park is designated as a mandatory Class I area under the Clean Air Act where air quality degradation is not acceptable. Localized emissions from wood burning stoves, campfires, snowmobiles, buses, and other motor vehicles are occasionally visible. Monitoring of air quality is required by law to avert violations of national air standards, to preserve views and visibility, and prevent health and safety risks to residents and visitors.

Air quality is monitored in the park at two locations. The Tower Ranger Station is part of the National Atmospheric Deposition Program network, and particulate matter as well as precipitation volume and chemistry are monitored there. At Lake, there is a semi-automated station that measures air pollutants (such as fine particulates, sulfates, nitrates, organic and inorganic carbon, and heavy metals), an ozone analyzer and calibrator, and meteorological equipment.

There are currently no major point sources of air pollution in the vicinity of the park, and air quality and visibility are generally considered excellent. Occasional periods of degradation may occur due to regional haze or forest fire smoke. The major sources of air pollutants in the area are those emitted locally by motor vehicles (automobiles, busses, snowcoaches, and snowmobiles) concentrated along motorized routes and in developed areas, and smoke from wood fires (stoves, fireplaces, and campfires).

At SCAA, sources of air pollution come from the wood stoves used to heat the office and animal health/leather shop cabins and from dust picked up by wind coming from Yankee Jim Canyon across the previously cultivated fields adjacent to the Yellowstone River and the county highway (Old Yellowstone Trail). These are short-term and have a negligible effect, so air quality will not be addressed an impact topic.

ECOLOGICALLY CRITICAL AREAS OR OTHER UNIQUE NATURAL RESOURCES

The SCAA does not contain geothermal resources or ecologically critical or unique natural resources. The BLA may be considered important winter habitat for park ungulates including pronghorn. This issue is addressed in the wildlife section. Ecologically Critical Areas or Other Unique Natural Resources was dismissed as an impact topic.

FLOODPLAINS

Executive Order 11988, *Floodplains Management*, requires all federal agencies to avoid construction within the 100 year floodplain unless no other practical alternative exists. Because the SCAA is not within the 100 year floodplain, this impact topic was dismissed from further consideration. A Statement of Findings for floodplains will not be prepared.

PRIME AND UNIQUE FARMLANDS

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effect of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the Natural Resources Conservation Service, none of the soils in the project area are classified as prime and unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this document.

WILDERNESS

The SCAA is not within Yellowstone's recommended wilderness. Neither the No Action nor the Preferred Alternative proposed in this document would occur in YNP's recommended wilderness areas. Therefore, wilderness was dismissed as an impact topic.

SOCIOECONOMIC RESOURCES

Yellowstone National Park extends into three different states, including Wyoming, Montana, and Idaho. Most of the property surrounding the park is managed by the U.S.D.A. Forest Service and a few private land owners. The park plays a prominent role in the social and economic life of the greater Yellowstone area.

Gateway communities of varying sizes have developed outside the park. Yellowstone's recreational opportunities tend to create a tourist-based economy in communities surrounding the park. These communities receive significant income by providing goods and services to park visitors and employees. Local businesses also benefit from annual NPS and concessioner expenditures for salaries, goods, and services.

Gardiner, Montana, four miles south of the SCAA, is a small community situated at the original entrance to YNP and is the only year round entrance into the park available by automobile. The town is located in the Upper Yellowstone Valley, surrounded by national park and forest lands. The Yellowstone River flows through the center of town. Gardiner relies on recreation, tourism, and the service industry to support its economy. Primary employers in the area include the NPS, Xanterra (a park concessioner), and the U.S.D.A. Forest Service. Gardiner has a public school that houses kindergarten through 12th grade.

The proposed action would neither change local and regional land use nor impact local businesses or other agencies. If the Preferred Alternative were to be selected, it has not been determined whether construction of the barn would be done by local builders or NPS staff. If contracted, the construction firm's employees would likely be housed and fed in Gardiner. At the peak of construction, it is estimated that approximately 10 contractor employees could be working on the project. There would be a negligible beneficial impact to the economy of Gardiner, Montana, primarily in the form of the purchase of groceries, snacks, drinks, and possibly lodging. Any increase would be temporary, lasting only as long the project. Therefore, the topic of socioeconomic resources was dismissed as an impact topic from this analysis.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "General Actions to Address Environmental justice in Minority Populations and Low Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effect of their programs and policies on minorities and low income populations and communities. The proposed action would not have health or environmental effects on minorities or low income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed as an impact topic in this document.

INDIAN TRUST RESOURCES

Indian trust assets are owned by Native Americans but held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order No. 3206, "American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act," and Secretarial Order No. 3175, "Departmental Responsibilities for Indian Trust Resources." Because no Indian trust assets occur within YNP, this impact topic was dismissed from further consideration.

VISITOR USE AND EXPERIENCE

Visitor use and economic activities supporting the use of Yellowstone are highly seasonal. Visitation is lower during the shoulder-season months of April, May, and October. Winter use grew rapidly in the early 1990s, with annual increases of 10 to 15 percent and has since started to decline slightly. In 2005, the park recorded 2.8 million recreational visits. In 2005 from January through August, the park recorded 2.3 million recreational visits, with 244,739 occurring in the winter season (December 2004-March 2005). A recreational visit is defined as visitors entering the park for any part of a day for recreational purposes.

Approximately 18 percent of the park's total visitors entered Yellowstone through the North Entrance in the 2005 summer season. In the 2005 winter season (mid-December through mid-March), 35 percent of visitors entered the park through the North Entrance. The North Entrance is the only park entrance open all year to wheeled vehicles. Stephens Creek is a NPS administrative area and has no visitor services or use. The SCAA is accessed by a dirt road that turns off from the county road that leads from the Roosevelt Arch and Park Street in Gardiner up the north side of the Yellowstone River to the bridge over the Yellowstone River at Corwin Springs. The administrative area is difficult to see from the county road and the access road is signed "Authorized Personnel Only." Consequently, few visitors drive into SCAA and visitor use and experience was dismissed as an impact topic.

ALTERNATIVES CONSIDERED

The need to address Yellowstone's corral operations as well as existing effects from continued growth and visual impacts of the SCAA required that the NPS evaluate its current administrative functions. Alternatives were considered based on National Park Service administrative needs, as well as internal and public scoping. Yellowstone has the largest horse and mule operation in the NPS and does not have adequate infrastructure.

For a full discussion of the evolution of the preferred alternative, please see "Alternatives Considered but Rejected."

Table 2: Comparative Summary of Alternatives

Objectives	Alternative 1: The No Action Alternative.	Alternative 2: The Preferred Alternative.
SUMMARY OF ALTERNATIVES:	The SCAA would continue at its present location under existing conditions and activities without a particular planning context.	The SCAA would remain at its present location but would be managed to mitigate visual impacts, sprawl, and exotic weeds and to limit or decrease future impacts to wildlife habitat. The footprint for the SCAA would remain as presented and would not be expanded. A barn for year-round corral operation functions would be constructed under this alternative.
Sprawl	SCAA managed without real boundaries; has expanded incrementally in size.	The SCAA would remain at the existing 43 acre footprint and would not be expanded without environmental evaluation.
Visual Impacts	SCAA has had visual impacts on landscape as viewed from highway and county road.	Vegetation and other screening tools would be implemented to reduce the visual impacts associated with the SCAA.
Wildlife Habitat	Unregulated management of SCAA may not confine growth in important wildlife winter habitat.	The SCAA would be managed to best maintain critical winter range for pronghorn and other wildlife. The footprint would not expand.
Exotic Vegetation	Exotic weeks would continue in disturbed areas and perhaps expand spatially. Limited spraying of critical weeds would occur.	Exotic vegetation would be actively managed. Major noxious weeds would be surveyed and controlled annually.
Corral Operations	No barn would be constructed and infrastructure for corral operations would remain inadequate.	A barn would be constructed within the existing footprint to facilitate year-round corral operations. A barn would consolidate functions, improve animal and staff working conditions, and ensure a safer working environment.
Administrative Use	Park function at SCAA would continue without planning. New functions may develop.	Park functions at the SCAA would be managed under the guidelines identified in this plan.

ALTERNATIVE 1: NO ACTION (Fig. 5)

The CEQ provides two definitions for no-action alternatives: (1) no action for plans is no change from current management direction (snapshot-in-time projected into the future), a continuation of existing conditions and activities without a particular planning context, or (2) no action for projects is to not do the project ("Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (40 CFR 1500-1508), *Federal Register* Vol. 46, No. 55, 18026-18038, March 23, 1981: Question 3). In the case for the SCAA, the No Action alternative would be to continue existing conditions and activities without a particular planning context. The SCAA has been administered inconsistently for at least the past five decades. Functions that are needed in YNP have landed at Stephens Creek when there were no other places for these functions to go. The result has been an erratic conglomeration of structures, functions, activities, and associated ecological and visual impacts.

The nursery began in 1932 and the corral operation and firing range began in the 1960s, and these functions have changed over time. The equipment and vehicle storage and log construction areas have developed more recently since the 1980s and have grown incrementally over time. The bison capture facility was initiated in 1996 after an Environmental Impact Statement was prepared in 2000 (NPS 2000). These unmanaged accumulations of administrative functions have caused the SCAA development to gradually grow in size in recent years, and have created visual impacts, especially when observed from U.S. Highway 89. The current size of the SCAA is approximately 43 acres

Specific issues associated with the SCAA in its present management framework, and which would remain under the No Action Alternative, include sprawl, visual impacts, wildlife including pronghorn habitat, and exotic vegetation.

Sprawl

The SCAA has been managed without distinct boundaries and has gradually grown in size in recent years. The accumulation of unused vehicles, trailers, equipment, and other storage use of this area has incrementally increased the size of the SCAA. Other examples of recent expansion include the placement of additional Federal Emergency Management Administration (FEMA) travel trailers and a log construction/storage yard in the north corner of the SCAA.

Visual Impacts

The SCAA can be seen on the landscape, especially when viewed from U.S. Highway 89 east of Stephens Creek and the county road Old Yellowstone Trail. Many of the vehicles, trailers, and other equipment at SCAA are bright colors such as orange, yellow, and white and attract the eye to an area that otherwise might appear to be a natural scene. This is especially true during the winter months when more seasonally-used trailers, vehicles, and equipment are stored at SCAA. Some vegetation to screen the SCAA has been planted but currently does not adequately cover the SCAA from view.

The yard light at the rear of the Rife House is easily visible from Highway 89 and the county road and comes on automatically. It has been the source of complaints from park neighbors. At SCAA, lights from the current corral operation buildings (HS-0100 and HS-0101) are on when

activities require them for operational safety and are on manual switches. This visual effect may be expected to continue under the No Action alternative.

Wildlife Habitat

The SCAA is part of the BLA and the BLA is considered important winter habitat for Yellowstone ungulates that includes the pronghorn population. The quantity and quality of this winter range is considered important for the long term success of this population. The current management of the SCAA may not confine growth and may not expand further into this winter range.

Exotic Vegetation

Non-native vegetation has been widespread within the BLA, including the SCAA. Under existing conditions, exotic weeds would continue in disturbed areas and perhaps expand spatially. Occasional efforts are made to limit their spread by spraying of the most invasive noxious weeds. However, The SCAA would continue to be a source for non-native vegetation and may lead to proliferation to other areas in the park as stored vehicles and equipment move back into interior portions of the park.

Park Administrative Functions:

Corral Operations

After being relocated from a building in Mammoth Hot Springs in 2002, administration and management functions were moved to two small buildings that house the corral operations office (HS-0101) and animal health area/leather shop (HS-0100). Horse equipment and tack would remain housed in the three rented metal storage units and a horse trailer. Miscellaneous equipment and materials would continue to be stored in a semi-trailer. These facilities add to the visual impacts at SCAA and provide poor storage conditions for leather tack and equipment. A small building and corral would continue to be used for isolation of sick and injured animals.

The park corral operation would continue without a barn. Training and horse handling activities would continue to occur out-of-doors in inclement weather. Hot/sweaty horses would be left to cool and dry off outside during the winter. Staff and animals would continue to have increased risk of injuries and long term health problems from exposure to wet and cold. The disposal of waste liquid from the animal health area in HS-0100 would continue to not meet current standards. The mixing of animal medicines, health equipment, and materials with human food and sanitation in HS-0100 would not meet public health standards. The small cabin used for grain storage will continue to be inadequate in size and will continue to deteriorate.

Law Enforcement Firing Range

The SCAA provides the only year-round firing range in the park. New requirements for law enforcement fire arms qualifications and for the abatement of lead resulting from these activities would not be met. Berms to catch lead and improve safety would not be constructed. Impacts to the soundscape would occur during operation of the shooting range at any hour of the day.

The small cabins used for firing range storage would continue to deteriorate and leak, and within a few years, they would become unsuitable for their storage purpose. Staff would continue to use the vault toilet at corral operations.

Log Building Operations

The construction of log structures and storage of their raw materials would continue at the SCAA without a management plan. Staff would continue to use the vault toilet at corral operations.

Equipment, Vehicle, and Trailer Storage

Equipment, vehicle, and trailer storage would continue and incremental but steady sprawl may continue to expand the footprint or development without a management plan.

Native Plant Nursery

The nursery operation would continue to operate within its existing space. The number of seedlings started would continue to be limited by the small greenhouse. The tree spades and the chipper would continue to be exposed to the weather.

Bison Capture Facility

The bison capture facility would continue to operate when needed. The corral operations office would continue to be utilized for logistics and agency coordination. Testing of blood samples would continue to be processed in a travel trailer. The travel trailer cannot be used for any other activities (for example, meetings or warming of staff) when blood testing is going on because trailer that shifts when staff move around inside it and blood testing equipment requires a completely stable platform. A portable restroom would provide sanitation during operation of the bison capture facility.

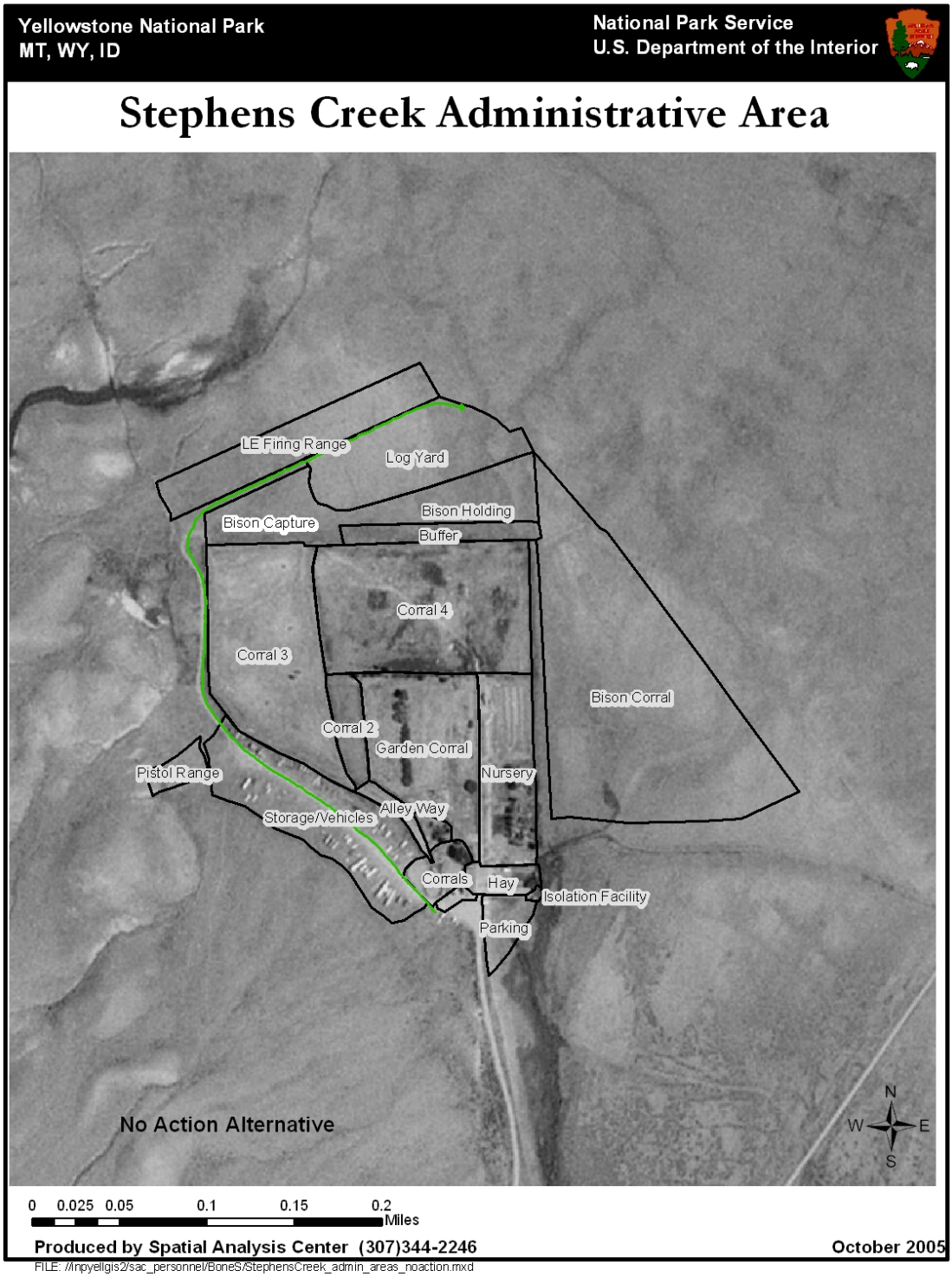

Figure 5. No Action Alternative for Stephens Creek Administrative Area. (Green line shows two track road.)

ALTERNATIVE 2: PREFERRED ALTERNATIVE (Fig. 6)

The management plan for the SCAA would consist of the actions proposed below in the Preferred Alternative of this environmental assessment. The SCAA would remain at its present location but would be managed to mitigate visual impacts, sprawl, and exotic weeds and to limit or decrease future impacts to wildlife habitat. The footprint for the SCAA would remain as presented and would not be expanded. A barn for year-round corral operation functions would be constructed under this alternative. The existing water source would be modified to address compliance with Montana water quality regulations. A water meter and a water disinfection system would be added to the existing spring-fed water system

Under the Preferred Alternative, the administrative functions that occur at the SCAA within the current 43 acre footprint would remain. Other areas considered for some or all of the current functions are addressed in the Alternatives Considered but Dismissed from Further Analysis section. The specific operations at SCAA would be managed as follows:

Sprawl

The footprint for the SCAA would remain as presented in this document and would not be expanded without environmental evaluation. The current configuration may be slightly modified within the existing 43 acre footprint. The unused vehicles, trailers, and equipment would be sold or otherwise removed from the park. The remaining storage and administrative functions would be managed to efficiently utilize space.

Visual Impacts

Vegetative and other screening tools would be implemented to reduce the visual impacts that are currently associated with the SCAA. Cottonwood trees have been growing along portions of the SCAA since about 1994 and are reaching a height that will improve screening. Additional irrigation and planting of native vegetation would be required to improve the visual quality of the SCAA from the adjacent lands. Outdoor lights in the SCAA would be night light sensitive. Under this alternative, the visual effect on the landscape would lessen when viewed from Highway 89 and the county road.

Wildlife Habitat

Management of the SCAA would occur with continued emphasis of maintaining important wildlife winter range and fawning areas for the Yellowstone pronghorn. Moreover, if future wildlife assessments determine that the SCAA should be modified, then park managers may take actions to improve conditions of the SCAA. These may include changing vegetation to match desired vegetative communities in an area-wide restoration project, modifying the bison wing fences to not impede major pronghorn migration patterns, or adjusting the configuration of the SCAA if determined to encourage pronghorn migration or habitat use. When the short firing range is abandoned, it would be rehabilitated to restore the area for wildlife. The existing 43 acre footprint would not be allowed to expand and would not cause further erosion of the winter wildlife range.

Exotic Vegetation

Exotic vegetation would be actively managed at the SCAA. Major noxious weeds including white top, spotted knapweed, musk thistle, and field bindweed would be surveyed and controlled on an annual basis. The SCAA would also be surveyed annually to ensure that new weed infestations do not occur. New weed patches would be identified and controlled immediately. Special attention for weed management would be placed at the equipment, vehicle, and trailer storage areas, so that non-native vegetation seeds would not be transported into interior portions of the park. Stock kept at Stephens Creek would continue to be fed certified weed-free hay in order to not encourage weeds at the SCAA and in Yellowstone's backcountry. When a vegetation restoration plan is implemented for the BLA, the SCAA should be included in that management, so as to not be a seed source for non-native vegetation.

Park Administrative Functions:

Corral Operations

The year-round corral operations would continue at Stephens Creek and the advantages include easy access to Gardiner and Mammoth Hot Springs (20 minutes from SCAA to park headquarters) and to the nearest veterinarian 60 miles away, and its close proximity to the main thoroughfare for bison movement, the bison capture facility, and the area where bison are hazed. If the capture facility and horse operation base were to be widely separated, this would result in a less inefficient operation all around with delays in responding to bison management needs by corral operations staff, bison office staff, and park rangers.

A barn of about 15,000 sq. ft. would be constructed to provide a safe and efficient facility allowing staff and stock to work year-round. While the barn would not be designed until funding is obtained, a possible roof configuration could be an open story, monitor type, like the cavalry buildings in Mammoth Hot Springs (Fig. 6). If this roof type is used, then the roof could be 30 feet high. A gable roof or a gambrel roof would be somewhat lower, between 24 and 28 feet high. The work areas (office, restroom, vet room, saddle repair shop, break/meeting room, and tack/equipment storage) in the barn (Fig. 7) would be insulated for energy efficiency, windows would be double paned; there would be energy-efficient lighting, and solar energy would be considered for heating and electricity. Colors would be chosen for the walls and roof so that it would blend into the hillside to the south. Proposed drainage would not interfere with natural hydrological processes.

The barn would be placed within the existing corral operation footprint and would provide an adequate all weather, indoor training facility for animals and riders, shoeing, storage of tack, grain, supplies, equipment storage and repair, animal health area (vet room), care of injured animals (stock), office, and meeting/break room. This would extend the useful life of both tack and stock and improve the health and safety of the staff by reducing exposure to environmental extremes (cold, wet, and heat) (Fig. 7). A 30 ft wide shed along one side of the barn would be used for small hay bale storage replacing the existing shed for small bales, tractor, and work wagons (see left side of the floor plan in Fig. 7). The staff and horses would continue to meet the operational needs of the park operations by training riders and stock.

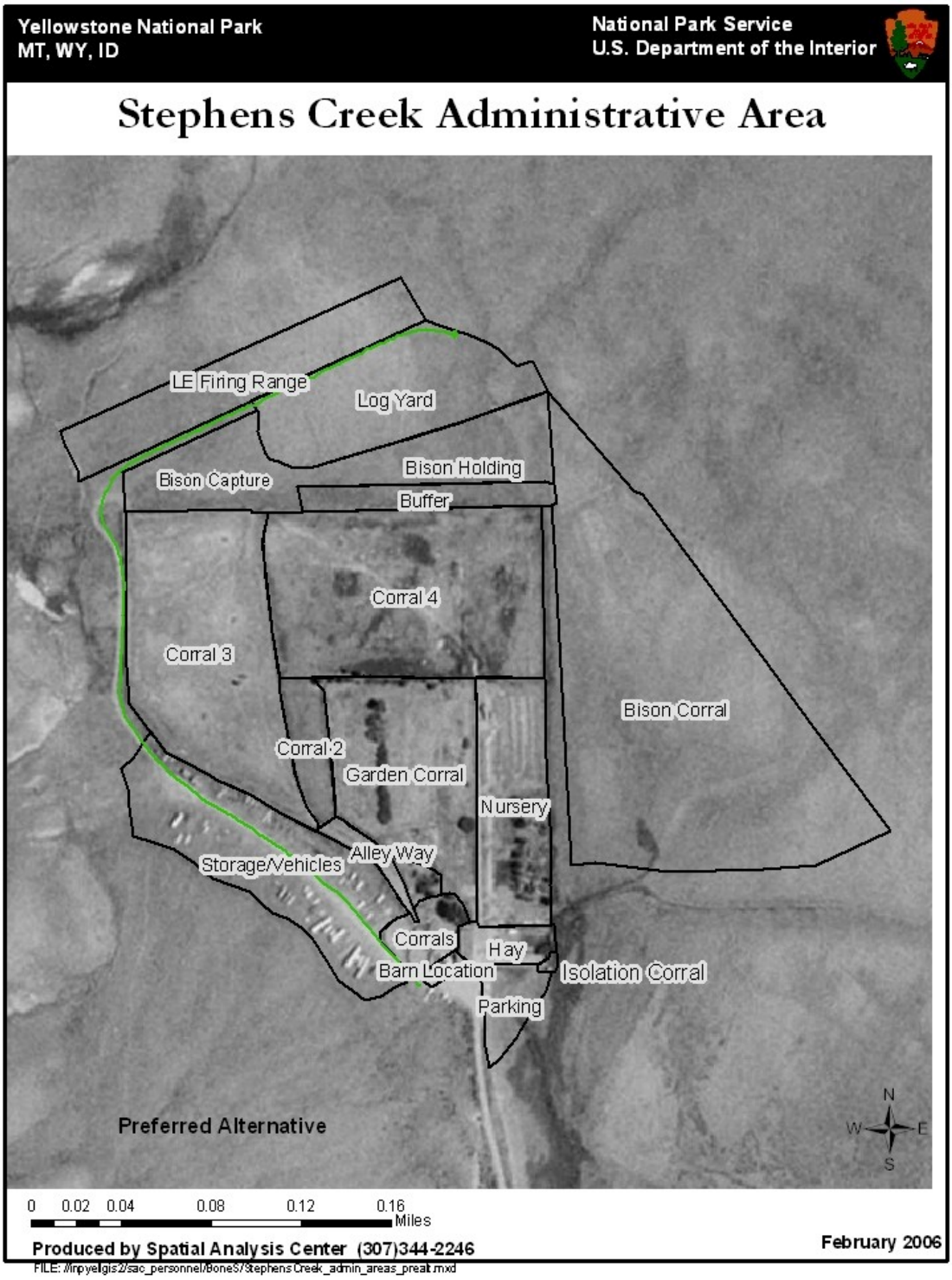

Figure 6. Preferred Alternative for Stephens Creek Administrative Area. (Green line is two track road.)

Figure 7: Possible Barn Appearance for No Action (above) and Preferred (below) Alternatives.

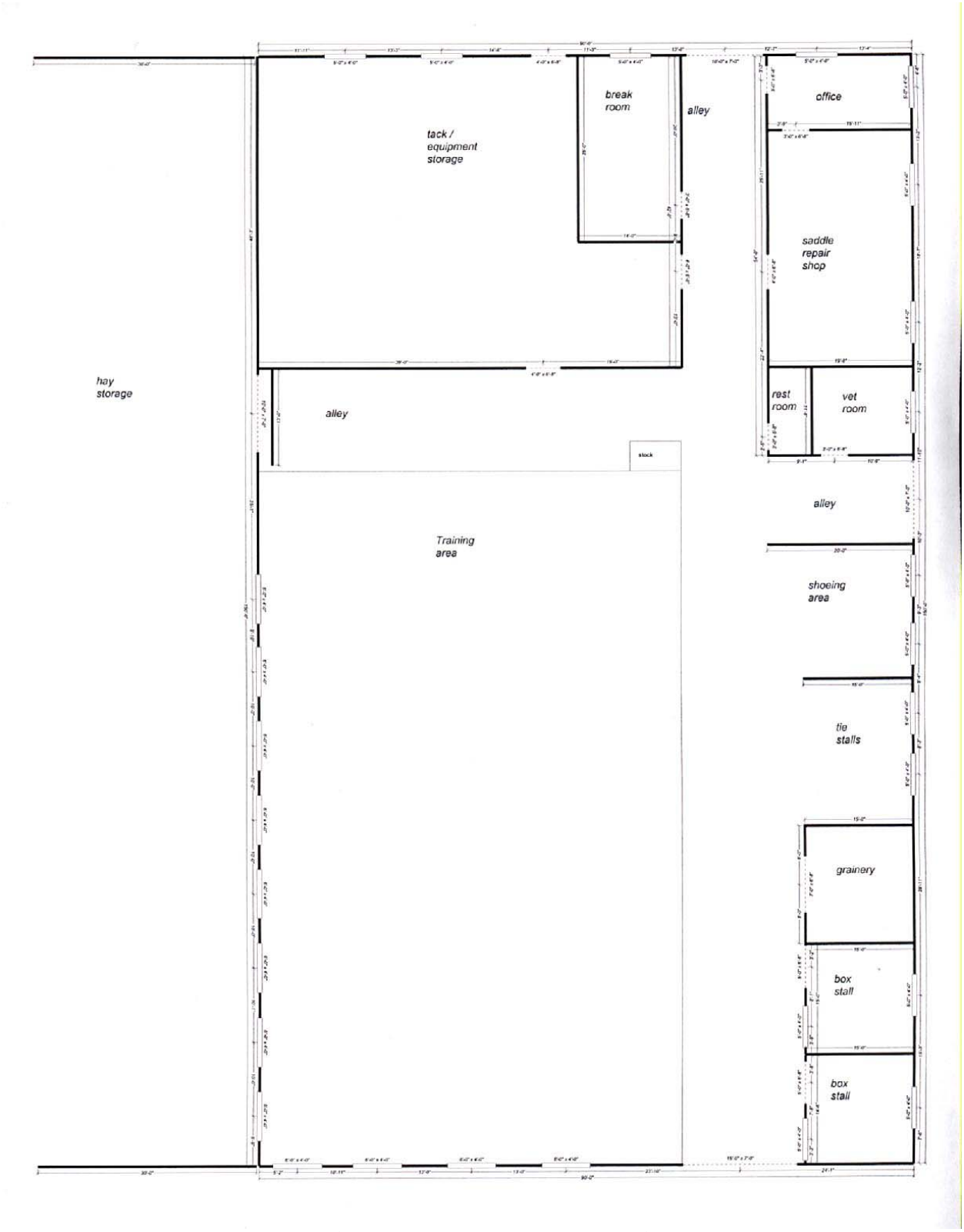

Figure 8: Potential Floor Plan for Proposed Barn (90 x 150 feet).

A barn would replace several structures and consolidate their functions in a single location (three rented metal storage units, the grain storage cabin, a horse trailer and a semi-trailer used for equipment storage and existing small bale hay shed). The current office (HS-0101) would be moved to the bison capture facility to replace the current RV trailer. The leather shop/animal health area (HS-0100) would be retained in its existing location and used for additional equipment storage. The proposed barn would contain a toilet, areas for working with green stock and park staff, horse shoeing, animal health area, grain storage, saddle repair shop, office, meeting/break room, and two stalls. A septic system would be installed within the SCAA footprint and would require limited excavation within the existing SCAA footprint. Water, power, and telephone lines already serve the office and Stephens Creek barn and only minor extensions would be needed. With the proposed construction of a barn, the three existing metal storage units would no longer be needed and would be returned to the rental company. The semi-trailer currently used for storage and the grain storage cabin would be removed. The isolation shed and corral would be retained in their current location.

The proposed barn would be situated so that its profile as seen from Highway 89 would be minimized and the roof and wall colors would be chosen to blend the structure into the hillside. If the solar energy option is selected, the orientation of the barn may need to be adjusted for solar optimization. More trees would be planted around the barn and corrals and the SCAA for livestock shelter and shade and to blend the SCAA into the background as seen from Highway 89. Drip irrigation would reduce the amount of water needed. At least some of the plants would come from the park nursery. Plantings of native vegetation could be grown at commercial nurseries through contract with the park. This vegetation would aid in decreasing the visual impact of the SCAA.

The proposed SCAA barn would be sited and designed in accordance with the NPS's *Guiding Principles of Sustainable Design* (1993), which provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and *Secretary of the Interior's Standards for the Treatment of Historic Properties*. The proposed barn would be designed to be energy efficient and would strive to minimize waste; use recycled and reused construction materials to the extent possible, and use non-toxic materials. Yellowstone National Park would encourage all suppliers and contractors to follow sustainable practices.

The fencing that encloses the horse corrals and the nursery would be repaired or replaced as the need arises in its historic perimeter location. The interior configuration of the corral fences could change but would not be expanded beyond the historic perimeter. Due to the repeated stock injuries from the aging wire fencing, existing wire fence would be replaced with pipe fence when funds become available.

Hay storage would continue for both large and small bales. Small bales would be moved to the storage area created by an overhang on the barn and the hay shed removed. Some large bales might be accommodated under the overhang but more large bales would remain at their existing location northeast of the existing animal health area/leather shop (HS-0100) within the existing fencing.

Park Administrative Functions:

Law Enforcement Firing Range

The Law Enforcement firing range would be designed for maximum human and wildlife safety under this management plan. The smaller firing range would be eliminated and the area rehabilitated. The larger firing range would then be utilized for all firing practice and exercises. In order to address wildlife, human safety, lead abatement, and firearms training effectiveness, the Firing Training Unit proposes moving the existing pistol range north across the eastbound turn in the Stephen's Creek access road (Fig. 5) and incorporating it into the long range. The size, or footprint of the range, would remain the same (approximately 50x300 yards).

Soil/fill would be brought in as available as waste material from other park projects to create berms along the back portion of the range. The berms would be between 10 and 12 feet high and 12-15 feet wide. These berms would prevent rounds from over-shooting the end of the range and the sides of the range. Additionally, these berms would serve to contain the lead. At intervals to be determined, the lead within these berms would be removed.

Occasionally, the sound from firearms practice and qualifications can be heard north and east across the Yellowstone River. Yellowstone National Park law enforcement rangers are required to qualify on each type of fire arm from two to four times annually and to practice during times of low ambient light (Law Enforcement Reference Manual-9). Every effort would be made to schedule these low light practices during those times of the year when darkness comes earlier in the evening.

Equipment, Vehicle, and Trailer Storage

A portion of the SCAA would continue to be used as storage for excess equipment and over-wintering vehicles. Excess and abandoned equipment, house and horse trailers, vehicles, and unneeded storage cabins would be inventoried and disposed of periodically. The remaining equipment, vehicles, travel trailers, house trailers, and horse trailers would be stored in a manner that would consolidate their distribution. The space identified in Figure 8 for equipment, trailers, and vehicle storage would serve as the footprint for this function. If the storage area were to be filled, park management would have to make the decision to use other parts of the 43 acre SCAA footprint for storage or to move the excess equipment, trailers, and vehicle storage outside of Stephens Creek. The surface of this area may be hardened with gravel to decrease the proliferation of exotic vegetation and the seasonally muddy conditions. The drainage/irrigation ditch on the hillside to the west of the vehicle storage area would be cleaned out periodically (as it has been in the past) to improve run-off and to direct this excess water away from operations. Visual impacts would be addressed using a variety of methods that may include vegetative screening, lowering the grade where storage occurs, and consolidation of equipment.

Native Plant Nursery

The park nursery would continue in its present location to provide nursery stock for parkwide revegetation projects. A storage shed would be constructed to shelter the tree spades and shredder from the weather and a cabin, possibly one of the three cabins currently located in the equipment storage area (Nos. 3, 200, and 203), would be moved to the nursery to serve as an

office. In the future, as funding allows, a newer greenhouse to replace the existing structure would be constructed within the existing footprint of the nursery to better serve the park's landscape operation.

Log Building Construction Operation

The three acre area that currently holds the log construction operation at the north end of the SCAA would be consolidated to form a smaller footprint of about one acre. During bison handling operations, the log construction operation would be managed to reduce noise impacts on the bison.

Bison Operations

The location and function of the bison capture facility at Stephens Creek has been addressed in previous environmental documents (Interim bison Management Plan [NPS 1996]; Final Environmental Statement for the Interagency Bison Management Plan, for the State of Montana and Yellowstone National Park [NPS 2000]). The existing facility would remain within the SCAA. Any major changes to this facility that might be proposed would be addressed in a future NEPA planning process.

Historic Structure-0101 (currently used for the corral operations office) would be evaluated to determine if it could be moved without structural damage. If it were determined to be sound, HS-0101 would be moved to the north of the current bison handling facility. This building would replace a travel trailer for laboratory testing, would be used for meetings for coordinating agencies staff, and as a warming hut for staff operating the capture facility. Minor adjustments to the configuration of the bison corrals would be made to adaptively facilitate more humane treatment of the bison. With construction of the barn and a flush toilet, the existing SCAA vault toilet would be moved to near the bison corrals to serve that facility and the firing range activities.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested by CEQ which guide NEPA. The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The No Action alternative would continue the SCAA to function without a management plan. If the development of the SCAA continues, this may result in continued gradual sprawl and more functions being added to the SCAA. Without a management plan, impacts to vegetation, wildlife, the cultural landscape, and visual resources would continue. Improvements to park operations would not be made. Noxious weeds would continue to spread at SCAA and into the park with only irregular control efforts. Overall, this alternative would not fully meet national policies 1-6.

Alternative 2 is the environmentally preferred alternative because it best meets the above criteria. After consideration of public and employee comments throughout the scoping and planning process and a careful review of potential natural and cultural impacts, the Preferred Alternative would result in long term beneficial impacts to preservation and protection of the park's important historic, cultural, and natural resources; visual impacts from Highway 89 and the Old Yellowstone Road would be reduced through consolidation, and disposal of excess and abandoned equipment and trailers, and screening. This alternative would limit future impacts to vegetation and wildlife, meet current environmental standards for disposal of wastewater, lead abatement, provide a safer work environment for staff and livestock, and more fully meets national policies 1-6.

ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

During the planning process, there was considerable discussion about the pros and cons of the alternatives. Additionally, other locations were considered for all or some of the existing functions at the SCAA.

Areas in the park and north in the Gardiner valley were considered for possible alternative locations for the park corral operations and the other SCAA functions (except the bison capture facility, impounded stock, firing range, and the nursery) (Fig. 9). The bison facility at Stephens Creek would not change without further environmental review and consultation with cooperating agencies of the Bison Management Plan (NPS 2000). The firing range requires a non-public area to carry out exercises safely. Moving of the historic nursery (ca. 1933) would affect the historic setting. The search for other locations extended to the south end of Yankee Jim Canyon with the understanding that areas any farther north would be too far for rangers to provide security, and travel to and from the park (more than 15 miles) would be prohibitive. Safety was also a consideration. There are more safety hazards in the form of increased number of vehicles (especially in the summer), deer and elk on the highway, the additional travel, and winter access during periods of rain, snow, and ice. Additional, year-round travel for staff, stock trailers, and equipment on busy U.S. Highway 89 could be expected to exhibit a proportionally higher accident rate.

Land of suitable size (~40 acres) was the first criterion for site selection and then topography was considered. If the corral operations were to be moved, having a larger area would reduce the

number of injuries caused by animals in the small corrals and runway. The topography of alternative sites for the SCAA was taken into account with the provision that that slopes would create impacts through run-off to soils, rivers and streams. Any property would also need electricity, water, septic, security, year-round accessibility, fencing, and a barn.

LOCATIONS INSIDE THE PARK

Upper Blacktail Area

During the 1960s, a square mile was fenced in the Upper Blacktail Area and 1000 head of stock were grazed there. Upper Blacktail would have the benefit of getting away from dry dusty conditions at Stephens Creek. However, this area can get heavy snowfall, which would make winter operations more difficult. The area has been rehabilitated (the fence has been removed from the pasture previously based there). New infrastructure would need to be built in elk winter range. Upper Blacktail is not near the lower elevations around Gardiner and Reese Creek where bison operations are in the winter.

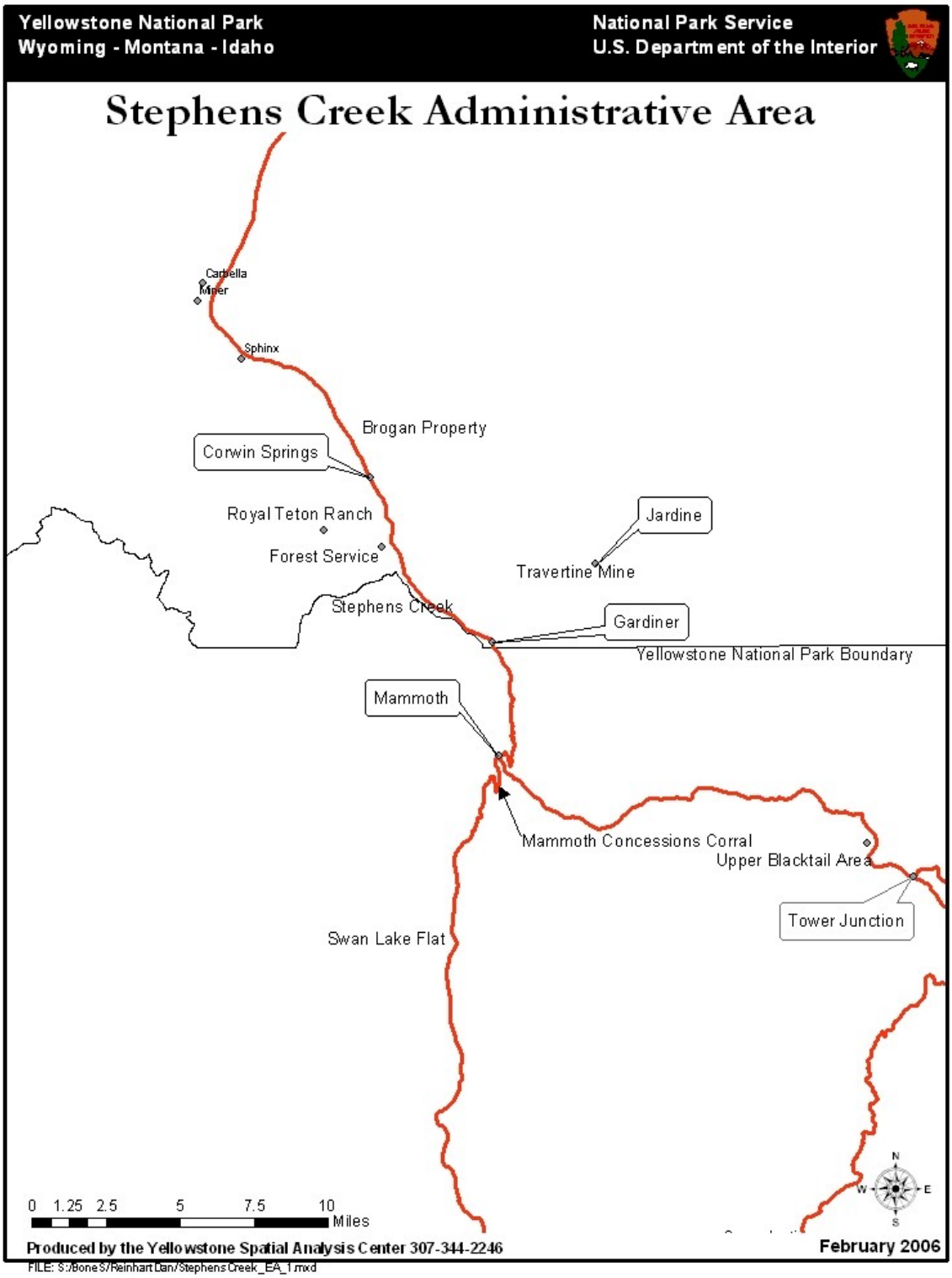

Figure 9: Alternative Locations within and outside Yellowstone National Park

Swan Lake Flat

Swan Lake Flat is large and has easy access to the interior of the park but it has deep snow in winter and into late spring. Infrastructure would have to be built and would impact excellent wildlife habitat. Negative aspects of this location are that the road is not open to this area in the winter and would require snow plowing for a year-round program, nor is it near the lower elevations around Gardiner and Reese Creek where bison operations are in the winter.

Mammoth Concessions Corral

This area, located one mile south of Mammoth Hot Springs, has been used for a concessioner horse operation. The infrastructure consists of a parking lot, small barn and corral, vault toilet, and electricity. This site was dismissed because it is in use by the concessioner and the existing facility lacked sufficient size. If park corral and other operations moved here, there would be an increased footprint disturbance and visual impacts with horse trailers, additional structures, hay storage, and enlarged corrals. There would be impacts to ungulate winter range and vegetation through this increased footprint. Due to proximity to a population center, it would not be suitable for the firing range.

LOCATIONS OUTSIDE THE PARK

Several areas outside YNP were considered as alternative locations for park corral operations and excess equipment, trailer, and vehicle storage. The distances to these areas would limit the ability of the rangers to provide security.

U.S.D.A. Forest Service Land Northwest of Park

There is Forest Service land close to the park (near Reese Creek) that is large enough, and topography could be used to screen the SCAA functions. However, the operations would be moved into other ungulate winter range--accomplishing no gain for wildlife. Either a new area or a rehabbed area would be disturbed. Complete infrastructure (water, septic, fencing, and barn) would be needed. Safety for staff and stock would be an issue during hunting season.

Travertine Mine above Gardiner

The travertine mine above Gardiner is private land, close to the park, and may meet the minimum size requirement, but it is currently leased by the Forest Service for summer pasture. Year-round access is difficult, because of the steep grade from Gardiner to this location, especially during wet and winter weather.

Royal Teton Ranch

This area, located in Corwin Springs north of YNP, has sufficient area and is reasonably close but would require additional time for rangers to provide security. There appears to be infrastructure for electricity and septic but there would be fencing, hay sheds, and other facility costs. Discussions were initiated with the Royal Teton Ranch regarding availability and infrastructure. The land is not for sale or available for lease at this time.

Brogan Property

The Brogan Property is near Corwin Springs, approximately seven miles north of YNP. Potentially, this area or part of it would be of sufficient size for some SCAA functions. A benefit would be that part of this land is irrigated which could improve health of stock by decreasing dust during the summer. However, this location is no longer available as the Animal Public Health Inspection Service (APHIS) has established a bison quarantine area there.

Other Properties

Several other privately owned parcels of sufficient size were considered north of the park near the Yellowstone River. These properties were not for sale or lease. Each had year-round access but needed complete infrastructure, electricity, well, septic, fence, barn, and hay shed. Water rights would need to be investigated. Due to their various distances from the park, security would be an issue and there would be increased travel time for park staff. If animals were to get out, they could rapidly move on to the highway, other private land, and become safety hazards.

OTHER ALTERNATIVES CONSIDERED

Moving the Existing Stephens Creek Barn (HS-0100)

During discussions regarding this plan, it was suggested that the existing Stephens Creek barn might be moved back to its original location southwest of the access road and 200 feet northwest of the Rife House. Inspection of this location reveals the footprint and access road are completely revegetated with native plants and the location is immediately adjacent to the wetland draining from the slopes of Mount Sepulcher. Returning the historic barn would cause impacts to wetlands, vegetation, and wildlife habitat, would provide new habitat for exotic plants, and go against the management goal of limiting growth for the SCAA. Because of the potential impacts to natural resources, this alternative was rejected.

SUMMARY OF ALTERNATIVE AREAS CONSIDERED

In summary, many of the areas considered would affect additional wildlife habitat. Areas located outside the park raise security issues as there would be more opportunity for unauthorized access and increased costs (time/dollars/manpower) of providing security patrols. Moreover, funding to acquire or lease non-park land would not be readily available.

AFFECTED ENVIRONMENT

NATURAL RESOURCES

Geology and Soils

Yellowstone National Park is located in a geologically active area (Zone 4) in the intermountain seismic belt of the Rocky Mountains and is noted for outstanding geologic features resulting from volcanism, faulting, and glaciation. Yellowstone is one of the most active geothermal areas in the world. The park is world-renowned for its hot springs, geysers, mud pots, and fumaroles. In addition, earth tremors are recorded frequently in and around the park. The SCAA is located in the northwestern section of the park, northwest of Gardiner, Montana. The general landscape is that the nearly level SCAA pushes up against the sharply rising northern slopes of Sepulcher Mountain. Within SCAA, the topography slopes very gently downward towards the north with several rocky steps towards the Yellowstone River.

The soils at SCAA are formed on alluvial fans derived from sedimentary rocks. The fan is dissected by drainage channels and streams. Gently sloping, SCAA soils interface between the valley floor and steeper mountain slopes. Cobbles and boulders are exposed on the surface away from the mountain slopes. The soils in this area are typically three feet thick with fine to medium texture silts and sands, enriched with calcium carbonate.

Adjacent to the SCAA, terraces were developed for agriculture by flattening and removing rocks and a series of ditches provided for flood irrigation before this area was annexed into the park.

Vegetation

Much of the SCAA is essentially devoid of native vegetation, due to historical homesteading and more recently from the corrals, bison capture, storage, and nursery operations. Planted vegetation includes cottonwoods, chokecherries, and a few conifers. Exotic plant species have come in and include spotted knapweed, crested wheatgrass, and mustard (*Allysum* spp.). The SCAA area has been treated with approved herbicides for a number of years to reduce the amount of noxious weeds.

The area surrounding the SCAA is within the Gardiner Basin and is known as the BLA of the park. This area consists of foothills, comprising a mixture of native vegetation including sagebrush, rabbitbrush, greasewood, juniper, cottonwoods, willow, Douglas fir, and a variety of herbs and grasses. There are also a series of open terraces along and near the Yellowstone River and Reese and Stephens Creeks that were cultivated before this land was annexed into the park. Vegetation in these areas is currently dominated by non-native species including crested wheat grass and mustard species. Yellowstone National Park management is currently studying reclamation strategies to return native topography and vegetation to these terraces.

Yellowstone National Park has about 100 plant species of concern. A rare plant survey was conducted at the SCAA using the Montana Natural Heritage Program's list of plant species of special concern (May 1995). The results of the survey indicate that there are no rare plants in the area proposed for development.

Wildlife

Yellowstone has 60 species of mammals, 12 species of native fish, 5 species of nonnative fish, 6 species of reptiles, 4 species of amphibians, and more than 300 species of birds. Among the 60 species of mammals are 7 species of native ungulates and 2 bear species.

Ungulates

Pronghorn:

Yellowstone pronghorn (*Antilocapra americana*) have historical and biological significance because they (1) were one of a few populations not exterminated or decimated by the early 20th century; (2) were the source for re-establishing or supplementing populations of pronghorn in numerous western states during the first half of last century; (3) express much of the genetic variation formerly widespread in the species, but no longer present elsewhere; (4) have retained some of their historic seasonal migration patterns; and (5) are an integral part of the unique predator-prey ecosystem of YNP. Thus, in 1998-1999 Yellowstone identified pronghorn as a Species of Special Concern, listed their conservation as a high-priority need in the park's Resource Management Plan, and implemented a rigorous monitoring program of abundance, limiting factors, and demographic rates. The following information was coalesced from Barmore (2003), Boccadori (2002), Byers (2002), Houston (1982), Keating (2002), Yellowstone Center for Resources (unpublished data), and references cited therein.

Pronghorn counts varied between 204 and 229 animals during 1996-2004 and there are concerns about the long term viability of Yellowstone pronghorn. Isolation, relatively low abundance, chronically low recruitment, and reductions in the quantity and quality of available winter range have increased their susceptibility to random, naturally occurring catastrophes (e.g., severe winter weather, droughts, and disease epidemics). Fawn survival has been chronically low since at least the mid-1960s, with high neonatal mortality regardless of pronghorn density. Fawn survival was <10% during 2000-2001 and coyote predation was implicated as the major source of mortality. Annual survival of radio-collared adult females in Yellowstone ranged between 0.76 and 0.92 during 1999-2004. These estimates are somewhat low compared to those in most unhunted populations where prime-aged females typically have high (>0.95) survival. Causes of mortality included predation by coyotes, mountain lions, and wolves (n=12), birthing complications (n=1), and unknown determinations due to scavenging or deterioration of the carcasses (n=7). No winter-kill (i.e., starvation) was detected during these relatively mild winters. Also, samples from 32 pronghorn captured in 1999 revealed low parasite loads, no evidence of exposure to significant levels of arsenic or lead, and no obvious disease problems affecting pronghorn survival. Data collected during 1999-2001 suggest that Yellowstone pronghorn are obtaining adequate nutrition and have relatively good body condition. Essentially all adult Yellowstone females became pregnant and produced twins each year, regardless of whether they raised fawns to weaning in the previous year. Birth mass was not related to survival, suggesting that poor fawn condition is not a significant source of mortality.

Yellowstone pronghorn congregate in a relatively small, high-elevation basin near Gardiner, Montana, during December through March where snow depths are relatively low compared to their higher elevation summer ranges. Yellowstone pronghorn prefer to forage in areas with <8 cm of snow and are rarely observed feeding in snow >15 cm deep, except during severe winters.

Thus, lower elevation habitats in the Gardiner basin, both inside and outside the park, are vital to the persistence of this population. In late March or early April, approximately two-thirds of the pronghorn migrate over Mt. Everts to widely dispersed summer ranges at higher elevations in the Blacktail Deer Plateau, Oxbow Creek and Hellroaring slopes, Specimen Ridge, and Lamar Valley. The remaining animals summer in the Gardiner basin.

Pronghorn are selective feeders and prefer forbs in all seasons, likely due to their high digestibility and nutritional value. However, shrubs are important for pronghorn survival, especially during winters with deeper snows. The quantity and quality of winter range for Yellowstone pronghorn has been a chronic concern for more than a century owing to settlement and land use changes in the Gardiner basin. None of the cover types in the Gardiner basin winter range are extremely productive, as indicated by the low percent canopy cover of herbaceous plants and shrubs (9.8-38.3%). Thus, no one cover type is most important for feeding and/or bedding and pronghorn must meet their nutritional needs from a combination of types. During winters 2000-2001, radio-collared females selected rabbitbrush (*Chrysothamnus* spp.) and greasewood (*Sarcobatus* spp.) cover types more than grassland, while less selection was shown for old agricultural fields/pastures, cover types where sagebrush (*Artemisia* spp.) was common, and other cover types (e.g., alfalfa, riparian, Douglas fir). Two patches of rabbitbrush located adjacent to the SCAA are frequently used by pronghorn throughout the year. Sagebrush, grass-sagebrush, and old agricultural field cover types near Stephens Creek are also used by pronghorn throughout the year. The use of these habitats near Stephens Creek increases during autumn and winter, likely due to the lack of snow cover and presence of forbs and annual grasses. Large groups of >70 pronghorn are frequently seen within 0.5 km of the Stephens Creek facility during winter. Also, pronghorn fawning occurs in rabbitbrush, sagebrush, and grass-sagebrush habitats adjacent to the SCAA.
Pronghorn have apparently habituated to lower intensity, day-to-day activities (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training) and vehicle traffic at the SCAA since they are routinely observed feeding and bedding adjacent to the Stephens Creek facility and access road while such activities are ongoing. However, there are strong indications that irregularly scheduled, higher-intensity activities (e.g., bison hazing and processing, weapons training, log building construction) at or near the Stephens Creek facility can displace pronghorn >1 km away. Some displacements appear to be temporary and ephemeral because pronghorn were observed foraging in habitats adjacent to the Stephens Creek facility less than 60 minutes after bison processing operations ceased during winter 2004.

Elk:

The northern Yellowstone elk herd constitutes one of the world's largest migratory elk populations, with maximum counts of >19,000 elk wintering on the northern range in Montana and YNP during the mid-1990s. This world-renowned population is a major attraction for park visitors, provides economic and sport hunting opportunities for the local community, and is an integral part of the park's intact predator-prey system. There is convincing evidence that elk are a keystone species that has a disproportionately large effect on other species inhabiting the greater Yellowstone ecosystem. Thus, changes in elk abundance and distribution could contribute to substantial changes in the structure and function of this ecosystem during the coming decades. The following information was coalesced from Cook et al. (2004), Coughenour and Singer (1996), Houston (1982), Singer and Norland (1994), White and Garrott (2005), Yellowstone Center for Resources (unpublished data), and references cited therein.

Trend counts of northern Yellowstone elk decreased at an overall rate of approximately 6% per year (95% CI=2-10%) during 1994-2005, from approximately 17,000 in 1994 to 9,545 during 2005. Predation by wolves and other large carnivores, as well as moderate human harvests of antler-less elk during the Gardiner Late Elk Hunt were the primary factors contributing to this decreasing trend. Other contributing factors include a substantial winter-kill owing to severe snow pack during 1997 and, possibly, drought-related effects on pregnancy and survival. Recruitment typically varies markedly among years in response to environmental variation and its strong interaction with density on juvenile survival and fecundity, but only ranged between 12-14 calves per 100 adult females during 2002-2004 after wolves reached high densities and the ratio of wolves to elk increased on the northern range. The survival rate for prime-aged females during 1996-2003, was 0.85 (95% CI=0.81 to 0.87) compared to 0.99 when harvests were low and wolves absent. Cause-specific mortality for radio-collared adult female elk during 2000-2003 was hunter harvest (10 of 27 deaths), wolf predation (9 deaths), unknown determinations due to scavenging or deterioration of the carcasses (5 deaths), and mountain lion predation (3 deaths).

No disease epidemics or population-impairing parasite infestations have been documented in Yellowstone elk. However, chronic wasting disease, a fatal neurologic disease of cervids, was detected in winter 2004 approximately 130 miles from the southeastern boundary of Yellowstone near an area where elk that summer in the park could commingle with mule deer (*Odocoileus hemionus*) during winter. Thus, this disease poses an imminent and fundamental threat to elk in the Greater Yellowstone Area. Data collected during winter 2000-2002 suggested that northern Yellowstone elk were in relatively good condition; though there were indications that some nutritional limitations occurred on summer ranges, with digestible energy intake insufficient to support both lactation and fat accretion. Pregnancy rates for prime-age females (3-15 years) during 2000-2003 when elk densities on the winter range varied between 8-12 elk/km^2 were high (0.90) and similar to those prior to wolf restoration (1950-1967) when elk densities varied between 5-9 elk/km^2. Probability of pregnancy was a function of body fat levels, with pregnancy unlikely at <6% body fat. Most non-pregnant elk were either lactating at time of capture or >14 years old.

Northern Yellowstone elk winter on approximately 1,500 km^2 of foothills and valley bottoms along the Gardiner, Lamar, and Yellowstone rivers between the northeast entrance of Yellowstone near Cooke City and Dome Mountain/Dailey Lake in the Paradise Valley of Montana (outside the park). Snow pack strongly influences the number of elk migrating to lower elevations in the Gardiner Basin and Paradise Valley. Between 832 and 4,547 elk have wintered north of Dome Mountain each winter since 1989. This represents 39-90% of the elk wintering north of Yellowstone. Also, there is a tendency for adult females with calves and yearlings tending to migrate to lower elevation areas inside and outside the park. Thus, lower elevation habitats in the Gardiner Basin, both inside and outside the park, are vital to the persistence of this population. The majority of northern Yellowstone elk migrate to summer ranges along the east-central boundary of the park, north of the park onto the Buffalo Plateau, and as far south as Lewis Lake.

Northern Yellowstone elk are habitat generalists that use virtually every vegetation type on the northern range during winter. They are primarily grazers, but also browse in autumn and winter. During the 1960s and 1980s, winter diets on the northern range consisted of approximately 75-80% grasses (*Agropyron spicatum*, *F. idahoensis*, *Poa* spp., *Koeleria macrantha*, *Calamagrostis* spp.), 8-11% shrubs (*A. tridentate* and *A. frigida*, *Chrysothamnus* spp., *Salix* and

Populus spp.), 3-5% conifers, 2-8% sedges, 1-3% rushes, and 3% forbs. Thus, northern Yellowstone elk consumed a relatively low quality diet during winter, with the consumption of browse increasing during severe winters and the consumption of forbs increasing during spring. During winter, the sagebrush- and conifer-covered slopes of Sepulcher Mountain located south of the Stephens Creek facility are frequently occupied by hundreds of elk. These slopes are also a major calving area for elk during mid-May to mid-June.

Mule Deer:

Although very few of the Yellowstone mule deer winter inside the park's northern boundaries, some are occasionally seen grazing in Gardiner and in open fields nearby. Few mule deer are observed around SCAA and are more common in and around Gardiner, Montana, northwest of Reese Creek, and particularly in habitats on the north side of the Yellowstone River.

Bighorn Sheep:

Bighorn sheep typically forage near escape terrain on the northern slopes of Mount Everts, upstream of Gardiner along the breaks above the Yellowstone River, and in Yankee Jim Canyon, distances greater than 5 km from the proposed location.

Moose:

Moose occur in YNP in forested habitats. Moose are not known to occur near the SCAA.

Bison:

The town of Gardiner is within the present and historic winter range of bison. However, the area does not contain bison calving grounds. Although some bison have been radio collared in the park between 1990-2001, no radio-collared bison have been located in the area analyzed. A very limited number of bison occasionally graze the football field and lawns at the Gardiner School. Bison occur uncommonly within 5 km of the SCAA during spring, summer, fall, and most winter seasons. During severe winters, some bison may forage on the grassy foothills flanking the north slopes of Sepulcher Mountain, and on the flats between SCAA and the Yellowstone River.

Other Wildlife

Mammals

Non-Ungulate Mammals that occur in the vicinity of the SCAA include medium to large mammals such as black bears, mountain lions, coyotes, badger, and red fox. Small mammals include deer mice, yellow pine chipmunks, red-backed voles, short-tailed weasels, tree squirrels, golden-mantled ground squirrels, and jackrabbits and cottontails rabbits.

Black bears are dispersed throughout the park and are most likely found within and near forested areas. Their primary diet in YNP includes ungulate carcasses, elk calves, spawning cutthroat trout, army cutworm moths, whitebark pine seeds, ants, grasses, sedges, dandelion, cow parsnip, fireweed, geranium, huckleberry, serviceberry, buffalo berry, chokecherry, rose,

grouse whortleberry, and the cambium of Englemann spruce and lodgepole pine. In late summer, black bears occasionally eat apples from the historic orchard in the front yard of the Rife House adjacent to the SCAA. However, with the recent drought, the apple trees have produced very little fruit for the last 5 years. In 2004, they produced no apples at all. Only four of the historic trees remain alive in 2005, two of these are likely to die within a few years. Black bears also occasionally forage at the road-kill carcass dump in lower Stephens Creek, however, the carcasses are primarily scavenged by grizzly bears which are dominant over black bears.

Historically, black bears have been involved in more bear/human conflicts than grizzlies. However, since implementation of the new Bear Management Program in 1970 which emphasizes preventing bears from obtaining human foods and garbage, there have been very few black bear-human conflicts within the park. The SCAA is considered to be low- to medium-quality bear habitat. During the 10 year period 1995-2004, there were only 10 sightings of black bears or black bear tracks within 3 km surrounding the SCAA. (Note: Grizzly bears are discussed in the "Threatened and Endangered Species" section below.)

Amphibians and Reptiles

Recent amphibian surveys indicate three species of amphibians are widespread and common in many parts of the park: the blotched salamander, boreal chorus frog, and Columbian spotted frog. Reptiles such as common garter snakes, bull snakes, western rattlesnakes, and sagebrush lizards could be found at SCAA.

It is unlikely that there is a reproducing population of amphibians at SCAA as suitable habitat does not exist there. Western rattlesnakes occasionally come down from hibernacula on the slopes of Hoppe Ridge immediately west of the SCAA. However, rattlesnakes are not known to occupy the SCAA on a permanent basis because the area has been affected by past human activities (personal communication, Roy Renkin, management biologist, YNP, 2005).

Birds

Birds found near SCAA include Clark's nutcracker, black-billed magpie, northern flicker, American kestrel, common raven, bald eagle, osprey, cliff swallow, barn swallow, vesper sparrow, western meadowlark, horned lark, mountain blue bird, and rock pigeon (personal communication, Terry McEneaney, park ornithologist, YNP, 2005).

Fish

The Yellowstone River near the SCAA contains native Yellowstone cutthroat, mountain whitefish, sculpins, and long nosed dace, and non-native brook trout, brown trout, rainbow trout, and cutthroat-rainbow hybrids. Reese Creek, approximately one mile north of the SCAA, contains many of the species found in the Yellowstone River. However, because Stephens Creek does not reach the Yellowstone River, there are no fish species in the area of the SCAA.

Threatened and Endangered Species

The Endangered Species Act (1973) requires an examination of impacts on all federally listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species.

There is one threatened bird species and two threatened mammal species present in YNP. The bald eagle, grizzly bear, and Canada lynx are currently classified as "threatened" under the Endangered Species Act of 1973. Gray wolves are designated as an experimental, non-essential population within the greater Yellowstone ecosystem (GYE) but treated as a threatened species within the park. The arctic grayling, a federal candidate for listing, is not known to occur in Reese Creek, Stephens Creek, or the Yellowstone River.

Bald Eagle

Both resident and migrating bald eagles can be found throughout Yellowstone. Bald eagle nesting sites occur primarily along the margins of lakes and along the shoreline of the larger rivers in the park. The bald eagle management plan for the GYE has achieved the goals set for establishing a stable bald eagle population in the park. Bald eagles are known to forage along the Yellowstone River between Reese Creek and Gardiner.

Gray Wolf

Gray wolves were native to the Yellowstone area at the time the national park was established in 1872. Gray wolves were historically hunted for their hides and were the target of systematic poisoning from 1872 through the early 1900s. As a result, the gray wolf was extirpated from the ecosystem by the 1930s.
The U.S. Fish and Wildlife Service released an EIS in May 1994 outlining wolf population recovery and reintroduction plans for Yellowstone and central Idaho. In 1995, 14 gray wolves were reintroduced to YNP. In 1996, 17 more wolves were released in the park. As of January 2005, there were about 333 wolves inhabiting the greater Yellowstone ecosystem. There are 33 packs or groups in the GYE, most of which inhabit territories within GYE, and most of which inhabit territories within Yellowstone or Grand Teton National Parks. Thirty-two packs have breeding pairs.

Wolves are occasionally seen in habitats between Gardiner and Reese Creek. The Swan Lake Pack currently uses the area north and east of Sepulcher Mountain for hunting prey, particularly during the winter and spring. Wolves are generally not sensitive to human disturbance, except near den sites (personal communication, Doug Smith, wildlife biologist, YNP, 2005). In 1997, the Chief Joseph pack denned within 3 km of Stephens Creek but have not been that close since then. In 2005, the Swan Lake pack denned in Gardner's Hole on the south side of Sepulcher Mountain, over 3 km away, but their 2006 status is unknown and this pack may have disbanded.

Stephens Creek is not considered important wolf habitat. They tend to avoid the area but do travel through. They are rarely located there from official records; most information on them comes from Stephens Creek staff noting tracks showing that they have traveled through. The SCAA is not within heavily used habitat for wolves (Doug Smith, wildlife biologist, YNP, 2005).

Canada Lynx

On March 21, 2000, the USFWS listed the Canada lynx as threatened under the Endangered Species Act. Of the 56 recorded lynx sightings in Yellowstone NP between 1887-1998, there is only one historic record of a lynx occurring within 4.8 km of the SCAA. In 1990, the park received an unverified report of a lynx at the confluence of the Gardiner and Yellowstone Rivers, approximately 7.5 km north of SCAA (YNP wildlife sightings records, on file).

The site does not occur within a Lynx Analysis Unit or lynx habitat mapped per guidelines of the Canada Lynx Conservation and Assessment Strategy (Murphy 2000).

Grizzly Bear

In 1975, the grizzly bear was listed as threatened in the contiguous United States (U.S.). Fewer than 1,500 grizzlies are thought to survive in the lower 48 states, mostly in Montana, Wyoming, and Idaho. The grizzly bear population within the 5.9 million acres encompassed by the Grizzly Bear Recovery Zone has been estimated at 280-610. Nearly 40 percent of this area, 2.2 million acres, is within the boundaries of YNP. The bear management program in Yellowstone is directed toward the recovery, maintenance, and management of the grizzly bear population, while also providing for safe park visitor experiences. The U.S. Fish and Wildlife Service will conduct a status review of the Yellowstone Grizzly Bear Population in 2005 and may propose removing grizzly bears from Threatened Species status at that time.

The primary food sources of grizzly bears in YNP include ungulate carcasses, elk calves, spawning cutthroat trout, army cutworm moths, whitebark pine seeds, pocket gophers and their root caches, false truffles, ants, earth worms, grasses, sedges, cow parsnip, elk thistle, fireweed, geranium, huckleberry, serviceberry, buffalo berry, grouse whortleberry, chokecherry, rose, the cambium of Englemann spruce and lodgepole pine, and the roots of spring beauty, yampa, onion grass, biscuitroot, and angelica. The Sepulcher Mountain foothills near the SCAA are a calving area for northern Yellowstone elk. This area is also frequested by bears during the elk calving season in May-June. In late summer, bears occasionally eat apples from the historic orchard in the front yard of the Rife House adjacent to the SCAA. However, with the recent drought, the apple trees have produced very little fruit for the last 5 years. In 2004, the historic trees produced no apples at all. Only 4 of the trees in the historic orchard remain alive in 2005. The SCAA is considered to be low- to medium-quality bear habitat. Between 1995 and 2004, 32 grizzly bear activity reports were recorded within 3 km (2 miles) of the SCAA. Most of these sighting were associated with the road-killed wildlife carcass dump and the historic orchard at the Rife House. Some were bears passing through the SCAA to access gardens and orchards on private land north of the Yellowstone River along Highway 89.

Occupied grizzly bear habitat in the GYE has been divided into 18 grizzly bear management units (BMUs). The BMUs were created to monitor bear population trends and to analyze the effects of habitat use or development on local bear populations. Each BMU is assumed to be sufficient to support its bear population from spring through fall.

The proposed development area is located within the Gallatin BMU. The SCAA is considered to be low- to medium-quality spring bear habitat. Between 1997 and 2001, 9 grizzly bear activity

reports were recorded within about 3 km (2 miles) of the Gardiner area (in YNP). Grizzly bear-human conflicts have not been recorded in the proposed development area.

Water Resources and Water Quality

The Yellowstone River is about 200 feet below the elevation of the SCAA. Reese Creek is a tributary to the Yellowstone River and is located 1.5 miles north of the SCAA. Stephens Creek is also a tributary of the Yellowstone River and is 0.4 mile south of the SCAA. Some natural turbidity and increase in color occurs in the creeks and river during high runoff periods in June and early July.

Groundwater does not occur near the surface of the SCAA project area and there are no discharges into streams. Water is obtained for human, stock, bison use, and for watering the nursery and the Rife House yard from the development of a spring high on the slope of Sepulcher Mountain.

Springs and run-off from Sepulcher Mountain were developed during the historic homesteading period, and, along with water from Stephens Creek, have historically provided water for the Rife House and the SCAA. Wilson Springs high on the hillside flow in a small stream downhill and create a narrow strip of wetland. The date for the original development of this water source is not known but a pipe was installed in 1933 to distribute water. Water from the spring collects in a small concrete tank from which water is piped to the SCAA and the Rife House. The leaking pipe was replaced in the mid-1990s. When water is not being used or the tank is full, water overflows into the wetland. Water is sufficient for domestic, lawn and orchard watering, stock/bison use, and for the nursery. On the hillside below the high spring and north of the Rife House is a small reservoir of earth and concrete and its water appears to be largely from spring and summer run-off. This reservoir has been abandoned and leakage from it extends the wetland down the hill.

There are several historic ditches that carried water to the nursery, gardens, corral operations, and adjacent fields. Water for these ditches came from Stephens and Reese Creeks and from a small impoundment southeast of the Rife House. That impoundment has been breached and no longer holds water. Water from Stephens Creek was not used after 1984-96 when the head gate was removed. Two ditch complexes were evaluated for their eligibility for the National Register of Historic Places and were determined not eligible under Criterion D.

Currently, water for the Rife House, human and livestock consumption, and the nursery at the SCAA comes from the developed spring box on the slope above and west of the SCAA. A series of historic and non-historic ditches run through the SCAA from Reese and Stephens Creeks and Wilson Springs but are currently not functional as they are no longer connected to water sources. The one exception is the ditch above and parallel with the two track road going to the bison capture facility. This ditch captures water from the hillside and directs it away from the equipment storage area, the road, and corral operations. This ditch was cleaned out most recently in about 1999. Other ditches have not been used in the past several decades.

Wetlands

There are wetlands to the west of the SCAA as the slopes of Sepulcher Mountain drain in several intermittent streams and natural springs. The wetlands have been affected by the development of the springs and installation of concrete spring boxes as the impounded water has created wetland areas. One spring is currently in use and the other developments are abandoned.

One spring now provides water by pipe for the SCAA and the Rife House. The available water is limited by the volume of the small concrete collection box. When this tank is drawn down, there is little/no water in the waterline until the inflow again accumulates. Although stock (and bison when in the capture facility) can consume water at any time, the nursery uses water only during the week day and domestic use at the Rife House is primarily early morning and evening. There are no historic records for the volume of water used from these springs but as the vegetable gardens are no longer planted and the nursery is smaller than it was historically, the volume of water used from the hillside is believed to be less. Also, since the replacement of the leaky pipe (early 1990s), less water is drawn off the hillside.

Visual Quality, including Lightscapes

Visual quality affects both visitor enjoyment and perception of Yellowstone. The SCAA is currently used by the NPS to stockpile miscellaneous vehicles, equipment, and trailers. These are visible for long distances due to their bright yellow, orange, and white colors. While the Rife House has an automatic yard light that is visible for long distances, the lights at corral operations are manually controlled and on only when staff are present and working. The NPS strives to preserve the natural ambient landscapes, which are natural resources and values that exist in the absence of human-caused light. The park uses the least amount of non-natural light necessary for safe operations.

Soundscapes

In accordance with National Park Service *Management Policies* (2001) and Director's Order #47, *Sound Preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

Hauling material, operating equipment, chipping organic debris, operating chainsaws, electric drills, and other construction equipment, firing range practice, and other construction activities could result in dissonant, human-caused sounds. However, all equipment and construction activity would occur in the SCAA developed area where protection of a natural ambient soundscape and opportunity for visitors to experience natural sound environments are not an objective. Any dissonant sounds associated with construction would be temporary, lasting only as long as the construction activity generating the sound, and would negligibly impact visitor

enjoyment of the park.

CULTURAL RESOURCES

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq*.), and the National Environmental Policy Act, as well as the National Park Service's Director's Order-28, *Cultural Resource Management Guideline (1994*), *Management Policies* (2001), and Director's Order-12, *Conservation Planning, Environmental Impact Analysis and Decision-making* (2001), require the consideration of impacts on cultural resources listed on or eligible for listing on the National Register of Historic Places. The undertakings described in this document are subject to Section 106 of the National Historic Preservation Act, under the terms of the 1995 Service wide Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. This document will be submitted to the Montana State Historic Preservation Officer (SHPO) for review and comment.

Historic Resources

During the latter part of the 19th century, Euro-Americans homesteaded in the Yellowstone area, including what is now SCAA. Increasing numbers of explorers, scientists, and visitors publicized Yellowstone's resources and scenery, leading to the formal establishment of the area as the world's first national park in 1872. Yellowstone was initially administered by civilians from 1872 through 1886. The park was managed by the military between 1886 and 1918 in order to control poaching and vandalism. The NPS assumed administration of YNP in 1918 and continues to manage park activities today. The NPS was created in 1916, but was not funded to operate until 1918, so the Army stayed until then. In the late 1920s and 1930s, the Game Ranch, Inc. purchased homesteads located between Gardiner and Reese Creek. This land was transferred to YNP in the 1932 and is known as the BLA.

Yellowstone has 907 historic buildings and structures on the List of Classified Structures; of these, 553 are eligible for the National Register of Historic Places (National Register). The remaining 354 structures still need to be evaluated for eligibility to the National Register. Five buildings have been designated as National Historic Landmarks. These include the museums at Madison, Norris, and Fishing Bridge; the Northeast Entrance Station; and the Old Faithful Inn. The majority of Yellowstone's historic buildings are located within developed areas of the park.

In the SCAA, there are three National Register eligible structures: the Rife House, its associated garage, and the Stephens Creek barn (HS-0100). Historic Structure-0100 is currently used as the animal health area/leather shop for the park's horse operation. The building was moved from its original site, which was approximately 400 feet to the west of the nearby residence, the Rife House [HS-0102], from 1983-1984 (Jim Hotchkiss pers. comm. 2005). Its original function was as the Game Ranch, Inc. barn. Historic Structure-0100 has been determined to be eligible for the National Register of Historic Places under Criteria A and C for its association with the historic context "Administration of YNP, 1872-1966.

Four cabins were moved in from the Lamar Buffalo Ranch. These cabins may have originally been at Fishing Bridge. They have been determined to be not eligible for the National Register

of Historic Places and are used by the nursery for an office/storage, corral operations to store grain, and by the rangers to store firing range supplies.

Cultural Landscapes

According to the National Park Service's *Cultural Resource Management Guideline* (DO-28), 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." In order for a cultural landscape to be listed in the National Register, it must possess significance (the meaning or value ascribed to the landscape) and have integrity of those features necessary to convey its significance. (See *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of,* 1996).

A cultural landscape inventory (CLI) has been prepared for the area associated with the historic Game Ranch, which contains the area of potential effect (Stephens Creek Administrative Area or SCAA). The CLI has been submitted for consensus determination of eligibility to the National Register of Historic Places, with the recommendation that it is eligible as a locally significant historic district under Criterion A for (1) its association with Yellowstone's early game management philosophies, (2) for its association with the park's landscape naturalization program (blending park developments into the landscape through the propagation of native plants), and (3) because of its association with the Civilian Conservation Corp (CCC) program. The buildings constructed by the CCC are significant under Criterion C for the NPS Rustic Architectural style used in rehabilitating and building of structures. The following descriptions of this cultural landscape, its contributing and non-contributing features and boundary are based on the significance, integrity, and eligibility recommended in this CLI.

Formerly a vernacular homestead landscape in a rural ranching river valley, the historic Game Ranch was purchased and developed for the express purpose of game conservation (the protection and feeding of elk and antelope on their northern range) at Yellowstone National Park. It was also the location of an extensive native plants nursery used to provide plant materials for the park's naturalization program (used to blend and harmonize the rustic architectural park developments into the landscape). A historic designed landscape, this entire complex was planned and designed in 1934 by a landscape architect employed by the National Park Service Branch of Plans and Design, and then constructed by the Civilian Conservation Corps (CCC). After constructing the facility in 1934-35, the CCC then operated the ranch and nursery until 1942. The nursery was disbanded in 1942, coinciding with the end of the Emergency Conservation Work (ECW) program. The park ceased irrigating the hay fields used to feed game sometime later (between the 1940s-50s), as a result of a shift in game management policy that made it inappropriate to feed wildlife. The period of significance is recommended as beginning with the construction by the CCC in 1934 and ends with the termination of the CCC operation of the complex in 1942.

The cultural landscape boundary for the Historic Game Ranch encompasses the base of the slope of Sepulcher Mountain where an intermittent small drainage from hillside springs and the leaking impoundment enters the site, and includes three separate spatial zones of the

development: the residential group (Rife House, garage, and immediate environs), the utilitarian group (former nursery, perimeter fence with perimeter shelter belt plantings), and the former cultivated fields (containing open/flat vegetation and irrigation ditches). A tree-lined access road connects the zones and is also considered contributing to the landscape. Expansive panoramic views of the Yellowstone River Valley and surrounding mountains remain mostly undeveloped.

The land uses within this cultural landscape have changed since 1942, as fields were no longer cultivated, irrigation ditches have not been maintained in their historic capacity, the nursery was disbanded, and, in the 1950s, a horse operation was located within the confines of the nursery perimeter fence. The historic barn (HS-0100) was moved from the residential zone to the new horse operation at the former nursery site. Other structures were also moved to the new corral to support that operation. The existing corral operation facilities and activities are considered an appropriate adaptive re-use of the Game Ranch nursery area, representing on-going conservation-related land use that is bucolic and utilitarian in nature. A small native plant nursery still exists and shares the area within the nursery perimeter fence with the horse operation. Plantings are in poor condition due to deferred maintenance and irrigation. The shelter-belt plantings have been partially decimated by both the horses as well as lack of irrigation. Bison management fences and have been constructed adjacent to the former nursery site. Vehicles, equipment and materials are stored in a graveled area next to the former nursery.

The SCAA encompasses one of the three spatial zones within the Historic Game Ranch cultural landscape: the utilitarian/nursery area. Contributing features within this area include the historic perimeter fence with its location, materials and workmanship representing the former nursery operation. Also included are remnant shelter-belt plantings, and the primary access road to the former nursery. Although the barn (HS-0100) was relocated from the residence zone to the corral operation, it remains a contributing feature since it still resides within the proposed district. Other structures moved to the former nursery area are non-contributing. The bison corrals, firing range, vehicle/equipment/materials storage area, and the corral operations are not contributing features to the cultural landscape.

Ethnographic Resources

Ethnographic resources are defined by the NPS as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (DO-28, *Cultural Resource Management Guideline*, p. 191).

For at least 12,000 years, Native Americans occupied the greater Yellowstone area. A number of Native American tribes were historically present in Yellowstone on at least a seasonal basis. These tribes may have included the Eastern Shoshone, Crow, Blackfeet, Nez Perce, Bannock, Salish, Lakota/Sioux, Gros Ventre, and Kiowa. During the early and middle 19th century, Euro-American explorers documented occupation of areas within the park by a band of Shoshone known as the Sheepeaters.

Today, the tribes who are affiliated with YNP, and with whom consultation occurs on a semi-annual basis, are (listed in alphabetical order): Assiniboine and Sioux Tribes of Ft. Peck; Blackfeet; Cheyenne River Sioux; Confederated Tribes of Salish & Kootenai; Coeur d'Alene tribe; Crow; Crow Creek Sioux; Eastern Shoshone; Flandreau Santee Sioux; Gros Ventre &

Assiniboine; Kiowa Tribe of Oklahoma; Lower Brule Sioux; Nez Perce of Lapwai, Nespelem, and Colville; Northern Arapaho; Northern Cheyenne; Oglala Sioux, Rosebud Sioux, Shoshone-Bannock; Sisseton-Wahpeton Sioux; Spirit Lake Sioux; Standing Rock Sioux; and Yankton Sioux. There are additional tribes who are considered to be associated with the park due to their interest and concern for bison.

An ethnographic overview of YNP was completed in 2000 (Loendorf and Nabokov 2000) and was published in 2002. The overview did not identify ethnographic resources specifically associated with the SCAA. A skirmish between some Nez Perce warriors, local ranchers (the Henderson Ranch), and cavalry took place about a mile away.

However, park-affiliated and associated American Indian Tribes remain actively interested in bison management issues at Yellowstone and are concerned about the welfare and disposition of bison that are captured at the facility. On different occasions during the winter seasons, representatives of diverse tribes have left offerings in the SCAA. Offerings have been left at the corral and in the field referred to as the "Big Bison" area, in the eastern portion of the study area. In some cases, ceremonies have occurred at these locations in association with the offerings. It appears that neither of the areas where ceremonies have occurred and where offerings have been left will be affected by the alternatives proposed in this EA. Therefore this proposal is expected to have no or negligible impacts on ethnographic resources.

In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed. Additionally, the NPS would ensure that each tribe traditionally associated with the lands of Yellowstone receives a copy of this EA for review and comment. If any tribe identifies ethnographic resources that this project would impact, the NPS would consult with the tribes to mitigate such impacts. The location of any such ethnographic sites would remain confidential.

As implied above, the bison are recognized as being important to all of the 26 park-affiliated and 54 bison-interested tribes. Yellowstone's 26 affiliated Native American tribes, in addition to the Intertribal Bison Cooperative (ITBC), were notified of the proposed SCAA Environmental Assessment during the scoping process. A letter from ITBC expressed concerned about wildlife habitat, invasive plant species, winter range needs for pronghorn, elk, deer, and bison, and that the administrative area is visually obtrusive.

Bison management is guided under the Interim Bison Management Plan and Environmental Impact Statement (NPS, DOI, and State of Montana 1996; NPS 2000). The presence and management of the bison capture facility will not be addressed in this document.

Archaeological Resources

People have been in Yellowstone for more than 11,000 years as evidenced by archeological sites, trails, and oral histories. Archeological sites are the physical remains left by people in the past and include stone tool scatters, campsites, hearths, roasting pits, tool stone sources (quarries), and tipi rings. Archeology also encompasses sites from the historic period including Army snowshoe cabins, abandoned hotels, and garbage dumps.

Currently there are about 1,300 archeological sites documented in about 2% of the park. The park's obsidian was sought after for making tools and was widely traded. Obsidian from Obsidian Cliff has been found in sites in northern Alberta, Ohio, Texas, and Washington state.

In 2001, the park archeologist completed a file search of both the park's Cultural Sites Inventory and the State Archeological Site Files in Missoula, Montana for information on archeological resources in the SCAA. Both searches resulted in findings that an archeological inventory (Allen 1994) had been done and no archeological sites were identified. Allen inventoried the Stephens Creek development for preparation of the bison capture facilities with negative results. Further Class II inventory by the park archeologist has not identified any National Register eligible archeological resources within the SCAA. Two irrigation ditches (24YE19 and 24YE167) were documented in the Stephens Creek area and determined to be not eligible for the National Register of Historic Placed under Criterion D in consultation with the Montana State Historic Preservation Office.

There are also no known historic archeological sites in the SCAA, although occasionally an individual object greater than 50 years in age may be found. The general scarcity of historic archeological objects probably relates to efforts to clean up the area. Because the area has had an appropriate archeological inventory and no resources were identified, no further work is recommended. However, it is acknowledged that there are a number of historic and prehistoric archeological sites in the BLA, so the construction for the proposed barn and leveling for the equipment storage would be monitored by the park archeologist.

ENVIRONMENTAL CONSEQUENCES

The NEPA requires that environmental documents disclose the environmental effects or consequences of a proposed federal action, and any adverse effects that cannot be avoided should the proposed action be implemented. In this instance, the proposed federal action involves changes to SCAA as recommended through decisions related to this management plan. The proposal would be limits on the amount of sprawl, reduce future impacts on native vegetation, control exotic vegetation, and propose construction of a barn for corral operations.

The intent of this section is to provide an analytical basis for comparison of the alternatives and the impacts that would result from implementation of these alternatives. Impact topics have been selected for the analysis based on the potential for effects on significant resources and other key issues identified during planning. Expected impacts are described for each of the alternatives considered.

The CEQ regulations, which implement the National Environmental Policy Act, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for the two alternatives presented in this plan.

METHODOLOGY FOR ASSESSING IMPACTS

Potential impacts (direct, indirect, and cumulative effects) are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, long term, or permanent?), and intensity (is the degree or severity of effects negligible, minor, moderate, or major). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed by this EA.

The following analysis of impacts was based upon whether the impacts would be:

beneficial: (a positive change in the condition of the resource, or a change that moves a resource toward its desired condition);
adverse: (a negative change in the condition of the resource, or a change that moves a resource away from its desired condition);

direct: (an effect that is caused by an action and occurs at the same time and place);
indirect: (an effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable);

short-term: (an effect which in a short amount of time would no longer be detectable, as a resource returns to its pre-disturbance condition; generally less than 5 years);
long term: (a change in a resource or its condition that does not return to pre-disturbance levels and for all practical purposes is considered permanent).
The analysis is also based upon whether the intensity or severity of the impacts includes:

negligible: (the impact is at the lowest levels of detection);
minor: (the impact is slight, but detectable);

moderate: (the impact is readily apparent);
major: (the impact is a severe or adverse impact or of exceptional benefit).

IMPAIRMENT

In addition to determining the environmental consequences of the preferred and other alternatives, NPS *Management Policies* (2001) requires 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 Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS the management 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 NPS 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. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent it affects 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.

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 environmental consequences section for each impact topic.

CUMULATIVE IMPACT SCENARIO

The CEQ regulations, which implement NEPA (42 USC 4321 *et seq*.), require assessment of cumulative impacts in the decision-making process for federal projects, regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives, including the no-action alternative.

Cumulative impacts were determined by combining the impacts of the preferred alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects surrounding the project area.

The geographic scope of this analysis includes elements within the park's northwest portion. The following projects were identified for the purpose of conducting the cumulative effects analysis, listed from past to future: bison capture facility, Heritage and Research Center and possible wings, proposed Yellowstone Association
building, vegetative restoration of former agricultural fields in the BLA, Rails-to-Trails proposal, and road rehabilitation in the northwest portion of YNP.

The analysis of the cumulative effects includes a discussion of current development plans within YNP and information about development plans for the lands surrounding the project area. Development plans in the immediate project area are primary factors in the analysis of cumulative impacts. In addition to determining the environmental consequences of the preferred and other alternatives, NPS policy (*Management Policies, 2001*) requires analysis of potential effects to determine whether or not actions would impair park resources.

Two plans, the Final Environmental Impact Statement for the Interagency Bison *Management Plan*, for the State of Montana and Yellowstone National Park (NPS 200) and Interim Bison Management Plan (National Park Service, Department of the Interior, and State of Montana 1996) address portions of the SCAA for bison management. The bison operation remains under the planning in these environmental documents and minor improvements to its operation could be made in the future.

Phase I of the Heritage and Research Center (HRC) is on the north side of Gardiner, Montana. This building has an 11,000 sq. ft. footprint and houses museum storage, herbarium, the library and archives, and laboratories for archeology, botany, and geology/paleontology. Future expansion, either attached or detached buildings may include a storage and display area for the historic vehicle collection, natural resources science wing or building, or warehouse and/or office space for the Yellowstone Association Institute (Heritage Center EA). Funding is not currently available for any of these projects.

There is interest in re-establishing native vegetation in the BLA where non-native vegetation has invaded the homestead and former Game Ranch, Inc. cultivated fields. In 1994, test plots were created in the BLA northwest of the intersection of the county road and the road into SCAA. This area was planted, fertilized, and watered. When the watering ceased, the vegetation turned quickly back to non-native crested wheat grass and *Alisum* species. Another effort to determine strategies to restore portions of the BLA to native vegetation has started with a spring 2005 meeting of range experts who identified recommendations for steps to be taken to re-establishment native plant species on the flats along the Yellowstone River.

Yellowstone continues with the road construction projects. These projects replace the poor quality, twenty-foot wide roads with a high quality, usually 30-foot wide road beds. Road improvements generally follow existing alignments. Improvement of the roadway between Mammoth and Gardiner is being planned and unless there is a catastrophic failure of the road in the Gardiner Canyon, work on the Gardiner-Mammoth road is scheduled for 2010 and could be delayed due to other work in the park. There are no plans to upgrade the gravel county road from Gardiner north through the BLA Area.

The track and ties have been removed from the Northern Pacific railroad bed between Livingston and Gardiner, Montana. Within the park, the railroad bed has been converted to a

biking/hiking path. There is public interest in developing a bike trail from Livingston to the park and a route is still being explored. Although many years away, if this were to come to fruition some time in the future, it is possible bike traffic on the section within the park would increase.

Although numerous construction and maintenance projects are planned for the northwest portion of YNP, the major emphasis of these projects is to replace, repair, and rehabilitate existing facilities that are approaching the end of their useful service life. Where new facilities are needed, they would be concentrated in and adjacent to existing developed areas to minimize the creation of new, isolated developments. Although some commitment of previously undisturbed resources is inevitable, as are some adverse cumulative effects, many of the projects to be undertaken involve the removal of existing development and the revegetation of other human activity scars.

IMPACTS TO CULTURAL RESOURCES

In this environmental assessment impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of CEQ that implement the NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act (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 to 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 either *adverse effect* or *no adverse effect* must also 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 inclusion in the National Register, e.g. diminishing the integrity (or the extent to which a resource retains its historic appearance) 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.

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, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant 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. Therefore, although actions determined to have an adverse effect under §106 may be mitigated, the effect remains adverse.

A §106 summary is included in the impact analysis sections. The §106 summary is an assessment of the effect of the undertaking (implementation of the alternative) on National Register eligible or listed cultural resources only, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

TABLE 3: SUMMARY OF POTENTIAL IMPACTS OF ALTERNATIVES

Impact Topic	Alternative 1 - No Action	Alternative 2 - Preferred
Geology and Soils	There is on-going non-discretionary loss of soils through erosion and wind- caused dust.	About a third of an acre within the existing corrals would be impacted for construction of a barn with a minor long term impact. Management of hillside run-off would limit erosion. Wind would continue to create dust from the surrounding area.
Vegetation-Exotic	Occasional efforts would be made to spray for noxious weeds, as resources are available.	Exotic weeds would be annually inventoried and treated to ensure containment of noxious exotic plants, as resources are available.
Vegetation-Rare Plants	The park botanist would visit the area primarily on other business and, depending upon the time of year, might carry out reconnaissance inventory for rare plants. There would be no specific inventory or monitoring would be done.	Because the list of species of concern changes through time, rare plant inventory would be conducted for ground disturbance such as rehabilitation of the short firing range.
Wildlife	The footprint at the SCAA may continue to incrementally grow under this alternative, thereby resulting habitat loss.	Wildlife would be displaced slightly during barn construction. Displacement of wildlife would be reduced by restricting and existing future activities to the current 43 acre footprint.
Threatened and Endangered Species	The boundaries of SCAA may incrementally expand and additional ungulate winter range may be	Bald eagles, gray wolves, and grizzly bears would be displaced slightly during barn construction. Displacement of these species would be reduced by restricting and

Impact Topic	Alternative 1 - No Action	Alternative 2 - Preferred
	diminished.	existing future activities to the current 43 acre footprint.
Water Resources and Water Quality	Water would continue to be used for domestic, animal, and nursery use.	Some increase in water usage would be anticipated but mitigation measures such as low flow toilet and drip irrigation would be implemented.
Wetlands	Springs and overflow from the holding tank and leakage from the historic reservoir would continue to support the hillside wetlands.	The flush toilet and irrigation of additional trees for the SCAA would have an increased water use. This is mitigated by low flow toilet and drip irrigation of vegetation replacing the current spray irrigation. Water would still overflow the holding tank and historic reservoir would continue to leak into the wetlands.
Visual quality and Lightscapes	It is envisioned that storage at SCAA would continue and would be expected to increase, contributing additional sprawl. Vehicles, recreational campers, horse and house trailers, and metal storage units would continue to be visible from Highway 89. The yard light at the Rife House would continue to be visible at night.	The management plan for SCAA would specify areas for different functions and limit sprawl. Unneeded or excess equipment, house trailers, and materials would be disposed of or sold. The three rented metal storage units would be returned and the semi-trailer used for storage could be removed. Trees and shrubs would be planted to supplement existing vegetation. As the vegetation matures, it will increasingly screen the storage area. The Rife House yard light would be replaced with a night sky sensitive light.
Soundscapes	The operations of the firing range could continue without constraints on timing.	The operations of the firing range would continue but would limit low light exercises to non-summer months, so that shooting noise would not be heard outside the park after 10 p.m.
Historic Structures	The Stephens Creek Barn (HS-0100) would be	HS-0100 would remain at its present location, or could be moved a short

Impact Topic	Alternative 1 - No Action	Alternative 2 - Preferred
	retained in its present location. Its current functions as leather shop and animal health area would continue or perhaps change in the future. Waste water from the sink would continue to be discharged into the soil beneath HS-0100.	distance in the immediate vicinity, and would be adaptively used for storage or another use. It would retain its National Register eligibility. Construction of a new barn would have a moderate, indirect, and long term effect.
Cultural landscapes	Unmanaged sprawl, and associated incremental changes in the SCAA would be expected to continue. Impacts to the cultural landscape would be minor, indirect, long term, and would cause no adverse effect.	The construction of a new barn would have a minor long term impact which under Section 106 could be considered to be a no adverse effect to the cultural landscape. Visual impact of equipment storage would be mitigated through designated footprints and vegetative screening. These actions would have a minor, indirect, long term, beneficial impact.
Ethnographic Resources	Activities covered in this plan would continue and have no effect on ethnographic resources. Operation of the capture facility would remain as described in the Bison EIS.	SCAA activities would be restricted to a set footprint and the activities within this footprint would have no effect on ethnographic resources. The operation of the bison capture facility would remain under the Bison EIS.
Archeological Resources	Activities covered in this plan would continue and have no effect on archeological resources.	SCAA activities would be restricted to a set footprint and the activities within this footprint would have no effect on archeological resources.
Public Health and Safety	To meet current potable water requirements, a small chlorinator would be added to the water system.	To meet current potable water requirements, a small chlorinator would be added to the water system. Construction of the new barn would reduce exposure to extreme environmental conditions for staff and animals and would result in a safer work environment. A septic system would be constructed for the proposed barn. Sanitation would be improved with new facilities in the proposed barn.

NATURAL RESOURCES

GEOLOGY AND SOILS

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to geologic resources and soils were derived from the available geologic information and park staff's past observations of the effects on soils from both visitor use and construction activities. Impacts to geology and soils that are unique to Yellowstone or to soils that support important vegetation species are more significant than impacts to common soils.

The thresholds of change for the intensity of impacts to geology and soils are defined as follows:

Negligible: Geologic resources and soils would not be affected or the effects on these resources would not be detectable.

Minor: Effects on geologic resources and 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: Effects on geologic resources and 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: Effects on geologic resources and 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.

IMPACTS OF ALTERNATIVE 1 ON GEOLOGY AND SOILS

Impact Analysis

Operation of the current SCAA would continue under this alternative. The SCAA could continue to gradually grow in size as more administrative functions occur and existing functions slowly expand without management direction. Soil disturbance would occur as this anticipated expansion happens. Measurable effects would be readily detectable, and could include removal of soil through loss of vegetation, compaction, and possibly unnatural erosion through disturbed vegetation and localized wind events.

Cumulative Impacts

Construction projects would continue across the Yellowstone River from the SCAA and in the northwest portion of YNP, disturbing various amounts of soil and causing minor amounts of erosion. These may include NPS construction near the Heritage and Research Center, soil tilling from BLA vegetation restoration, and construction on private property near YNP. Rehabilitation efforts and erosion control are standard practices. When added to other past and foreseeable future projects occurring in the area, continued operation of the SCAA would cause minor to moderate cumulative impacts to soil.

Conclusions

Effects on geological resources and soil would be minor to moderate, localized, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to geology and soils, this alternative would contribute a minor to moderate soil disturbance to the cumulative geological scenario. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON GEOLOGY AND SOILS

Impact Analysis

The SCAA would be managed within the existing 43 acre footprint. This would eliminate soil disturbance on the perimeter of the development. Approximately 0.4 acre of previously disturbed soil would be impacted by excavation and grading for a new barn. Planting of shrubs and trees to screen the development would benefit soils by diminishing wind-caused erosion. The surface of the vehicle and equipment storage area would be hardened to diminish the visual impacts and prevent seasonally muddy conditions and further erosion.

Any top soil that must be disturbed would be conserved, and re-spread on-site after construction during the landscaping and revegetation. Attention to drainage would direct rain and snow melt away from the barn and corrals, lessening erosion. Excess material from park projects would be stored and reused to create berms for the firing range or to improve local drainage patterns.

Cumulative Impacts

Construction projects would continue across the Yellowstone River from the SCAA and in the northwest portion of YNP, disturbing various amounts of soil and causing minor amounts of erosion. These may include NPS construction near the Heritage and Research Center, soil tilling

from BLA vegetation restoration, and construction on private property near YNP. Rehabilitation efforts and erosion control are standard practices. When added to other past and foreseeable future projects occurring in the area, continued operation of the SCAA would cause minor cumulative impacts to soil.

Conclusions

Effects on geological resources and soil would be minor, localized, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions, this alternative would contribute a minor soil disturbance to the cumulative soil scenario. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

VEGETATION

Methodology and Intensity Thresholds

Park staff performed an on-site survey for rare plants and species of special concern, and no rare plants or species of concern were identified within the proposed project area. Additionally, available information on park native vegetation and unique plant communities was used to analyze the effects of the alternatives. Exotic vegetation was also surveyed in the SCAA.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: 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. No exotic vegetation was found in the area.

Minor: 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. Exotic vegetation is found in the area but is being managed under an active management plan.

Moderate: A sizeable 0100 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. Exotic vegetation is found in the area and is not being managed under an active management plan.

Major: 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. Exotic vegetation is found extensively in the area and is not being managed under an active management plan.

IMPACTS OF ALTERNATIVE 1 ON VEGETATION

Impact Analysis

Continued operation of the SCAA would affect native vegetation. The current SCAA has little or no vegetation within its existing footprint. Exotic weed species reside in this area under minimal management. Exotic vegetation is occasionally inventoried and controlled. Potential gradual expansion of the SCAA footprint would cause further loss of native vegetation as this development grows.

Cumulative Impacts

Construction projects would continue across the Yellowstone River from the SCAA and in the northwest portion of YNP, disturbing various amounts of vegetation and causing increased disturbance and proliferation of non-native species. These may include NPS construction near the Heritage and Research Center, soil tilling from BLA vegetation restoration, and construction on private property near YNP. Revegetation efforts and exotic species control would continue inside and outside the park. When added to other projects occurring in the area, continued operation of the SCAA would cause minor to moderate cumulative impacts to vegetation.

Conclusions

Effects to vegetation would be minor to moderate, localized, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would contribute a minor to moderate effect to the cumulative impacts on vegetation. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON VEGETATION

Impact Analysis

The SCAA under the preferred alternative would be managed within the existing 43 acre footprint. This would eliminate disturbance of vegetation outside the perimeter of this development. Excavation for the proposed barn would affect vegetation. However, because the proposed barn would be constructed within the existing footprint of the stock operation, there would be minimal additional disturbance of vegetation. Planting native shrubs and trees within the SCAA would limit visual impacts and benefit native vegetation by reducing wind erosion. The SCAA would be monitored and treated for exotic vegetation annually to ensure annual inventory and control of noxious weed species. The park's rare plant expert would be consulted

before new ground disturbing activities, such as rehabilitation of the short Firing Range, are implemented. Any topsoil that must be disturbed would be conserved, and re-spread on-site after construction during the landscaping and revegetation. Screening vegetation in the SCAA would improve the overall visual landscape of the area.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwest portion of YNP, disturbing various amounts of vegetation and causing increased disturbance and proliferation of non-native species. These may include NPS construction near the Heritage and Research Center, soil tilling from BLA vegetation restoration, and construction on private property near YNP. Revegetation efforts and exotic species control would continue inside and outside of the park. When management strategies are developed to restore the Gardiner Basin with native plant species, these techniques would be incorporated in the vegetation management of the SCAA. When added to other projects occurring in the area, continued operation of the SCAA would cause minor cumulative impacts to vegetation.

Conclusions

Effects on vegetation would be minor, localized, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would contribute a minor beneficial effects to the cumulative impacts on vegetation. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

WILDLIFE

Wildlife species are addressed below under Pronghorn, Other Ungulates (bison, elk, and mule deer), and other wildlife species, including mammals, reptiles, amphibians, and birds.

Pronghorn

Because pronghorn are a species of special concern for YNP, impacts to pronghorn are analyzed separately from other ungulates.

Methodology and Intensity Thresholds

All available information on pronghorn was compiled. Predictions about short- and long term impacts were based on existing monitoring data from YNP. Note that threatened and endangered species are considered separately under the impact topic immediately following wildlife.

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

Negligible: Pronghorn would not be affected or the effects would be below the level of detection.

Minor: Effects to pronghorn would be detectable, although the effects would be localized, short-term, and of little consequence to the species population.

Moderate: Effects to pronghorn would be readily detectable, localized but long term, with consequences potentially at the population level. Mitigation measures proposed to offset adverse effects would be extensive.

Major: Effects to pronghorn would be obvious, long term, and would have substantial consequences to the population(s) in the park. Mitigation measures proposed to offset adverse effects would be extensive.

IMPACTS OF ALTERNATIVE 1 ON PRONGHORN

Impact Analysis

Pronghorn are known to use habitats near the SCAA. Pronghorn have habituated to low intensity, day-to-day activities at the SCAA (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training, log construction, exercises at the firing ranges, and vehicle traffic). They are routinely observed feeding and bedding adjacent to the Stephens Creek facility and access road while such activities are ongoing. Displacements appear to be temporary and ephemeral because pronghorn were observed foraging in habitats adjacent to the Stephens Creek facility less than 60 minutes after bison processing operations ceased during winter 2004. However, there are strong indications that infrequent, irregularly scheduled, higher-intensity activities (e.g., bison hazing and processing) at or near the Stephens Creek facility can displace pronghorn >1 km away (P.J. White, personal communication, 2005).

The following activities would continue at the Stephens Creek facility under the No Action alternative: (1) year-round corral operations; (2) operation of the firing ranges; (3) bison hazing and bison capture facility; (4) log building construction; (5) nursery operations; and (6) equipment, trailer, and vehicle storage.

The footprint of activities at the SCAA could continue to grow under this alternative, thereby resulting in the loss and fragmentation of additional habitat for pronghorn. The pronghorn are a species of special concern in the park and the displacement of pronghorn away from the Stephens Creek area may intensify, if the Stephens Creek facility incrementally expands and unmanaged growth and activities occur.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwest portion of YNP, disturbing various amounts of pronghorn habitat. If appropriate vegetation and treatment for the Gardiner Basin were to be developed and implemented, this would improve long term ungulate habitat. When added to other projects occurring in the area, continued

operation of the SCAA would cause minor, cumulative impacts to pronghorn.

Conclusions

Effects on pronghorn would be minor, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to pronghorn, this alternative would contribute a minor, direct, long term impact to the cumulative ungulate scenario. Under this alternative,

there may be small scale changes in land-use patterns, because there would be no restrictions on activities in the Stephens Creek area.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON PRONGHORN

Impact Analysis

Pronghorn, have apparently habituated to low intensity, day-to-day activities at the SCAA (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training, log building construction, firing range and vehicle traffic), since they are routinely observed feeding and bedding adjacent to the Stephens Creek facility and access road while such activities are ongoing. Displacements appear to be temporary and ephemeral because pronghorn were observed foraging in habitats adjacent to the Stephens Creek facility less than 60 minutes after bison processing operations ceased during winter 2004. However, there are strong indications that infrequent, irregularly scheduled, higher-intensity activities (e.g., bison hazing and processing) at or near the Stephens Creek facility can displace pronghorn >1 km away (P.J. White, personal communication, 2005).

The following existing activities would continue at the Stephens Creek facility under this alternative: (1) year-round corral operations; (2) operations of the firing ranges; (3) bison hazing and bison capture facility (winter/early/spring); (4) log building construction; (5) nursery operations; (6) equipment, trailer, and vehicle storage.

The following conservation measures would be implemented as part of the preferred alternative to avoid and minimize potential adverse effects to pronghorn: (1) the barn would not be constructed December through June when antelope are on their winter range and fawning areas; (2) the short Firing Range would be restored as habitat; and (3) YNP will seek funding towards restoration of previously cultivated fields within the BLA.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and the northwest portion of YNP, disturbing various amounts of pronghorn habitat, including research and monitoring and restoration of old agricultural fields in the Gardiner Basin. Future lead abatement and rehabilitation of the short Firing Range would free 0.36 acres for ungulate habitat. Consolidation of the log construction could restore two acres to ungulate habitat. No increase in every day activity is expected following construction of a barn as this structure would merely consolidate a number of activity into one area. When added to other projects occurring in the area, continued operation of the SCAA would cause minor, local, long term cumulative impacts to pronghorn.

Conclusions

Effects on pronghorn would be minor, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to pronghorn, this alternative would contribute a minor, direct, long term impact to the cumulative ungulate scenario. Under this management plan for the SCAA, the footprint for this administrative area would not expand or otherwise contribute to changes in land-use patterns, population density, or growth rate. Growth of the SCAA under this alternative would be capped at 43 acres.

Changes in the frequency, timing, or intensity of these existing activities are not anticipated. Thus, potential adverse effects of these existing activities (e.g., temporary, short-term displacement of animals from the immediate area) should remain unchanged from its current situation.

This alternative would reduce the potential for future adverse effects to ungulates by restricting existing and future activities in this area to the existing footprint of the Stephens Creek facility and reducing the extent of this footprint in some areas. Thus, additional losses or fragmentation of pronghorn habitat in this area should be avoided.

It is anticipated that on-going activities will have a minor impact to the pronghorn. Thus, because there would not be major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

OTHER UNGULATE SPECIES

Methodology and Intensity Thresholds

All available information on other ungulates was compiled. Predictions about short- and long term impacts were based on existing monitoring data from YNP. Note that threatened and endangered species are considered separately under the impact topic immediately following wildlife. For the SCAA, emphasis will be primarily on ungulate species including elk, mule deer, and bison. Because bighorn sheep and moose do not occur in the vicinity of the SCAA, impacts to these two species are not addressed.

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

Negligible: Other ungulates would not be affected or the effects would be below the level of detection.

Minor: Effects to other ungulates would be detectable, although the effects would be localized, short-term, and of little consequence to the species' population.

Moderate: Effects to other ungulates would be readily detectable, localized but long term, with consequences potentially at the population level. Mitigation measures proposed to offset adverse effects would be extensive.

Major: Effects to other ungulates would be obvious, long term, and would have substantial consequences to the other ungulate population(s) in the park. Mitigation measures proposed to offset adverse effects would be extensive.

IMPACTS OF ALTERNATIVE 1 ON OTHER UNGULATES

Impact Analysis

Other ungulates include elk, mule deer, and bison. Elk and mule deer are primarily observed early in the morning or late in the day and around SCAA, while bison may be present at any time of the day. These species have habituated to low intensity, day-to-day activities at the SCAA (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training, log construction, exercises at the firing ranges, and vehicle traffic), since they are routinely observed feeding and bedding adjacent to the Stephens Creek facility and access road while such activities are ongoing. At other times, these activities are observed to cause short term displacement of elk and mule deer. Bison may also have short term displacement but to a lesser degree than elk and mule deer.

The following activities would continue at the Stephens Creek facility under the No Action alternative: (1) year-round corral operations; (2) operation of the firing ranges; (3) bison hazing and bison capture facility; (4) log building construction; (5) nursery operations; (6) equipment, trailer, and vehicle storage. The footprint of activities at the SCAA may continue to grow under this alternative, thereby resulting in the loss and fragmentation of additional habitat for ungulates.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwestern portion of YNP, disturbing various amounts of ungulate habitat. If appropriate vegetation and treatment for the Gardiner Basin were to be developed and implemented, this could improve ungulate habitat. When added to other projects occurring in the area, continued operation of the SCAA would cause minor, cumulative impacts to ungulates.

Conclusions

Effects on ungulate species such as elk, bison, and mule deer would be minor, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to ungulates, this alternative would contribute a minor, direct, long term impact to the cumulative ungulate scenario. Under this alternative, there may be small scale changes in land-use patterns, because there would be no restrictions on activities in the Stephens Creek area.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON OTHER UNGULATES

Impact Analysis

Other ungulates include elk, mule deer, and bison. Elk and mule deer are primarily observed early or late in the morning in and around SCAA, while bison may be present at any time of the day. These species have habituated to low intensity, day-to-day activities at the SCAA (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training, log construction, exercises at the firing ranges, and vehicle traffic), since they are routinely observed feeding and bedding adjacent to the Stephens Creek facility and access road while such activities are ongoing. At other times, these activities are observed to cause short term displacement of elk and mule deer. Bison may also have short term displacement but to a lesser degree than elk and mule deer.

The following existing activities would continue at the Stephens Creek facility under this alternative: (1) year-round corral operations; (2) operations of the firing ranges; (3) bison hazing and bison capture facility; (4) log building construction; (5) nursery operations; (6) equipment, trailer, and vehicle storage. The corral operation is the year-round activity at the SCAA and with construction of the proposed barn, corral operations staff would work inside out of sight for many activities. This would decrease opportunities for disruption of other wildlife.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and the northwest portion of YNP, disturbing various amounts of ungulate habitat, including research and monitoring and restoration of old agricultural fields in the Gardiner Basin. Future lead abatement and rehabilitation of the short Firing Range would free 0.36 acres for ungulate habitat. Consolidation of the Log Construction area would restore 2 acres to ungulate habitat. No increase in every day activity is expected following construction of a barn as this structure would merely consolidate a number of activity into one area. When added to other projects occurring in the area, continued operation of the SCAA would cause minor, local, long term cumulative

impacts to ungulates.

Conclusions

Effects on ungulate species such as elk, bison, and mule deer would be minor, direct, and long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to ungulates, this alternative would contribute a minor, direct, and long term impact to the cumulative ungulate scenario. Under this management plan for the SCAA, the footprint for this administrative area would not expand or otherwise contribute to changes in land-use patterns, population density, or growth rates. The size of the SCAA under this alternative would be capped at 43 acres.

While vehicle traffic would not be expected to change, much of the corral operations work would take place inside the barn. So, minor decreases in the frequency, timing, or intensity of these existing activities and staff visibility would be anticipated. Thus, potential adverse effects of these existing activities (e.g., temporary, short-term displacement of elk, bison, and mule deer from the immediate area) should remain unchanged from its current situation.

This alternative would reduce the potential for future adverse effects to ungulates by restricting existing and future activities in this area to the existing footprint of the Stephens Creek facility and reducing the extent of this footprint in some areas. Thus, additional losses or fragmentation of ungulate habitat in this area should be avoided.

Thus, because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

OTHER WILDLIFE SPECIES

Methodology and Intensity Thresholds

All available information on known wildlife was compiled. Predictions about short- and long term site impacts were based on existing monitoring data from YNP. For the SCAA, other wildlife emphasis will be on non-ungulate species including mammals, reptiles, amphibians, and birds. Fish species do not occur near the SCAA and are not included here.

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

Negligible: Wildlife would not be affected or the effects would be below the level of detection.

Minor: Effects to wildlife would be detectable, although the effects would be localized, short-term, and of little consequence to the species' population. Mitigation measures to

offset adverse effects would be proposed.

Moderate: Effects to wildlife would be readily detectable, localized but long term, with consequences potentially at the population level. Mitigation measures proposed to offset adverse effects would be extensive.

Major: Effects to wildlife would be obvious, long term, and would have substantial consequences to the wildlife population(s) in the park. Mitigation measures proposed to offset adverse effects would be extensive.

IMPACTS OF ALTERNATIVE 1 ON OTHER WILDLIFE

Impact Analysis

The footprint of activities at Stephens Creek would likely continue to sprawl, thereby resulting in the loss and fragmentation of additional habitat for wildlife species, especially for non-ungulate mammals, birds, and some reptiles found in this area. Some wildlife species such as black bears, coyotes, and small mammals, various bird species, and snakes do not appear to be displaced during SCAA activities. The displacement of other wildlife away from SCAA may intensify as the facility expands and new activities are established in this area.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwest portion of YNP, disturbing various amounts of wildlife habitat. When added to other projects occurring in the area, continued operation of the SCAA would cause negligible to minor, cumulative impacts to non-ungulate wildlife species.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to wildlife, this alternative would contribute a negligible to minor, direct, long term impacts to the cumulative non ungulate wildlife scenario. This alternative may be growth-inducing or otherwise contribute to changes in land-use patterns, population density, or growth rate because there would be no restrictions on activities or the footprint of these activities in the Stephens Creek area. This alternative would contribute a negligible to minor, direct, long term, and adverse effect to wildlife species.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON OTHER WILDLIFE

Impact Analysis

Non-ungulates wildlife are apparently habituated to low intensity, day-to-day activities at the SCAA (e.g., stock and corral operations, nursery operations, equipment storage, horsemanship training, log construction, firing ranges, and vehicle traffic), since they are occasionally observed adjacent to the Stephens Creek facility and access road. Some wildlife species such as black bears, coyotes, and small mammals, various bird species, and snakes do not appear to be displaced during SCAA activities. Loss of additional wildlife habitat beyond the current footprint would not occur.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwest portion of YNP, disturbing various amounts of wildlife habitat. When added to other projects occurring in the area, continued operation of the SCAA would cause negligible, long term cumulative impacts to non-ungulate wildlife species.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to wildlife, this alternative would contribute a negligible, long term impacts to the cumulative non-ungulate wildlife scenario. This alternative would not be growth-inducing or otherwise contribute to changes in land-use patterns, population density, or growth rate because there would be no expansion on activities or the footprint of these activities in the Stephens Creek area. Continued sprawl and growth of the SCAA footprint would not occur under this alternative, there would be negligible impairment of the park's resources or values. This alternative would contribute negligible, local, long term, and adverse effects to non-ungulate wildlife species.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

THREATENED AND ENDANGERED SPECIES

Methodology and Intensity Thresholds

Yellowstone National Park biologists familiar with each of the threatened and endangered species present in Yellowstone were consulted for their knowledge and opinion on potential project impacts. These experts consulted records of threatened and endangered species sightings within four miles of the SCAA, historic records of sightings, and their detailed

knowledge of the life habits of the species in question. The evaluation of effects included direct, indirect, interrelated, interdependent, and cumulative impacts as defined by the Endangered Species Act (ESA).

Informal consultation with the U.S. Fish and Wildlife Service (USFWS) will occur for this proposed project. Measures to avoid adverse effects to threatened or endangered species would include avoidance, minimization, and conservation as defined by the ESA.

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 either (1) insignificant, discountable, or beneficial for individual members of the species, or (2) effects are localized, temporary, and of little negative consequence to individuals of the species, particularly for effects that relate to human disturbance or habitat modification affecting breeding, sheltering, or feeding of individuals. In situation #2, given implementation of mitigation (conservation) measures proposed by the park, a "minor effect" corresponds to a determination by the park of "may affect, but not likely to adversely affect" the species (or not likely to adversely modify proposed or designated critical habitat) for §7, ESA purposes. The USFWS must concur with this determination during consultation.

Moderate: Effects are readily detectable, localized, and are often long term in nature. 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 resulting from consultation would include conservation measures proposed by the park and terms and conditions required by the USFWS to avoid and minimize the adverse effects to individuals that are certain to occur.

Major: Effects are readily detectable at the population level and are long term in nature. 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 mitigation (conservation) measures proposed by the park and terms and conditions required by the USFWS would result in significant changes to the project in order to avoid and reduce the adverse impacts to the species. 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.

IMPACTS OF ALTERNATIVE 1 ON ENDANGERED OR THREATENED SPECIES

Impact Analysis

Although grizzly bears, bald eagles, and gray wolves are rarely seen in this area, the footprint of activities at the SCAA would likely continue to gradually expand, thereby resulting in the loss and fragmentation of additional habitat for threatened and endangered species. The displacement of these species away from SCAA may intensify as the Stephens Creek facility expands and new activities are established in this area. Although bald eagles are occasionally seen flying across this area, they are unlikely to be displaced from this development. The SCAA is not in a Canada Lynx Analysis Unit. Canada lynx do not use this area, although the activities at SCAA under this alternative would not present barriers to lynx travel.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and the northwest portion of YNP, disturbing various amounts of threatened and endangered species habitat. When added to other projects occurring in the area, the continued operation of the SCAA would cause negligible impacts on Canada lynx and bald eagles and negligible to minor, long term cumulative impacts to grizzly bears and gray wolves.

Conclusions

This alternative would result in no effect to Canada lynx. This alternative would also result in negligible to minor, indirect, long term, adverse impacts to bald eagle, grizzly bears, and gray wolves. This alternative may be growth-inducing or otherwise contribute to changes in land-use patterns, population density, or growth rate because there would be no restrictions on activities or the footprint of these activities in the Stephens Creek area. This alternative would have no effect to the Canada lynx. This alterative may affect but would not likely adversely affect bald eagle, grizzly bears, and gray wolves.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON THREATENED AND ENDANGERED SPECIES

Impact Analysis

Although grizzly bears, bald eagles, and gray wolves are rarely seen in this area, the footprint of activities at the SCAA would not expand beyond its current 43 acre footprint. There would be no additional loss and fragmentation of habitat for the threatened and endangered species. These species may be temporarily displaced away from Stephens Creek but this would not intensify. Bald eagles are occasionally seen flying across this area, and they are unlikely to be displaced from this development. Canada lynx do not use this area. This alternative would result in negligible, indirect, long term, adverse effects to Canada lynx and bald eagle populations.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and the northwest portion of YNP, disturbing various amounts of threatened and endangered species habitat. When added to other projects occurring in the area, the continued operation of the SCAA would cause negligible impacts on Canada lynx and bald eagles and negligible to minor, long term cumulative impacts to grizzly bears and gray wolves.

Conclusions

When combined with other past, present, and foreseeable future actions, this alternative would result in no effect to Canada lynx. This alternative would also result in negligible to minor, indirect, long term, adverse impacts to bald eagle, grizzly bears, and gray wolves. This alternative would not be growth-inducing or otherwise contribute to changes in land-use patterns, population density, or growth rate because there would be restrictions on activities or the footprint of these activities in the Stephens Creek area. Sprawl and growth of the SCAA footprint would not occur under this alternative. This alternative would have no effect to Canada lynx. This alterative may affect but would not likely adversely affect bald eagle, grizzly bears, and gray wolves.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

WATER RESOURCES AND WATER QUALITY

Methodology and Intensity Thresholds

Park plumbing staff conducted a survey of the SCAA water system. Surface water does not occur near the SCAA project area; Reese Creek is 1.5 miles to the west and Stephens Creek is 0.4 mile to the east. There are no discharges from the SCAA into streams.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: An action that would cause no change in an existing water resources and water quality or function.

Minor: An action resulting in a change that would require considerable scientific effort to measure and have barely perceptible consequences to water resources and water quality function.

Moderate: An action that would change existing water resources and water quality, but the impact could be mitigated by water quality measures. The action would have a measurable effect

on water resources and water quality, but all resources would remain indefinitely viable within the park.

Major: An action that would have drastic and permanent consequences for an existing water resources and water quality which could not be mitigated. Water resources and water quality dynamics would be upset, and resources would be at risk of degradation in the park.

IMPACTS OF ALTERNATIVE 1 ON WATER RESOURCES AND WATER QUALITY

Impact Analysis

Water is currently obtained for human, stock, bison use, and for watering the nursery and the Rife House yard from the development of a spring on the slope of Sepulcher Mountain above the SCAA. The springs currently used for the SCAA have historically provided water for the Rife House and the original functions of the SCAA. Water from the upper spring collects in a small concrete tank from which water is piped to the SCAA and the Rife House. Water is currently sufficient for domestic, lawn and orchard watering, stock/bison use, and for the nursery. The lack of a water measurement station and sanitation station does not currently meet state environmental quality standards. A series of historic and non-historic ditches run through the SCAA from Reese and Stephens Creeks but are currently not functional as they are no longer connected to water sources.

Cumulative Impacts

Development would continue outside the park in the vicinity of the SCAA and in the northwest portion of YNP. In addition, agricultural water resources would be utilized on private land around the park. When added to other projects occurring in the area, continued operation of the SCAA would cause negligible cumulative impacts to water resources and water quality.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to water resources and water quality, the current functions at SCAA would be expected to expand their footprint gradually through time. The impacts to the water resources and quality for activities under the No Action alternative would be negligible, adverse, and long term.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON WATER RESOURCES AND WATER QUALITY

Impact Analysis

Water would continue to be obtained for human, stock, bison use, and for watering the nursery and the Rife House from the development of a spring high on the slope of Sepulcher Mountain. This water from the upper spring collects in a small concrete tank from which water is piped to the SCAA and the Rife House. Water use would increase slightly but would be sufficient for continued domestic, lawn and orchard watering, stock/bison use, and for the nursery. Water from the modern development is adequate for the future needs of the SCAA and Rife House. Additional water would be used for the flush toilet in the barn and for watering of additional vegetation. A water measurement station and sanitation station would be constructed. Conservation measures such as installation of a low flow toilet and drip line irrigation for screening vegetation would ensure that there would not be a need for further development of the existing spring box water supply. A water measurement station and sanitation station would be constructed in order to comply with state environmental quality standards. Use of drip irrigation for screening vegetation at the SCAA and low flow toilet would conserve water. The historic and non-historic ditches that run through the SCAA from Reese and Stephens Creeks would not be functional as they are no longer connected to water sources.

Cumulative Impacts

Development would continue outside the park in the vicinity of the SCAA and in the northwest portion of YNP. In addition, agricultural water resources would be utilized on private land around the park. When added to other projects occurring in the area, the proposed operation of the SCAA would cause negligible cumulative impacts to water resources and water quality.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to water resources and water quality, the proposed functions at SCAA would not expand from the existing footprint. The impacts to the water resources and quality for activities under the Preferred Alternative would be negligible to minor, adverse, and long term.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

WETLANDS

Methodology and Intensity Thresholds

Park staff performed an on-site survey for wetlands, and no wetlands were identified within the proposed project area. However, because water from the developed spring with a wetland is brought to the SCAA, impact to wetlands was used to analyze the effects of the alternatives.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: An action that would cause no change in an existing wetland area or function or to riparian vegetation and wildlife communities.

Minor: An action that would cause no change in wetland and function. The action would affect a few individuals of plant or wildlife species within an existing wetland or riparian area. The change would require considerable scientific effort to measure and have barely perceptible consequences to wetland or riparian habitat function.

Moderate: An action that would change an existing wetland area, but the impact could be mitigated by the creation of artificial wetlands. The action would have a measurable effect on plant or wildlife species within an existing wetland or riparian area, but all species would remain indefinitely viable within the park.

Major: An action that would have drastic and permanent consequences for an existing wetland area which could not be mitigated. Wetland and riparian species dynamics would be upset, and species would be at risk of extirpation from the park.

IMPACTS OF ALTERNATIVE 1 ON WETLANDS

Impact Analysis

Natural springs on the slopes of Sepulcher Mountain were developed historically to bring water to the Rife House and the historic nursery in the SCAA. Additionally, there is an abandoned historic impoundment lower on the slope that has a wetland associated with it. This historic impoundment would not be affected. Water from the currently-in-use spring is adequate for the needs of the SCAA and Rife House and excess water overflows the spring box and leaks from the historic reservoir to support a local wetland.

Cumulative Impacts

Development would continue outside the park in the vicinity of the SCAA and in the northwest portion of YNP. In addition, agricultural water resources would be utilized on private land around the park. When added to other projects occurring in the area, continued operation of the SCAA would cause negligible cumulative impacts to wetlands.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to wetlands, this alternative would contribute a negligible cumulative impacts on wetlands. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON WETLANDS

Impact Analysis

Natural springs on the slopes of Sepulcher Mountain were developed historically to bring water to the Rife House and to the historic nursery in the SCAA. All but one spring currently drain unimpeded in several intermittent streams into an abandoned historic impoundment to the west. Water from the currently-in-use spring is adequate for the current and future needs of the SCAA and Rife House and excess water overflows the spring box, leaks out of the impoundment, to support a local wetland.

Water from the modern development is adequate for the future needs of the SCAA and Rife House. Additional water would be used for the flush toilet in the barn and for watering of additional vegetation. A water measurement station and sanitation station would be constructed. Conservation measures such as installation of a low flow toilet and drip line irrigation for screening vegetation would ensure that there would not be a need for further development of the existing spring box water supply. A septic system for the proposed barn would occur within the SCAA and not affect wetlands.

Cumulative Impacts

Construction projects would continue in the vicinity of the SCAA and in the northwest portion of YNP. In addition, agricultural water resources would be utilized on private land in this area. Water usage at the SCAA would be expected to increase slightly but conservation measures would limit this volume. When added to other projects occurring in the area, continued operation of the SCAA would cause negligible cumulative impacts to wetlands.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to wetlands, this alternative would contribute a negligible, indirect, local, long term, and adverse cumulative impacts on wetlands. Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

VISUAL QUALITY, INCLUDING LIGHTSCAPES

Methodology and Intensity Thresholds

The NPS recognizes the importance of preserving Yellowstone's scenic views and dark nighttime skies. The use of artificial light at SCAA is temporary, project or activity specific, and as necessary for safety.

Analyses of the potential intensity of impacts to the visual quality of the landscape were derived from the available information and park staff's past observations of the effects on visual quality from both visitor use and construction activities. The thresholds of change for the intensity of impacts to visual quality are defined as follows:

Negligible: No changes in the visual quality of the landscape would result or any changes would be below the level of detection.

Minor: Effects on the visual quality of the landscape, including nighttime lighting, would be detectable, but the effects would be small, localized, and temporary. Mitigation measures would be proposed to offset any adverse impacts.

Moderate: Effects on the visual quality of the landscape would be readily apparent. Such effects would be long term but localized within the area. Mitigation measures would be proposed to offset adverse effects.

Major: Effects on the visual quality of the landscape would be obvious, long term, noticeable throughout the immediate area. The visual quality of the park's landscape would be substantially affected. Mitigation measures would be proposed to offset adverse effects.

IMPACTS OF ALTERNATIVE 1 ON VISUAL QUALITY/ LIGHTSCAPES

Impact Analysis

The visual impact of the SCAA is divided into daylight and night skies. The former contributes the majority of the visual impact, in terms of quantity and degree. Continued operation of the SCAA would result in impacts on visual quality in that area. Due to the equipment, trailer, and vehicle storage with their bright colors, the SCAA would continue to be visible for several miles away and from U.S. Highway 89 and the Old Yellowstone Trail. Other functions include the log building construction area and corral operations' metal containers that affect the visual quality. This visibility would continue to cause negative comments on the parts of locals and visitors, and the SCAA might be expected to expand and present a larger profile through lack of management and creep. Some vegetation would grow and block a portion of the storage area but other vegetation would die and parts of the vehicle, equipment, and trailer storage would be more visible and create changes to the view shed.

The current lighting in the SCAA include a porch light with a manual switch and a flood light can be turned on when early morning, evening, or night activities that take place in front of Historic

Structures-0100 and 0101, the existing barn and office. SCAA lighting, when in use, is more noticeable during the darker winter months than during the summer. The Rife House, 400 meters from the SCAA, has a yard light with an automatic timer that is also visible from outside its immediate area.

Cumulative Impacts

Construction and development in the areas adjacent to this part of the park would continue to occur but each project would have different effects on visual quality and on night skies. The current SCAA operation has an effect on the visual quality of the area and continued operation of the SCAA under the No Action alternative would have moderate, local, direct, long term, and adverse cumulative impacts to visual quality and lightscapes.

Conclusions

The cumulative impact of the SCAA from this alternative on day and night visual quality would be moderate, direct, long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to visual quality, the various functions at SCAA would be expected to expand their footprint gradually through time and for the impact to the visual quality to also grow.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON VISUAL QUALITY/LIGHTSCAPES

Impact Analysis

The NPS fully recognizes the importance of preserving Yellowstone's scenic views and dark nighttime skies. The use of light is temporary, project or activity specific, and as necessary for safety. The visual impact of the SCAA is divided into daylight and night skies. The former contributes the majority of the visual impact, in terms of quantity and degree. Construction of the proposed barn would include the temporary visual impacts of equipment and associated activities. Due to the distance from the Old Yellowstone Trail and change in elevation, these effects would be minor and short term. In the long term, the height of the barn would be about 12 feet higher than existing structures, which could make it more visible from U.S. Highway 89 as travelers drive towards Gardiner and the North Entrance. Mitigation measures such as material, colors, textures, and site orientation of the building and planting more vegetation would help lessen this visibility.

Through implementation of a defined footprint for the SCAA and restriction of various functions to their particular section, removal of unused, unneeded, and abandoned vehicles, trailers, and equipment, and a planting and watering program, the SCAA would become less

obvious. The barn would also be expected to block some of the visual impact of part of the equipment storage area.

The existing office (Historic Structure-0101) has a porch light and the animal health area/leather shop (HS-0100) has a flood light. Both lights have manual switches and can be used when early morning, evening, or night activities are taking place at the SCAA. Outside yard lights for the SCAA would be replaced with night sky sensitive lighting. Selective use of the SCAA lights would be necessary to insure the safety of staff and livestock during dark hours and are used more during the winter than the summer.

Under this alternative, mitigation measures to reduce visual impacts of the SCAA include: (1) removal of excess and abandoned equipment, trailers, and vehicles; (2) increase in vegetative screening; (3) use of the least amount of light possible; (4) lower visibility lighting at the SCAA would be explored and used as long as staff and stock safety is not compromised; and (5) the design and color of the proposed barn would employed to minimize its visibility from U.S. Highway 89 and Old Yellowstone Trail.

Cumulative Impacts

Construction and development in the areas adjacent to this part of the park would continue to occur but each project's effects on visual quality and impact to night skies would be different. Current SCAA operation has an effect on the visual quality of the area and continued operation of the SCAA under the Preferred Alternative would have a cumulative impact that is direct, local, long term, minor to moderate, and adverse. Excess, unneeded, and abandoned vehicles, trailers, and equipment would be removed; existing vegetation would grow taller and additional vegetation would be planted; the proposed barn would add a large structure to this administrative area but could hide part of the vehicle and equipment storage; and the SCAA footprint would not allowed to expand.

Conclusions

The impact of the SCAA on day and night visual quality would be minor to moderate, direct, and long term, and adverse. When combined with other past, present, and foreseeable future actions that would result in impacts to visual quality, this alternative would contribute moderate, direct, local, long term impact to the cumulative visual quality scenario. The new barn at the SCAA would be visible but would blend into the hillside as seen from Highway 89 and Old Yellowstone Trail due to proper selection of colors, textures, and materials. Under the mitigation measures proposed under this plan, however, this area would become less obvious when viewed from U.S. Highway 89 and Old Yellowstone Trail.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

SOUNDSCAPE

Methodology and Intensity Thresholds

The natural soundscape is an intrinsic resource or value of park lands, and includes all of the sounds of nature absent any sounds from human sources. Impacts on the natural soundscape are complex, as with many other resources and values. Soundscapes was identified during scoping as an issue. Complexity is a blend of the geographic source, frequency, and magnitude of human-made sound. Audibility (i.e., whether a sound can be heard at all within the natural soundscape), sound level (i.e. amount of sound energy or "loudness" of the sound), and time factors (i.e., duration, frequency of occurrence, and timing) of noise all determine whether a noise is an impact on the natural soundscape. The definition of impact levels takes these factors into account, and these are defined as follows:

Negligible: An action that does not affect the natural soundscape or the potential for its enjoyment, but with infrequent occurrence and only for short duration at low sound levels. At this impact level, unique soundscape characteristics (such as bubbling hot springs or geysers) are not affected.

Minor: An action that may affect the natural soundscape or potential for its enjoyment in zones of use where human-made sounds are expected. In those zones, the duration, frequency of occurrence, and sound level of the intruding noise are all considered no more than minor. Noise is rarely audible more than 50% of the time in these zones, and levels are rarely 50 dB or greater at 100 feet, or 10 dB or greater at 1,000 feet. Relatively few acres are affected in management zones where noise is not expected to be audible and, in those zones, effects are infrequent with short duration and at low levels.

Moderate: An action that may affect the natural soundscape or potential for its enjoyment in zones of use where human-made sounds are expected. In those zones, either the duration, frequency of occurrence, or sound level of the noise is considered moderate, but no impacts from any of these upon the natural soundscape are considered major. Specifically, noise is audible 50% or more of the time in a minority of the area of these zones, and/or levels are often 50 dB or greater at 100 feet or 10 dB or greater at 1,000 feet. A relatively disproportionate area is affected in management zones where noise is not expected to be audible, and/or in those zones effects are more than infrequent or of more than short duration or low level.

Major: An action has an easily recognizable adverse effect on the natural soundscape or potential for its enjoyment. In zones where man-made sounds are expected, a noise is major if it is audible for more 50% or more the time in half such zones. Alternatively, if any one of the noise's duration/frequency/levels is considered major, the overall impact is considered to be major. A relatively disproportionate area is affected by noise in management zones where noise is not expected to be audible, or where any of duration/frequency/level in those zones is considered moderate or greater.

IMPACTS OF ALTERNATIVE 1 ON SOUNDSCAPES

Impact Analysis

Hauling material, operating vehicles and equipment, chipping organic debris, operating chainsaws, electric drills, and other construction equipment, firing range practice, and other construction activities could result in dissonant, human-caused sounds. However, all equipment and construction activity would occur in the SCAA developed area where protection of a natural ambient soundscape and/or opportunity for visitors to experience natural sound environments is not an objective. Any dissonant sounds associated with construction and other operations would be temporary, lasting only as long as the construction activity generating the sound, and would negligibly impact visitor enjoyment of the park. These sounds do not escape beyond the SCAA. This is not the case for sound from the firing range that does extend beyond the SCAA and would occur during at any time during the day and sometimes into the evening hours.

Cumulative Impacts

A variety of sound-creating activities (for example, hauling material, operating equipment, operating chainsaws, electric drills, other construction equipment and other activities, and private use of fire arms) would occur in the northwest portion of YNP and within private lands near the SCAA. However, because these sounds would be localized and of short durations, impacts of the SCAA firing range to soundscapes would be minor.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to soundscapes, this alternative would contribute a minor, direct, localized, short term, and adverse impact to the cumulative soundscape scenario.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON SOUNDSCAPE

Impact Analysis

Hauling material, operating vehicles and equipment, chipping organic debris, operating chainsaws, electric drills, and other construction equipment, firing range practice, and other construction activities could result in dissonant, human-caused sounds. However, all equipment and construction activity would occur in the SCAA developed area where protection of a natural ambient soundscape and/or opportunity for visitors to experience natural sound environments is not an objective. Any dissonant sounds associated with construction and other

operations would be temporary, lasting only as long as the activity generating the sound, and would negligibly impact visitor enjoyment of the park. These sounds do not escape beyond the SCAA. This is not the case for sound from the firing range that does extend beyond the SCAA. Park rangers would strive to limit firing range activities during evening hours and only when reduced lighting fire arms qualification is necessary.

Cumulative Impacts

Hauling material, operating equipment, operating chainsaws, electric drills, and other construction equipment, and other construction activities would occur in the northwest portion of YNP and within private lands near the SCAA. Additionally, private shooting of fire arms occurs outside the park. However, because these sounds would be direct, localized, and of short durations, impacts of the firing range to soundscapes would be negligible to minor.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to soundscapes, this alternative would contribute a negligible to minor, direct, short term, and adverse impact to the cumulative soundscape scenario. Thus, effects of these existing activities should remain unchanged from their current situation.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

CULTURAL RESOURCES

HISTORIC RESOURCES

Methodology and Intensity Thresholds

In order for a historic site, structure, or building to be eligible for the National Register of Historic Places it must meet one or more of the following criteria of significance:

1. associated with events that have made a significant contribution to the broad patterns of our history;
2. associated with the lives of persons significant in our past;
3. 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; or
4. 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 National Historic Preservation Act of 1966, as amended) with the appropriate State Historic Preservation Officer (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.

Analyses of the potential intensity of impacts to historic resources were derived from a review of the List of Classified Structures, research in the park archives to determine the potential eligibility of the historic resource(s), and on-site investigations to determine a project's proximity to historic resources.

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 such items as 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; and/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.

IMPACTS OF ALTERNATIVE 1 ON HISTORIC STRUCTURES

Impact Analysis

The current Stephens Creek Barn, HS-0100, is eligible for the National Register of Historic Places under Criterion A, events important in the past. This structure would continue to be used in its existing location and would receive periodic maintenance such as paint. However, the

SCAA and the current barn (HS-0100) have been used for a variety of activities over time. However, through these various changes, the structure's exterior has remained the same. It is reasonable to expect that there might be a gradual expansion of existing activities and perhaps the addition of new ones in and around this structure.

Cumulative Impacts

Cumulative impacts as a result of implementing the No Action Alternative combined with other past, present, and reasonably foreseeable future projects, would have a negligible, indirect to direct, long term, no effect impact on historic resources.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to this Historic Structure, this alternative would have negligible, local, direct, and long term impact on historic structures. For §106, there would be no adverse effect to historic properties.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON HISTORIC STRUCTURES

Impact Analysis

In the Preferred Alternative, the existing barn (animal health area/leather shop) (HS-0100) would remain at or near its present location at the SCAA and would have a compatible adaptive use. This structure has been moved in the past and its function has changed several times (barn, fire cache, shoeing shed and currently animal health area and leather repair shop). The current corral office, HS-0101, would be moved to another location at the SCAA, possibly near the bison operation. This structure has been determined not eligible for the National Register of Historic Places. Both structures would receive periodic maintenance such as paint and new shingles. The proposed barn would be constructed to the west of the existing animal health area/leather shop (HS-0100) and HS-0100 would be used as screening for the new structure. Consultation with the Montana State Historic Preservation Office would occur regarding the effect construction of the proposed barn would have on this historic structure. The NPS would mitigate potential adverse impacts to HS-0100 by ensuring that suitable colors, textures and structure orientation are selected for the proposed new barn.

Cumulative Impacts

Stephens Creek Barn (HS-0100) has been impacted in the past by being moved and by having its function change; however this has not jeopardized its National Register eligibility. Cumulative impacts as a result of implementing the Preferred Alternative combined with other past, present, and reasonably foreseeable future projects, would have a minor to moderate, indirect, long term,

no adverse effect impact on historic resources.

Conclusions

When combined with other past, present, and foreseeable future actions that would result in impacts to HS-0100, this alternative would contribute a minor to moderate, indirect, long term, no adverse effect impact to the cumulative historic structure scenario. For §106, this alternative would have a no adverse effect on historic structures.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

CULTURAL LANDSCAPES

Methodology

For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact(s) 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(s) or feature(s) 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(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*. A memorandum of agreement is executed among the National Park Service 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 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 National Park Service 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*.

Section 106 (§106) consultation (as described in the National Historic Preservation Act of 1966, as amended) with the appropriate State Historic Preservation Officer (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.

Note: If there is determination of *adverse effect* under §106, a memorandum of agreement is executed among the National Park Service 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 reduce the intensity of impact under NEPA from major to moderate.

Impacts of Alternative 1 on the Cultural Landscape

Impact Analysis

Although no construction activities are identified in Alternative 1, unmanaged sprawl, and associated incremental changes in the SCAA would continue with potential for future additional functions primarily outside the Historic Game Ranch cultural landscape's utilitarian group perimeter fence. The temporary metal storage units would remain as would the equipment, vehicle, and RV trailer storage. Some additional vegetative plantings may occur as a cultural landscape preservation measure.

Cumulative Impacts

Various alterations to some of the historic Game Ranch cultural landscape elements within the SCAA have occurred over the years, including additions to vegetation, dead and dying plantings, non-historic modifications to ditches, as well as additions and removal of structures. Anticipated impacts associated with continuation of status quo under the no action alternative would be minor, long term, and, under Section 106, no adverse effect. In conjunction with previous impacts, there would be minor, direct to indirect, long term, no adverse effect cumulative impacts to the cultural landscape.

Conclusions

When combined with other past, present, and foreseeable future actions, Alternative 1 would result in minor impacts to cultural landscapes. This alternative would have no adverse effect on the historic Game Ranch cultural landscape.

Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON THE CULTURAL LANDSCAPE

Impact Analysis

Under this preferred alternative, the SCAA would not expand and the various functions would be limited to designated footprints. Additional plantings associated with screening these functions would occur, and historic shelter-belt plantings would be rejuvenated. The reestablishment of these plantings would restore more of a semblance of the historic nursery's historic appearance. Installation of pipe fencing is proposed to replace historic perimeter fencing, maintaining the historic location.

The proposed new barn would be located within the utilitarian group, within the existing corral area. The function of the proposed new barn would be compatible with the bucolic and utilitarian activities associated with the cultural landscape's period of significance. The new barn would perpetuate this compatible, adaptive re-use of this property. To ensure the new structure would also be compatible within the proposed district, the scale, massing, design, materials and location of the proposed barn would be developed in consultation with the Montana State Historic Preservation Office, as a rehabilitation under the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The construction of a new barn would have a minor, long term, impact, which, under Section 106 would be considered a no-adverse effect to the cultural landscape. The relocated historic barn (HS-0100) would be retained within the district, and would continue to be adaptively used, possibly for storage or an office for the nursery operation.

Cumulative Impacts

Alterations to some of the landscape features and patterns have occurred over the years, including changes to the irrigation ditches, changes in the nursery, and moving structures in and out. To date, these changes have not diminished the integrity of the cultural landscape so that it is no longer potentially eligible to the National Register of Historic Places. The impacts associated with implementation of the preferred alternative would have a minor impact to the contributing features and patterns of the Historic Game Ranch cultural landscape by containing and deliberately planning the adaptive re-use and
rehabilitation of the site in an appropriate and compatible fashion. Future changes that are not already accommodated in this plan would be limited.

Conclusions

Overall, the preferred alternative, in conjunction with past impacts, would result in the indirect to direct, long term, beneficial to minor, no adverse cumulative impacts to the cultural landscape. The change in fencing materials, as a means to reduce livestock injuries due to exposed sharp wire, would have a negligible to minor, long term, no adverse effect. Implementation of the preferred alternative would have *no adverse effect* on the Stephens Creek Cultural Landscape, which has the potential to be eligible to be listed for local significance in the National Register of Historic Places.

Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (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.

ETHNOGRAPHIC RESOURCES

Methodology

For the purposes of analyzing potential impact to cultural landscapes, the thresholds of change of for the intensity of an impact are defined as follows:

Definitions of Intensity Levels

Negligible: Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be *no adverse effect.*

Minor Adverse: impact(s) would be slight but noticeable but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be *no adverse effect.*

Beneficial impact: would allow access to and/or accommodate a group's traditional practices or beliefs. The determination of effect on Traditional Cultural Properties for §106 would be *no adverse effect.*

Moderate Adverse: impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be *adverse effect.*

Beneficial impact: would facilitate traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for §106 would be *no adverse effect*.

Major Adverse: impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that the survival of a group's practices and/or beliefs would be jeopardized. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for §106 would be *adverse effect*.

Beneficial impact: would encourage traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for constituent components would be no adverse effect.

Section 106 (§106) consultation (as described in the National Historic Preservation Act of 1966, as amended) with the appropriate State Historic Preservation Officer (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.

IMPACTS OF ALTERNATIVE 1 ON ETHNOGRAPHIC RESOURCES

Impact Analysis

There are no Traditional Cultural Properties at the SCAA, however, there are ethnographic resources within the study area. These resources are the places where different tribal members have left offerings on behalf of the buffalo and where ceremonies have occurred in association with the offerings. It is important to note that bison or buffalo are culturally important to all 26 park-associated and 54 bison-interested tribes. Consequently, the bison capture facility and the manner in which bison are held and handled in the capture facility remains an on-going issue of concern to all these tribes. The no action alternative would not modify in any way the structure and operation of the bison capture facility and how bison are handled there, though some tribes have expressed an interest in modifying the facility to more humanely treat the buffalo.

Cumulative Impacts

There are no cumulative impacts associated with the No Action Alternative as related to ethnographic resources.

Conclusions

When combined with other past, present, and foreseeable future actions, the No Action, in conjunction with past impacts, would result in no effect on ethnographic resources. Because there would be no adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON ETHNOGRAPHIC RESOURCES

Impact Analysis

There are no Traditional Cultural Properties at the SCAA, however, there are or ethnographic resources within the study area. These resources are the places where different tribal members have left offerings on behalf of the buffalo and where ceremonies have occurred in association with the offerings. It is important to note that bison or buffalo are culturally important to all 26 park-associated and 54 bison-interested tribes. Consequently, the bison capture facility and the manner in which bison are held and handled in the capture facility remains an on-going issue of concern to all these tribes. The no action alternative would not modify in any way the structure and operation of the bison capture facility and how bison are handled there, though some tribes have expressed an interest in modifying the facility to more humanely treat the buffalo.

Section 106 (§106) consultation (as described in the National Historic Preservation Act of 1966, as amended) with the appropriate State Historic Preservation Officer (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.

Cumulative Impacts

There are no cumulative impacts from the Preferred Alternative on ethnographic resources.

Conclusions

When combined with other past, present, and foreseeable future actions, the preferred alternative, in conjunction with past impacts, would result in no impacts to ethnographic resources. This alternative would have no effect on ethnographic resources. Because there would be no adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

ARCHEOLOGICAL RESOURCES

Methodology

Archeological resources were identified as an impact during internal scoping because proposed construction of a barn would create some ground disturbance. Also, the BLA near the SCAA is known to contain significant archeological sites.

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Archeological resources have the potential to answer, in whole or in part, such research questions. An archeological site(s) can be eligible to be listed in the National Register of Historic Places if the site(s) has yielded, or may be likely to yield, information important in prehistory or history.

The National Historic Preservation Act requires agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places. The process begins with an identification survey and evaluation of cultural resources for National Register eligibility, followed by an assessment of effect on those eligible resources, and concluding after a consultation process. If an action (undertaking) could change in any way the characteristics that qualify the resource for inclusion on the National Register, it is considered to have an effect. No adverse effect means there could be an effect, but the effect would not be harmful to those characteristics that qualify the resource for inclusion on the National Register. Adverse effect means the effect could diminish the integrity of the characteristics that qualify the resource for the National Register.

As noted above, effects to archeological resources can be either beneficial or adverse, direct or indirect, or short- or long term. For the purposes of this analysis, levels of impact to archeological resources were defined as follows:

Negligible: The impact is at the lowest levels of detection – barely measurable with no perceptible consequences to archaeological resources.

Minor: The impact affects an archeological site(s) with little or no potential to yield information important in prehistory or history. These archeological resources are generally ineligible to be listed in the National Register of Historic Places.

Moderate: The impact affects an archeological site(s) with the potential to yield information important in prehistory or history. The historic context of the affected site(s) would be local or state.

Major: The impact affects an archeological site(s) with the potential to yield important information about human history or prehistory. The historic context of the affected site(s) would be national.

IMPACTS OF ALTERNATIVE 1 ON ARCHEOLOGICAL RESOURCES

Impact Analysis

Following inventories, there were no archeological resources found within the SCAA. The activities identified in the No Action alternative would not be monitored. The SCAA may gradually expand its footprint. However, this would have negligible effect on archeological resources.

Cumulative Impacts

There are no cumulative impacts associated with the No Action Alternative as related to archeological resources.

Conclusions

When combined with other past, present, and foreseeable future actions, the No Action, in conjunction with past impacts, would result in negligible effect on archeological resources. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

IMPACTS OF ALTERNATIVE 2 ON ARCHEOLOGICAL RESOURCES

Impact Analysis

No resources were identified by archeological inventories within the SCAA. There would be some ground disturbance with construction of a barn. Ground disturbing activities associated with the construction of a barn and other activities of this plan will be monitored by the park archeologist. If
construction activities discover previously unknown archaeological resources, all work immediately on and adjacent to the site would stop until the park archaeologist could identify, document, and evaluate the resources and until consultation with the Montana SHPO.

Cumulative Impacts

There are no cumulative impacts associated with the Preferred Alternative as related to archeological resources. The activities identified in this plan would have negligible effect on archeological resources.

Conclusions

When combined with other past, present, and foreseeable future actions, the Preferred Alternative, in conjunction with past impacts, would result in negligible on archeological resources. Because there would be no adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of YNP; (2) key to the natural or cultural integrity 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.

TABLE 4: SUMMARY OF THE POTENTIAL EFFECTS OF ALTERNATIVE 2 ON CULTURAL RESOURCES

Historic Resources	National Register Status	Area of Potential Effect (APE)[1]	Proposed Protective Measures	Further 106 Review Requirements	Determination of Effect
HS-0100 Stephens Creek Barn	Determined Eligible for the National Register of Historic Places.	The structure is located within the Area of Potential Effect (APE).	Leave in existing location and use for storage or office for nursery.	Finding of Effect and consultation on Effect with Montana SHPO.	No adverse effect.
HS-0101 Existing Corral Operations Office	Determined Not Eligible	Would be moved for construction of new barn to area of bison corrals.	Not applicable.	Not applicable.	Not Applicable.
Cabins #3, 206, and 216.	Determined not Eligible.	Not Applicable.	Not applicable.	Not applicable.	Not Applicable.
Historic Game Ranch Cultural Landscape	Potentially eligible at Local Significance.	The proposed new barn would be sited in a accordance with the Secretary of the Interior's Guidelines.	No significant landscape features would be impacted.	DOE and Finding of Effect with Montana SHPO.	No adverse effect.

Notes:
[1]APE = Area of Potential Effect, the geographic area(s) within which an undertaking may cause changes in the character or use of historic properties.
[2]DOE= Determination of Eligibility

CUMULATIVE EFFECTS OF THE PREFERRED ALTERNATIVE

Implementation of Alternative 2 would have a minor cumulative effect on geology, soils, and vegetation because the area proposed for development has been previously disturbed by homesteading, operations of the historic and modern nursery, victory and community gardens, corral operations, equipment storage area, and firing range. Construction of a new barn within the existing footprint would have a minor, indirect, long term, no adverse effect on the existing barn (HS-0100). NPS would mitigate potential adverse impacts to HS-0100 by ensuring that construction of the proposed new barn adheres to appropriate design guidelines and that

preservation maintenance on HS-0100 was carried out in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (1995). The proposed new barn would have a minor, short term cumulative impact on wildlife as construction is a temporary event. To minimize that impact, construction would occur after pronghorn antelope have moved out of the Stephens Creek area towards summer grazing areas and before they return in the fall. The visual quality would be improved by removal of excess and abandoned trailers, equipment, by removal of the metal storage units used by corral operations for tack, by additional screening vegetation, and by the proposed barn which would block part of the storage area from Highway 89.

Some cumulative visual effect on cultural resources would result from implementation of Alternative 2 and construction of the barn, but would be mitigated by using an appropriate building design, orientation, and colors, and by planting and watering trees and shrubs. The visual impact would be lessened by positioning the building so that the roof has a smaller profile as seen from Highway 89 and by the colors, textures, and materials selected. As solar energy is being explored to light and heat the barn, orientation of the structure will also have to take that into consideration. The proposed building would have moderate cumulative effects on the visual quality of the area. The planting and watering of vegetation would revitalize the historic plantings and benefit the cultural landscape.

OTHER PLANNING EFFORTS IN THE NORTH ENTRANCE AND NORTHWEST PORTION OF YELLOWSTONE NATIONAL PARK.

The Interagency Bison Management Plan addresses the bison capture facility and its operation on the edge of the SCAA. The bison would continue to be managed under this plan and would be affected by decisions in this environmental assessment. An interagency vegetation group has made recommendations for the reestablishment of native vegetation on previously cultivated fields in a portion of the BLA. This study began in the spring, 2005. The Yellowstone Association has proposed constructing a building adjacent to the Heritage and Research Center on the edge of Gardiner, Montana but fundraising has not yet begun and their plans may have recently changed. Phases II and III of the Heritage and Research Center would construct wings on the Phase I building to store the historic vehicle collection and to house a natural resources research function when funding is available.

CONSULTATION AND COORDINATION

Based on this EA, if the project would significantly affect the human environment, a notice of intent (NOI) to prepare an environmental impact statement (EIS) would be issued. Conversely, a finding of no significant impact (FONSI) would be issued if it is determined that there would be no significant impact from this project.

Consultation with the USFWS on threatened and endangered species under 50 CFR Part 402, which implements the Endangered Species Act, would be completed. As part of the consultation process, the NPS would seek USFWS concurrence with its determination of effect on threatened and endangered species.

Contractor activities would comply with state and federal air quality regulations, and contractors would operate under applicable permits.
The undertaking (build a barn) described in this document is subject to Section 106 of the National Historic Preservation Act, under the terms of the 1995 Servicewide Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. This document would be submitted to the Montana State Historic Preservation Officer (SHPO) for review and comment.

Native American tribes traditionally associated with YNP would be contacted for input and comment on this project.

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Bear Creek Council (Gardiner)
Gardiner Chamber of Commerce
Montana State Historic Preservation Office

U.S. Fish and Wildlife Service
U.S.D.A. Forest Service, Gardiner Ranger District
Yellowstone National Park's 26 Affiliated Tribes

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